

# CALENDAR 2013/2014



**Agriculture**  
**Architecture and Planning**  
**Arts and Social Sciences**  
**Computer Science**  
**Engineering**  
**Health Professions**  
**Management**  
**Science**

# A Statement of the Aims of Undergraduate Education at Dalhousie

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Dalhousie University offers undergraduate education enriched by a longstanding institutional commitment to research and to graduate and professional education. The University tries to assist all its undergraduate students to become independent thinkers and articulate communicators, knowledgeable about their chosen disciplines or professions, conversant with a reasonable body of general knowledge, and committed to learning throughout their lives.

**Dalhousie assists its students to learn how to think for themselves.** Students in all disciplines and professions can expect to develop skills and attitudes crucial for logical and independent thought. The faculty strives to teach students how to think, rather than what to think, and to enable them to make fair-minded enquiries in their fields of study and into the broader ethical, cultural and social issues that shape our lives. An educated person thinks carefully, reconsiders received ideas, and leads an examined life. The development of these habits of mind is the primary goal of undergraduate study.

**Dalhousie assists its students to learn to express themselves, orally and in writing with clarity, precision and style.** It does so, not only because communication skills permit the efficient transfer of information, but also because they make possible dialogues which lead to new ideas and to deeper appreciation of existing knowledge. Because a communal effort to exchange ideas and information is at the heart of university life, students in all disciplines and professions need opportunities to develop their skills in writing and in speaking at all levels of the undergraduate curriculum.

**Dalhousie assists its students to master a combination of specialized and general knowledge.** The specialized knowledge acquired by undergraduates at Dalhousie varies from discipline to discipline and even from student to student. Such knowledge should include, not only data skills, but also an understanding of the theories, structures and processes central to the discipline or profession in question, and an awareness of their practical applications and ethical consequences. Undergraduate students at Dalhousie should become familiar with a significant body of general knowledge as well. All should become acquainted with concepts central to our own culture and those of others. All should acquire basic quantitative skills and some knowledge of the principles of science and technology. All should share a sense of history and an appreciation of achievements in literature, philosophy and the arts. Such general knowledge helps us not only to confront the practical demands of work and life, but also to comprehend more fully our experience of the human condition.

**Dalhousie assists its students to develop the capacity for commitment to learning throughout their lives.** Their educational experiences within and outside the classroom should be rich and diverse. By providing social, cultural, recreational and other opportunities for student involvement and leadership, Dalhousie acknowledges responsibility for promoting both personal and intellectual growth.

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Published by:  
**Registrar's Office**  
February 2013

# Smoke Free/Scent Free Dalhousie

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## **Providing a Healthy Work and Study Environment**

To protect people from involuntary exposure to tobacco smoke, in 2003, Dalhousie declared the University entirely smoke-free. The No Smoking Policy prohibits smoking in all University buildings, including University residences, on University property and in University Vehicles.

Under this policy, those wishing to smoke are asked to leave University property ([http://safety.dal.ca/programs\\_services/smokefree/property.php](http://safety.dal.ca/programs_services/smokefree/property.php)). While smoking on public property, smokers are asked to avoid littering, to be respectful of others, and of course to abide by the municipal by-law.

The University has also acted to support its many students and employees who report that they are harmed when they are exposed to scents which are present in many scented personal care products. Scents in perfume, cologne, hair-spray, after-shave, and even some soap and fabric softeners, cause serious illness in people who are sensitive to these chemicals.

To provide an environment which supports teaching and learning, Dalhousie asks students, staff, faculty and visitors, to refrain from using such scented products while at the University. The scent reduction program is part of a broader effort to limit, to the fullest extent practical, exposure to all chemicals in our buildings.

For more information on the Smoking Policy and the Scent Reduction Program, contact the Safety Office by email at [Safety.Office@dal.ca](mailto:Safety.Office@dal.ca) or consult the web sites [http://safety.dal.ca/programs\\_services/scentfree/](http://safety.dal.ca/programs_services/scentfree/) and [http://safety.dal.ca/programs\\_services/smokefree/](http://safety.dal.ca/programs_services/smokefree/).



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# Important Notices

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Students are advised that the matters dealt with in this Calendar are subject to continuing review and revision. This Calendar is prepared some months before the year for which it is intended to provide guidance. Students are further advised that the content of this calendar is subject to change without notice, other than through the regular processes of Dalhousie University, and every student accepted for registration in the University shall be deemed to have agreed to any such deletion, revision or addition whether made before or after said acceptance. Additionally, students are advised that this calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with the University. Other rules and regulations are contained in additional publications that are available to the student from the Registrar's Office, and/or the relevant faculty, department or school.

The University reserves the right to limit enrolment in any program. Students should be aware that enrolment in many programs is limited and that students who are admitted to programs at Dalhousie are normally required to pay deposits on tuition fees to confirm their acceptance of offers of admission. These deposits may be either non-refundable or refundable in part, depending on the program in question. While the University will make every reasonable effort to offer classes as required within programs, prospective students should note that admission to a degree or other program does not guarantee admission to any given class. However, no student in a graduating year may be excluded from a class required by that student to meet degree requirements because of lack of space (This rule does not apply to elective courses or to preferred sections of classes.). Students should select optional classes early in order to ensure that classes are taken at the most appropriate time within their schedule. In some fields of study, admission to upper level classes may require more than minimal standing in prerequisite classes.

Dalhousie University does not accept any responsibility for loss or damage suffered or incurred by any student as a result of suspension or termination of services, classes or courses caused by reason of strikes, lockouts, riots, weather, damage to university property or for any other cause beyond the reasonable control of Dalhousie University.

Inquiries should be directed to:

## **The Registrar**

Dalhousie University  
PO Box 15000  
Halifax, Nova Scotia B3H 4R2  
Canada  
Telephone: (902) 494-2450  
Fax: (902) 494-1630  
E-mail: Registrar@dal.ca

## **Other Programs**

Information on programs offered by the Faculties of Dentistry, Law and Medicine, can be found in the Dentistry, Law, Medicine Calendar. Information on programs offered by the Faculty of Graduate Studies can be found in the Graduate Studies Calendar.

# Academic Dates 2013/2014

ACADEMIC CLASS ADD/DROP DATES (For financial deadlines and refund dates, visit <a href="http://www.dal.ca/studentaccounts">www.dal.ca/studentaccounts</a> .)						
Term Identifier	Part of Term Description	Duration of Classes	Last Day to Register	Last Day to Cancel and Add Classes for registered students	Last Day to Drop without "W" Last Day to Change from Audit to Credit and Vice Versa	Last Day to Drop with "W"
Summer Term 2013						
I	Full Term	May 6 - August 2, 2013	May 6, 2013	May 13, 2013	May 31, 2013	June 28, 2013
A	6-week Term	May 6 - June 21, 2013	May 6, 2013	May 13, 2013	May 22, 2013	June 7, 2013
D	3-week Term	May 6 - May 29, 2013	May 6, 2013	May 10, 2013	May 13, 2013	May 22, 2013
9	12-week Term	May 30 - August 23, 2013	May 30, 2013	June 17, 2013	July 2, 2013	August 2, 2013
E	3-week Term	June 3 - June 21, 2013	June 3, 2013	June 11, 2013	June 12, 2013	June 17, 2013
B	7-week Term	July 2 - August 16, 2013	July 2, 2013	July 8, 2013	July 19, 2013	August 2, 2013
F	3-week Term	July 2 - July 24, 2013	July 2, 2013	July 8, 2013	July 9, 2013	July 17, 2013
G	4-week Term	July 25 - August 16, 2013	July 25, 2013	July 31, 2013	August 2, 2013	August 9, 2013
Fall Term 2013						
X/Y	Full Year Class	September 5, 2013 - April 7, 2014	September 5, 2013	September 20, 2013	November 4, 2013	February 3, 2014
I	Full Term	September 5 - December 3, 2013	September 5, 2013	September 20, 2013	October 7, 2013	November 4, 2013
Winter Term 2014						
I	Full Term	January 6 - April 7, 2014	January 6, 2014	January 17, 2014	February 3, 2014	March 10, 2014
Q	4th-year Nursing	January 6 - March 14, 2014	January 6, 2014	January 17, 2014	January 27, 2014	February 14, 2014
Summer Term 2014						
I	Full Term	May 5 - August 1, 2014	May 5, 2014	May 12, 2014	May 30, 2014	June 27, 2014
A	6-week Term	May 5 - June 20, 2014	May 5, 2014	May 12, 2014	May 21, 2014	June 6, 2014
D	3-week Term	May 5 - May 28, 2014	May 5, 2014	May 12, 2014	May 14, 2014	May 21, 2014
9	12-week Term	May 29 - August 22, 2014	May 29, 2014	June 19, 2014	July 10, 2014	July 31, 2014
E	3-week Term	June 2 - June 20, 2014	June 2, 2014	June 6, 2014	June 12, 2014	June 16, 2014
B	7-week Term	July 2 - August 20, 2014	July 2, 2014	July 11, 2014	July 24, 2014	August 5, 2014
F	3-week Term	July 2 - July 25, 2014	July 2, 2014	July 7, 2014	July 11, 2014	July 17, 2014
G	4-week Term	July 29 - August 21, 2014	July 25, 2014	July 31, 2014	August 7, 2014	August 14, 2014

## Other Academic Dates

### 2013

#### May

Friday, 3 Faculty of Agriculture Convocation  
 Monday, 6 Co-op and Academic Summer term begins  
 Monday, 20 Victoria Day - University closed  
 Tuesday, 21 -  
 Wednesday, May 29 - Spring Convocations

#### July

Monday, 1 Canada Day - University closed  
 Tuesday, 2 Last day to apply to graduate in October

#### August

Friday, 2 Co-op summer academic term ends  
 Monday, 5 Halifax/Dartmouth Natal Day - University closed  
 Tuesday, 6 Examinations begin commerce co-op, computer science & engineering  
 Saturday, 10 Examinations end except commerce co-op  
 Friday, 16 Examinations end commerce co-op

### September

Monday, 2 Labour Day - University closed  
 Thursday, 5 Classes begin, fall term  
 Friday, 20 Last day to apply for honours programs  
 Friday, 20 Last day to change from Dalhousie to King's and vice versa

### October

Monday, 7 -  
 Wednesday 9 Fall Convocations  
 Monday, 14 Thanksgiving Day - University closed

### November

Monday, 11 Remembrance Day - University closed  
 Tuesday, 12 Study Day (except students in Co-op Clinicals, or Internships)

### December

Monday, 2 Last day to apply to graduate in May  
 Tuesday, 3 Classes end, fall term  
 Thursday, 5 Examinations begin  
 Monday, 16 Examinations end

**2014****January**

Wednesday, 1 New Year's Day - University closed  
 Monday, 6 Classes begin, winter term

**February**

Friday, 7 Munro Day - University closed \* for some students and employees  
 Monday, 17 - 21 Study break

**April**

Monday, 7 Classes end, regular session  
 Wednesday, 9 Examinations begin, regular session  
 Friday, 18 Good Friday - University closed  
 Monday, 21 Easter Monday \*\*  
 Saturday, 26 Examinations end, regular session

**May**

Monday, 5 Co-op and academic summer term begins  
 Friday, 9 Convocation (Faculty of Agriculture)  
 Monday, 19 Victoria Day - University closed  
 Tuesday, 20 -  
 Thursday, May 29 Spring Convocations

**July**

Tuesday, 1 Canada Day - University closed  
 Wednesday, 2 Last day to apply to graduate in October

**August**

Friday, 1 Co-op Summer academic term ends  
 Monday, 4 Halifax/Dartmouth Natal Day - University closed  
 Tuesday, 5 Examinations begin, commerce co-op, computer science and engineering  
 Saturday, 9 Examinations end, except commerce co-op  
 Friday, 15 Examinations end, commerce co-op

\* Students and employees on the Agricultural Campus should check online for up to date information.

\*\* Students and employees on the Agricultural Campus should check online for up to date calendars.

**Admission Dates 2013/2014****Final Dates for Receipt of Applications for Admission****Regular Session 2013/2014****Faculties of Arts and Social Sciences, Computer Science, Engineering, Management, and Science**

International Students (except USA) ..... April 1  
 Students entering from Canada or USA<sup>1</sup> ..... June 1  
 Returning Dalhousie Students<sup>4</sup> ..... August 15  
 Diploma in Meteorology ..... August 15

**Faculty of Agriculture**

Bachelor of Agriculture ..... July 1  
 Diploma in Veterinary Technology ..... February 28  
 All other programs ..... August 15

**Faculty of Architecture and Planning**

Bachelor of Community Design<sup>1</sup> ..... June 1  
 Bachelor of Environmental Design Studies ..... March 1

**Faculty of Health Professions**

Pharmacy ..... February 1  
 Social Work, Health Sciences ..... February 15  
 BSc (Recreation)<sup>1</sup>, BSc (Kinesiology)<sup>1</sup>, and  
 BSc (Health Promotion)<sup>1</sup> ..... June 1  
 Health Services Admin (DHSA, DEHSM) ..... July 1  
 BSc (Nursing) ..... March 15

**Dentistry<sup>2</sup>**

DDS ..... December 1  
 Dental Hygiene ..... March 15  
 Dentistry Qualifying Program ..... September 1  
 Bachelor of Dental Hygiene (BDH) ..... March 15  
 Paediatric General Practice Residency Program ..... October 15

**Medicine<sup>2</sup>**

MD ..... August 15

**Law<sup>2</sup>**

JD ..... February 28

**Winter Term**

BA and BSc programs only ..... November 15  
 Returning Dalhousie Students<sup>3</sup> ..... November 15  
 BEDS Transfer students ..... November 1

<sup>1</sup> Late applications may be considered but we cannot guarantee space in programs.

<sup>2</sup> Information on these programs is included in the appropriate calendar.

<sup>3</sup> For students returning to the same undergraduate programs, or attending as Special Students in any faculty

NOTE: In order to be considered for entrance scholarships, applications for admission from high school students must be received by March 15.

# Definitions

The following definitions are intended to facilitate an understanding of the calendar and not to define all words and phrases used in the calendar which may have specific meanings.

## Academic Dismissal

Required withdrawal from a program due to unsatisfactory academic performance (see Academic Regulations, page 37, section 20).

## Academic Program

A distinct group of classes and other requirements which lead to eligibility for a degree or other university-awarded credential.

## Academic Terms

- Fall term: September - December
- Winter term: January - April
- Summer term: May - August
- Regular term: September - April

## Advanced Standing

Students possessing advanced knowledge of a subject will be encouraged to begin their studies in that subject at a level appropriate to their knowledge, as determined by the department/school/college concerned. However, such students must complete, at Dalhousie, the full number of credits required for the particular credential being sought.

## Audit Student

A student permitted to attend classes but not expected to prepare assignments, write papers, tests or examinations. Credit is not given nor is a mark awarded for classes. Classes appear on the transcript with the notation "Aud". If not already admitted to the University, audit students must apply. Students may register to audit a class only after the first day of classes.

## Class

A unit of instruction in a particular subject identified by a name and number.

## Clerkship

See Internship

## Clinical Practice

See Internship

## Co-operative Education

A program where academic study is combined with career related work experience.

## Co-requisite

Requirement which can be fulfilled concurrently with the class being considered.

## Course

A unit of study in a subject area. Such a course is identified by a course/subject label, number, credit value and title (eg. ENGL 1000.06: Introduction to Literature).

## Credit

A unit by which University class work is measured. A full year (X/Y) class is normally worth one full credit (six credit hours).

## Credit Hours

One full credit is equal to six credit hours and one half credit is equal to three credit hours.

## CRN

Each class has a CRN attached to it (course reference number). This number is to be used when registering for classes.

## Crosslisted Classes

Classes are crosslisted based upon course content that deals with more than one subject area in a substantive way. The crosslisting recognizes the interdisciplinary nature of the class.

## Email

Email is an authorized means of communication for academic and administrative purposes within Dalhousie. The University will assign all students an official email address. This address will remain in effect while the student remains registered and for one academic term following a student's last registration. This is the only email address that will be used for communication with students regarding all academic and administrative matters. Any redirection of email will be at the student's own risk. Each student is expected to check her or his official email address frequently in order to stay current with Dalhousie communications.

## Exclusion

An exclusion is when one course is sufficiently similar to another course that credit will only be given once if both are taken.

## Externship

See Internship.

## Fieldwork

See Internship.

## Full-time Students

Those registered for three full classes (18 credit hours for UG, AC, HP level, 12 credit hours for TC level) or more in the Regular term, or the equivalent of three half credits (nine credit hours for UG, AC, HP level, six credit hours for TC level) classes or more in either the Summer, Fall or Winter term.

## Good Standing

Students who meet the required GPA are considered to be in good academic standing. (see Academic Regulations, page 37, section 18)

## Grade Point Average (GPA)

- Weighted sum of the grade points earned, divided by the number of credit hours enrolled.
- Term GPA: Classes taken in a single term.
- Cumulative GPA: All classes taken while registered in a level of study.
- In the case of a class that has been repeated, only the highest grade is included.

## Internship, Fieldwork, Clinical Practice, Externship, Practicum, Clerkship

These terms are used in programs to describe practical professional educational experiences that are conducted in a non-university setting such as a health or social service agency.

## Letter of Permission

A Letter of Permission authorizes a Dalhousie student to take a class(es) at another institution for credit towards a Dalhousie qualification. Such permission must be obtained in advance of taking the class(es).

## Level of Study

The following are levels of study:

TC	Technology Diploma - Faculty of Agriculture
AC	Architecture/Engineering (Years 3 and 4)
HP	Health Professions
UG	Arts & Social Sciences
	Computer Science
	Engineering (Years 1 and 2) and Bachelor of Food Science
	Management
	Science

## Part-time Students

Students registered for fewer than three full-credit classes (18 credit hours for UG, AC, HP level, 12 credit hours for TC level) or the equivalent of three half-credit (nine credit hours for UG, AC, HP level, six credit hours for TC level) classes in either the Summer, Fall or Winter term.

## Practicum

See Internship.

## Prerequisite

A requirement that must be fulfilled prior to registering in a specific class.

## Probation

Warning to students that their academic performance is unsatisfactory and that they will be dismissed from their program unless their performance improves by the end of the next term. (See Academic Regulations, page 37, section 19).

## Scholarship GPA

See Awards section page 608.

## Special Students

Students who are not candidates for a degree or diploma but who wish to take classes which may be allowed for credit. This is not the same as auditing a class. Special students must satisfy normal admission requirements.

## Transcript

A transcript is a complete history of a student's academic record at Dalhousie. Partial transcripts, e.g., a portion of a student's record pertaining to registration in a particular degree, faculty, or level of study, are not issued.

## Transfer Student

A transfer student is one who is awarded credit towards a Dalhousie degree for academic work completed at a previous university or equivalent institution of higher learning.

## Undergraduates

Students who are candidates for an undergraduate degree or diploma.

## Visiting Student

A person permitted to take classes at Dalhousie for transfer of credit to another university.

## Work Term

Career related work experience required in Co-operative Education programs. Work terms are usually 13-16 weeks in duration.

## Writing Intensive

Writing Intensive classes are those which emphasize the process of writing, frequency of writing assignments, and weighting of those assignments in the class grades. A Writing Intensive class is normally taken as a sequel to a Writing Requirement class, but does not satisfy the Writing Requirement.

## Class Codes

### Numbers

0010-0099 pre university preparation classes  
0100-0200 introductory technology level classes  
1000 level classes are introductory  
2000-4000 level classes are advanced  
5000-9000 level are Graduate level (with some exceptions)

### Credit Hours—examples only

.06 credit hours = 1 full credit UG, AC, HP level  
.03 credit hours = ½ credit UG, AC, HP level  
.02 credit hours = ½ credit TC level

### Subject Codes

Four letter codes are used to describe the department offering a particular class as follows:

ACAD - Academic  
AGRI - Agriculture  
AGRN - Agronomy  
ANAT - Anatomy & Neurobiology  
ANSC - Animal Science  
APSC - Applied Science  
AQUA - Aquaculture  
ARBC - Arabic  
ARCH - Architecture

ARTC - Applied Health Services Research  
ARTS - Art  
ASSC - Arts and Social Sciences Interdisciplinary  
BCBD - Community Building and Design  
BIOA - Biology (Faculty of Agriculture)  
BIOC - Biochemistry and Molecular Biology  
BIOE - Biological Engineering  
BIOL - Biology  
BIOT - Bioethics  
BMNG - Biomedical Engineering  
BUSI - Business Administration  
CANA - Canadian Studies  
CH&E - Community Health & Epidemiology  
CHEE - Chemical Engineering  
CHEM - Chemistry  
CHIN - Chinese  
CHMA - Chemistry (Faculty of Agriculture)  
CIVL - Civil Engineering  
CLAS - Classics  
CMMT - Communications  
CNLT - Centre for Learning and Teaching  
COMM - Commerce  
CPST - Complimentary Studies  
CRWR - Creative Writing  
CSCA - Computer Science (Faculty of Agriculture)  
CSCI - Computer Science  
CTMP - Contemporary Studies  
DCYT - Diagnostic Cytology  
DEHY - Dental Hygiene  
DENQ - Dentistry Qualifying  
DENT - Dentistry  
DISM - Disability Management  
DMUT - Diagnostic Medical Ultrasound Technology  
ECED - Electrical and Computer Engineering  
ECMM - Electronic Commerce  
EOCA - Economics (Faculty of Agriculture)  
ECON - Economics  
EDUC - Education  
EGLA - English (Faculty of Agriculture)  
EMSP - Early Modern Studies  
ENGI - Engineering  
ENGL - English  
ENGM - Engineering Math  
ENGN - Engineering (Faculty of Agriculture)  
ENSL - English Language (CE)  
ENVA - Environmental Sciences (Faculty of Agriculture)  
ENVE - Environmental Engineering  
ENVI - Environmental Studies  
ENVS - Environmental Science  
ERTH - Earth Sciences  
EURO - European Studies  
EXTE - Extension Education  
FOOD - Food Science (Faculty of Agriculture)  
FOSC - Food Science & Technology  
FREN - French  
FRNA - French (Faculty of Agriculture)  
GELA - Geology  
GEOA - Geography (Faculty of Agriculture)  
GEOG - Geography  
GENE - Genetics  
GERM - German  
GWST - Gender and Women's Studies  
HAHP - Health and Human Performance  
HEED - Health Education  
HESA - Health Administration  
HINF - Health Informatics  
HISA - History (Faculty of Agriculture)  
HIST - History  
HLTH - Health Professions  
HORT - Horticulture  
HPRO - Health Promotion  
HSCE - Health Sciences Education

HSTC - History of Science and Technology	RURS - Rural Studies
HUCD - Human Communication Disorders	RUSN - Russian Studies
IAGR - International Development (Faculty of Agriculture)	SCIE - Science
IDIS - Interdisciplinary Studies	SLWK - Social Work
IENG - Industrial Engineering	SOCI - Sociology (Faculty of Agriculture)
INFB - International Food Business	SOIL - Soils
INFO - Information Management	SOSA - Sociology and Social Anthropology
INFX - Informatics	SPAN - Spanish
INTA - Internship (Faculty of Agriculture)	SPEC - Special Topics
INTD - International Development Studies	SPNA - Spanish (Faculty of Agriculture)
INTE - Interdisciplinary Studies (Graduate)	STAA - Statistics (Faculty of Agriculture)
INWK - Engineering Internetworking	STAT - Statistics
IPHE - Interprofessional Health Professions	SUST - Sustainability
ITAL - Italian	THEA - Theatre
JOUR - Journalism	TYPR - Transition Year Program
KINE - Kinesiology	VISC - Vision Science
KING - King's Foundation Year Programme	VTEC - Veterinary Technology
LAWS - Law	
LEIS - Leisure Studies	
MARA - Marine Affairs	
MARI - Marine Biology	
MATH - Mathematics	
MATL - Materials Engineering	
MCRA - Microbiology (Faculty of Agriculture)	
MDLT - Medical Lab Technology	
MECH - Mechanical Engineering	
MEDI - Medicine	
MEDS - Medical Science	
MGMT - Management	
MGTA - Management (Faculty of Agriculture)	
MICI - Microbiology & Immunology	
MINE - Mineral Resource Engineering	
MTHA - Mathematics (Faculty of Agriculture)	
MUSC - Music	
NESC - Neuroscience	
NUMT - Nuclear Medicine Technology	
NURS - Nursing	
NUTR - Nutrition	
OCCU - Occupational Therapy	
OCEA - Oceanography	
ORAL - Oral & Maxillofacial Surgery	
PATH - Pathology	
PEAS - Process Engineering and Applied Science	
PERI - Periodontics	
PETR - Petroleum Engineering	
PGMD - Post-Graduate Medicine	
PGPH - Post-Graduate Pharmacy	
PHAC - Pharmacology	
PHAR - Pharmacy	
PHAS - Pharmaceutical Sciences	
PHDP - PHD Program	
PHIL - Philosophy	
PHLA - Philosophy (Faculty of Agriculture)	
PHYC - Physics and Atmospheric Science	
PHYL - Physiology	
PHYS - Physics (Faculty of Agriculture)	
PHYT - Physiotherapy	
PLAN - Planning	
PLSC - Plant Science	
POLI - Political Science	
POLS - Political Science (Faculty of Agriculture)	
PORT - Portuguese Studies	
PROS - Prosthodontics	
PSYC - Psychology (Faculty of Agriculture)	
PSYO - Psychology	
PUAD - Public Administration	
RADT - Radiological Technology	
REGN - Registration Course - Graduate	
RELS - Religious Studies	
RESM - Research Methods/Project Seminars	
RSCH - Research Class for PDF's	
RSPT - Respiratory Therapy	



# Undergraduate Programs

## Faculty of Agriculture

Bachelor of Agriculture - International Food Business (4 year)  
 Bachelor of Science (Agriculture) (4 year major)  
 Bachelor of Science (Agriculture) (4 year double major)  
 Bachelor of Technology (4 year major)  
 Diploma in Engineering (2 year)  
 Diploma in Technology - Business Management (2 year)  
 Diploma in Technology - Managed Landscapes (2 year)  
 Diploma in Technology - Plant Science (2 year)  
 Diploma in Technology - Veterinary Technology (2 year)

## Faculty of Architecture and Planning

Bachelor of Environmental Design Studies (2 years)  
 Bachelor of Community Design (3 years)  
 Bachelor of Community Design (4 year honours)

## Faculty of Arts and Social Sciences

Bachelor of Arts (3 year concentration)  
 Bachelor of Arts (4 year major)  
 Bachelor of Arts (4 year double major)  
 Bachelor of Arts (4 year concentrated honours)  
 Bachelor of Arts (4 year combined honours)  
 Bachelor of Arts/Bachelor of Engineering Concurrent (5 years)  
 Bachelor of Music (4 years)  
 Advanced Diploma in Costume Studies (3 years)  
 Diploma in Costume Studies (2 years)

## Faculty of Computer Science

Bachelor of Computer Science (4 years)\*  
 Bachelor of Computer Science (4 year honours)\*  
 Bachelor of Informatics (4 year co-op)  
 Bachelor of Science (4 year double major)\*  
 Bachelor of Science (4 year combined honours)\*  
 Bachelor of Arts (4 year double major)\*  
 Bachelor of Arts (4 year combined honours)\*

## Faculty of Engineering

Bachelor of Applied Science (Food Science)  
 Bachelor of Engineering (4 years)\*  
 Bachelor of Science/Bachelor of Engineering Concurrent (5 years)\*  
 Bachelor of Arts/Bachelor of Engineering Concurrent (5 years)\*  
 Diploma in Engineering (2 years)

## Faculty of Health Professions

Diploma in Emergency Health Services Management (1 year)  
 Diploma in Health Science (2 years)  
 Diploma in Health Services Administration (1 year)  
 Bachelor of Science (Health Promotion) (4 years)  
 Bachelor of Science (Health Promotion) (4 year honours)  
 Bachelor of Health Science (4 years)  
 Bachelor of Science (Kinesiology) (4 years)  
 Bachelor of Science (Kinesiology) (4 year honours)  
 Bachelor of Science (Nursing) (4 years)  
 Bachelor of Science (Nursing) for registered nurses (3 years)\*\*  
 Bachelor of Science (Nursing) (Arctic Nursing) (4 years)  
 Bachelor of Science (Pharmacy) (4 years)  
 Bachelor of Social Work (3 years)  
 Bachelor of Science (Recreation) (4 years)  
 Bachelor of Science (Recreation) (4 year honours)\*  
 Bachelor of Science (Recreation)/Bachelor of Management (5 years)  
 Bachelor of Science (Recreation)/Bachelor of Management (5 year honours)\*

## Faculty of Management

Bachelor of Commerce (4 year co-op)  
 Bachelor of Management (4 years)\*  
 Bachelor of Science Recreation/Bachelor of Management (5 years)  
 Bachelor of Science Recreation/Bachelor of Management (5 year honours)\*

\*Also available as an internship program

\*\* Suspension of program pending approval

## Faculty of Science

Bachelor of Science/Bachelor of Arts (3 year concentration)  
 Bachelor of Science/Bachelor of Arts (4 year major)\*  
 Bachelor of Science/Bachelor of Arts (4 year double major)\*  
 Bachelor of Science/Bachelor of Arts (4 year concentrated honours)\*  
 Bachelor of Science/Bachelor of Arts (4 year combined honours)\*  
 Bachelor of Science (4 year multi-disciplinary honours)  
 Bachelor of Science/Bachelor of Engineering Concurrent (5 years)\*  
 Diploma in Meteorology (1 year)

\*Also available as a co-op program

# Dalhousie University

Dalhousie University blends the finest academic traditions with innovative thinking and outstanding educational opportunities. Located on Canada's east coast - an area long known for its natural beauty and friendly people -- Dalhousie is a warm and welcoming university that attracts students from around the globe.

Dalhousie has been at the heart of Halifax, Nova Scotia - a lively coastal city - for almost 200 years. The university features both an historic, tree-lined urban campus and a rural agricultural campus, located about an hour from the city. Dalhousie combines a welcoming atmosphere with the international prestige of a big-name school. With 12 faculties and more than 4,000 classes in over 180 areas of study, the university offers its more than 18,000 students a wealth of choice and innovative degree programs.

Dalhousie encourages student learning through exchange programs, fieldwork, community service and cooperative education. Its collaborative learning environment encourages students to interact with one another and with faculty experts to share ideas and offer new perspectives. A member of the U15, Dalhousie is the smallest of Canada's research-intensive universities, combining the culture of a more intimate undergraduate college with the opportunities of a larger research institution.

This collaborative spirit also extends off campus. Dalhousie conducts research in partnership with teaching hospitals, professional organizations, businesses and industry, non-profit agencies and other universities. As Atlantic Canada's leading research university, Dalhousie attracts more than \$149 million in research grants and awards annually. The university is a world leader in marine-related research and home of the international Ocean Tracking Network.

Atlantic Canada's only Faculty of Agriculture, offering programs in areas such as international food business, pre-veterinary medicine and plant sciences, is located at Dalhousie's Agricultural Campus in Truro, NS.

The University of King's College, situated adjacent to the Dalhousie campus, is an affiliated institution, and its students in arts and science receive Dalhousie degrees in the name of both institutions.

Dalhousie University is a member of the Association of Universities and Colleges of Canada, the Association of Atlantic Universities and the Association of Commonwealth Universities.

## Executive Officers

### President and Vice-Chancellor

Tom Traves, BA, MA, PhD  
Richard Florizone, BSc, MSc (Saskatchewan), PhD (MIT) (*effective July 1, 2013*)

### Vice Presidents

#### Academic and Provost

Carolyn Watters, BSc, MSc, MLS (Western), PhD (TUNS)

#### Finance and Administration

Ken Burt, BA, MBA

#### External

Floyd W. Dykeman, BA, MPL

#### Student Services

Bonnie Neuman, BA, MA, EdD

#### Research

Martha Crago, BA, MSc (A), PhD

#### Associate Vice-President Academic

Keith F. Taylor, BSc (St. FX), PhD (Alberta)

#### Associate Vice-President Academic

Susan Spence Wach, MHA

#### Associate Vice-President, Research

Mark Filiaggi, BSc, MAsC, PhD

#### Associate Vice-President, Research

John Newhook, PhD, Peng

#### Assistant Vice-President, Academic Success Services

Meri Kim Oliver, BA, MTS

#### Assistant Vice-President, Ancillary Services

Heather Sutherland, BSc, MEd

#### Assistant Vice-President and Chief Development Officer

Peter Fardy, BA, MBA

#### Assistant Vice-President, Communications and Marketing

Catherine Bagnell Styles, BA, ABC

#### Assistant Vice-President, Enrolment Management and Registrar

Åsa Kachan, BA, MLIS

#### Assistant Vice-President, Facilities Management

Jeffrey W. Lamb, BEng, MEng (Royal Military College)

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#### Assistant Vice-President, Government Relations

TBA

#### Assistant Vice-President, Human Resources

Katherine Sheehan, BA, CHRP

#### Assistant Vice-President, Industry Relations and Executive Director, ILI

Stephen Hartlen, BComm, MBA

#### Assistant Vice-President, Information Technology Services

Dwight Fischer, BSc, MSc, EMBA

#### University Legal Counsel

Karen Crombie, BA (Hon), JD

#### University Librarian

Donna Bourne-Tyson, BA, MA, MLIS

## Deans of Faculties

### Agriculture

Harold Cook, BSc (Agr), MSc (Agricultural Chemistry), PhD (Biochemistry)  
Dean and Campus Principal

### Architecture and Planning

Christine Macy, BA (Arch) (California at Berkeley), MArch (MIT), Reg. Arch. (WA)

### Arts and Social Sciences

Robert Summerby-Murray, ATCL (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

### Computer Science

Michael Shepherd, MSc, PhD (Western)

### Dentistry

Thomas Boran, DDS, MEd (Dalhousie)

### Engineering

L. Joshua Leon, BSc, MSc, PhD (Dalhousie), PEng

## Graduate Studies

Bernard Boudreau, BSc (UNB), MS (Texas A & M), MPhil, PhD (Yale), FRSC

## Health Professions

William G. Webster, BSc (Hon), MA, PhD

## Law

Kim Brooks, BA (Toronto), LLB (UBC), LLM (York)

## Management

Peggy Cunningham, BA (Queen's), MBA (Calgary), PhD (Texas A & M)

## Medicine

Tom Marrie, MD (Dalhousie)

## Science

Chris Moore, BA, PhD (Cambridge, UK)

## College of Continuing Education

Andrew Cochrane, BPER, MBA

## College of Arts and Science, Provost

Robert Summerby-Murray, ATCL (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Executive Directors

### Centre for Learning and Teaching

TBA

### Office of Institutional Analysis and Research

TBA

## Directors

### Arts Centre

Heather McGean, BA

### Environmental Health and Safety

Raymond G. Ilson, M.Eng., CIH, CRSP, CRPA(R)

### Health Services

Glenn Andrea, MD (Dalhousie)

### Internal Audit Services

Margaret Sterns, BBA, CA

### Sustainability Office

Rochelle Owen, BSc (He-Ed), MES

## Board of Governors

Under the University's statutes, the Board of Governors is responsible for the operation of the University. The Board consists of representatives named by the Government of Nova Scotia, the alumni, the Student Union and certain other bodies. Internal regulation of the University is the primary concern of the Senate, subject to approval of the Board of Governors.

### Chancellor

Dr. Frederick Fountian

### Chancellor Emeritis

Dr. Rueben Cohen  
Sir Graham Day  
Dr. Ruth Goldbloom  
Dr. Richard Goldbloom

### Officers

Dr. Jim Spatz, Chair  
Mr. William Black, Vice-Chair  
Ms. Joyce Carter, Honorary Secretary  
Mr. Lawrence Stordy, Honorary Treasurer  
Dr. Tom Traves, President and Vice-Chancellor

## Members

Mr. Jay Abbass  
Mr. Jamie Arron  
Ms. Michelle Awad  
Mr. John Baxter  
Mr. Barrie Black  
Ms. Joyce Carter  
Mr. Richard Clark  
Mr. Wadih Fares  
Dr. Frederick Fountian  
Dr. Lloyd A. Fraser  
Mr. Curtis Johnston  
Mr. George McLellan  
Mr. Aubrey Palmeter  
Mr. Chris Smith  
Mr. Stan Spavold  
Ms. Candace Thomas  
Ms. Gail Tomblin Murphy  
Mr. Jim Wilson

## University Secretary

Ms. Susan Brousseau

## Observer for Faculty Association

Dr. David Mensink

## Senate

The Senate is the University's senior academic decision-making body. It is responsible for the approval of new programs and academic units and it manages the reviews of Faculties, Centers and Institutes. Senate approves the granting of degrees and diplomas, including the conferral of Honorary Degrees. It is responsible for setting academic regulations which affect the University as a whole, including regulations governing student conduct and discipline, as well as regulations concerning faculty tenure and promotion.

Senate has 77 members - 52 elected Faculty representatives, 17 academic administrators (President, Vice-President Academic and Provost, Vice-President, Research, University Librarian, and the Deans of each faculty), seven students elected by the Dalhousie Student Union, and a representative from the University of King's College.

Senate normally meets on the second Monday of each month from 4:00 - 6:00 pm. In addition, if there are sufficient items of business, Senate will meet on the fourth Monday of the month, from 4:00 - 6:00pm

### Chair of Senate

Lloyd A. Fraser, EdD

### Vice-Chair (Academic Programs)

Carolann McLarny, PhD

### Vice-Chair (Student Affairs)

Alan Pinder, BSc, PhD

year CEGEP with minimum 70% overall average, with no individual academic subject below 65%

PLEASE NOTE: Fulfilment of admission requirements does not necessarily provide the prerequisite background for all first year classes. Please consult the class description section of this calendar.

# Admission Requirements

Dalhousie University is an affirmative action and equal opportunity educational institution. Students who are Aboriginal, Black/persons of African descent, or persons with a disability and do not meet the normal admission requirements may choose to self-identify and request special consideration.

Dalhousie University reserves the right to rescind any acceptance of an applicant into a program or to rescind an offer of admission of an applicant into a program. Please refer to University Regulations, page 19.

PLEASE NOTE: Admission to many programs is limited. Possession of minimum requirements does not guarantee admission.

## I. General Admission Requirements

Applicants must meet the admission requirements as outlined in the appropriate section of this calendar.

### 1. Place of Residence

For the purpose of admission to the University, the place of residence of a student is the place of domicile. This is normally presumed to be the place (country, province, etc.) where the parents or guardian's home is located. That place remains unchanged unless the Registrar is satisfied that a place of residence is established elsewhere.

### 2. Age Requirement

No person under sixteen years of age is admitted to any class except on the specific recommendation of the admissions committee of the relevant Faculty or School, which shall take into account all aspects of the applicant's preparedness for the class or program involved, and which may attach such conditions to the applicant's admission as the committee judges appropriate.

### 3. Students from Canadian High Schools

For general admission to most programs, students require grade 12 level university preparatory English and four additional university preparatory classes. Special attention will be paid to grades in English and mathematics. Final grades in mathematics (if required for the program) and English must be at least 65%. Students are expected to have an overall minimum average of 70%. Final grades in individual university preparatory classes other than mathematics and English must be at least 60%.

Any special or pilot class must have been previously approved by Dalhousie if it is to be used as one of the credits needed for admission.

### 4. Students from a Community College, College of Applied Arts and Technology (CAAT) or a CEGEP

Applicants who have completed studies in a Community College, College of Applied Arts and Technology (CAAT) or a CEGEP program, may qualify for transfer credits. Applications are considered on an individual basis.

### 5. Acceptable High School Classes for Admission

- English
- Biology, chemistry, French, geography (or global geography), German, history (or global history), Latin, mathematics, physics, calculus, comparative religion, computer related studies, economics, environmental studies, Gaelic, geology, journalism, law, music, political science, sociology, Spanish, theatre, drama and other classes provincially coded as academic or advanced.

### 6. For Students from Quebec

Students attending high schools offering Grade 12 must meet the distribution and average requirements outlined for students from the Atlantic provinces, or first

## 7. Students from Outside Canada

### American High School Curriculum

Students studying in an American-based curriculum (in the United States, or abroad), are required to present a Grade 12 high school average of "C" or better. In addition, students must present a minimum SAT score of 1650 or an ACT score of 23 or better.

### British Curriculum (GCE and GCSE)

Students studying in a British-patterned curriculum (GCE) are required to present the General Certificate of Education with at least five subjects. These must include at least two Advanced Level classes (A-levels), or four AS-level classes, with grades of at least "C". Exceptional candidates may be admitted on O-level results.

**Advanced Placement (AP), Baccalauréat (French Baccalauréat), A-level (GCE) and International Baccalaureate (IB)** classes are accepted towards meeting admission requirements. Please refer to the General Admission Requirements section of the Calendar for specific admission requirements. Classes may be eligible for transfer credits. Please refer to section 12.

### Admission Requirements by Country

For most countries, we consider the same academic preparation that is required for university entrance in that country - that is, successful graduation from an academic secondary school program or equivalent. View our Admission Requirements by Country chart at [www.discover.dal.ca](http://www.discover.dal.ca) for more information.

## 8. English Language Proficiency Requirements

English is the language of study at Dalhousie; therefore all applicants whose first language is not English must provide proof of English proficiency. This requirement can be satisfied with one of the following criteria:

- Test of English as a Foreign Language (TOEFL)
  - TOEFL (computer based) - 237 with no band below 21
  - TOEFL (paper based) - 580 with no band below 55
  - TOEFL (iBT) - 90 with no band below 20
  - Students must achieve 4.0 or better on the essay or TOEFL Writing Test
- International English Language Testing System (IELTS) - 6.5 with no band below 6.0
- Michigan English Language Assessment Battery (MELAB) - 81
- Canadian Academic English Language Assessment (CAEL) - 70
- Certificate of Proficiency in English (CPE) minimum grade C and Certificate in Advanced English (CAE) minimum grade B
- IB Higher Level English class A1, A2 with a minimum grade of 5 or English B with a minimum grade of 6
- AP English Examination (Language Composition; Literature and Composition) with a minimum grade of 4
- O-Level GCSE or IGCSE English Language or English Literature class with a minimum grade of B
- CanTest of English for Scholars and Trainees (CanTest) - 4.5
- Student has graduated from a Dalhousie-recognized school which uses English as the primary language of instruction and the student has spent three successful years in the English program
- Student has studied full-time for at least three years (or equivalent in part-time studies) in a secondary school where the language of instruction and examination was English
- Student has studied full-time for at least one year in a recognized university where the language of instruction and examination was English and the class curricula require proficiency in English

The following Web links will provide more information on English Language proficiency tests:

TOEFL - <http://www.ets.org/toefl/>  
 IELTS - <http://www.ielts.org>  
 MELAB - <http://www.lsa.umich.edu/eli/testing/melab/>  
 CAEL - <http://www.cael.ca/>  
 CPE/CAP - <http://www.cambridgeesol.org/>

Arrange to have your English Language proficiency test score(s) sent directly by the testing agency to Dalhousie at the following address:

Dalhousie University  
Registrar's Office  
PO Box 15000  
Halifax, NS B3H4R2  
Canada  
Dalhousie University TOEFL Code: 0915

## 9. Language Training

Students who meet the academic admission requirements whose English proficiency minimum test scores are TOEFL PBT 550, CBT 213, or iBT 79 or IELTS 6.0 or MELAB 76 or CanTest 4.0 or CAEL 60 may be offered part-time Dalhousie admission with the co-requisite of completing a full-time approved English training program.

## 10. Students with Learning Disabilities

Dalhousie University is committed to providing equal educational opportunities and full participation for students with learning disabilities.

Students with diagnosed learning disabilities who meet the current admission requirements for Dalhousie University may follow the current admission procedures. All new Dalhousie students will receive in the offer of admission a statement indicating that, if they have a learning disability or any other disability for which they will require accommodations or special assistance, they should contact the Advisor to Students with Disabilities, in order to ascertain the degree to which their needs can be met.

Students with diagnosed learning disabilities who do not meet the current admission requirements or who otherwise wish to have their learning disability considered may apply for special consideration as may all other students who have extenuating circumstances. These requests will be made to the appropriate admissions committee, acting in consultation with the Advisor to Students with Disabilities and other knowledgeable professionals.

The following documentation must be submitted by students who wish to apply for special consideration:

1. Letter(s) of recommendation from the individual(s) most familiar with the applicant's academic performance and/or potential for success at university;
2. A written, oral or electronic statement from the student. In this brief personal statement, students should describe their learning disability, how this affected their grades and the type of assistance they would require while at Dalhousie University;
3. A current (within three years) psychological assessment based on standard diagnostic instruments administered by a registered psychologist documenting the presence of learning disabilities. If a current report is not possible, Dalhousie University may accept an earlier report along with a current opinion (ie. within the past year) expressed in a letter by a registered psychologist (or individual supervised by a registered psychologist) that the student has a learning disability. This letter should specify the nature, extent and rationale for program modifications or accommodations that were deemed appropriate in the student's last two years of schooling.

## 11. Mature Students

Applicants who are Canadian Citizens or permanent residents and 21 years of age or older, by the first day of classes, and are not eligible for admission on the basis of regular admission requirements, may apply for admission as a mature applicant. In order to be eligible, the applicant must either have no university-level study, or have attempted less than one year of transferable classwork. The student cannot have been in full-time university-level study for a minimum period of two years.

Applicants must provide a completed application for admission, high school or post-secondary transcripts, any other relevant documents (e.g. SAT scores, if available), and a letter outlining life and work experience since last attending full-time study. Applicants will be expected to clearly outline their education goals and motivation to succeed at university study. All factors will be considered in the admission decision.

Admission under this policy is restricted to first year of undergraduate programs. Applicants must have completed grade 12 English (or equivalent) with a minimum grade of 65%. Admission to some programs will require completion of other required subjects.

A student admitted on this basis may be restricted in the number of classes he/she can register in during the first year. Otherwise, these students have the same rights, privileges and responsibilities as other students within their program.

## 12. Transfer Students

Students wishing to apply for transfer credit should consult Academic Regulation 7, in this calendar. Certified copies of class descriptions from calendars are acceptable in lieu of originals. Certificates in languages other than English or French must be accompanied by certified translations into English. Students applying with one year or less of university work must also submit high school transcripts.

The minimum GPA for admission as a transfer student may vary by program of study. Please contact the Registrar's Office for more information.

Note: Transfer credit will not be awarded for work completed while a student was academically ineligible.

## 13. International Baccalaureate (IB), Advanced Placement (AP), Baccalauréat (French Baccalaureate), A-Level (GCE) Classes

Students taking any of these classes, may qualify for advanced placement or transfer credits.

Transfer credits will be awarded based on equivalent Dalhousie classes. Credit may be awarded to students with Higher level IB classes with final grades of 5, 6 or 7 or with AP national exam results of 4 or 5. For students with a Baccalauréat exam result of 11 or higher on classes with a minimum coefficient of 4, transfer credits may be awarded. Those who have completed A-Level classes with a final grade of C or higher may receive transfer credit.

Students may opt to forgo transfer credit awarded for these programs. To do so, applicants must contact the Registrar's Office (902) 494-2450.

Lists of equivalent Dalhousie credits that have been previously determined can be found on the Registrar's Office website (<http://www.dal.ca/transfercredits>). Transfer credits are evaluated on an individual basis and will vary depending on each student's personal academic program.

## 14. International and Exchange students attending Dalhousie as Visiting Students

International students must meet the following requirements:

- Good academic standing at the home institution
- Written academic approval from the appropriate department head, Dean or designate (e.g., Registrar) to undertake class work at Dalhousie (written approval is usually in the form of a *letter of permission*)
- The required student visa to study in Canada
- Proof of adequate health insurance for the duration of the stay in Canada
- Proof of proficiency in English

PLEASE NOTE: Students studying for less than one full academic year are restricted from taking full-year classes (see Class Codes and Definitions).

## 15. Rescission of Acceptance into a Program

Dalhousie University reserves the right to rescind any acceptance of an applicant into a program or to rescind an offer of admission of an applicant into a program. Such rescission shall be in writing and may be made by the President or the Vice-President (Academic) and Provost, in consultation with the appropriate Dean, at any time prior to the applicant's registration being confirmed by the Registrar. Any such rescission shall be reported to the Senate in camera.

## 16. Canadian and Local Students attending Dalhousie as Visiting Students

All students wishing to attend Dalhousie University on a letter of permission from their home university must submit the following:

- A completed application for admission
- Letter of permission from the home university
- Students applying from Saint Mary's, Mount Saint Vincent, and NSCAD University are not required to pay the application fee, all other applicants are required to pay the application fee.

At the end of each academic session, grades will be forwarded to Saint Mary's, Mount Saint Vincent, and NSCAD University on the student's behalf. Students from all other universities must arrange for transcripts to be sent to the home university.

## II. Specific Program Requirements

### A. Faculty of Agriculture

#### Pre University Study

The Faculty of Agriculture offers pre university study in Math, Chemistry and Physics. Applicants who do not meet the stated admission requirements in Math or Science may still be admitted to a degree program in the Faculty of Agriculture on the condition that they complete the pre university level course prior to entering the degree level required subject.

#### 1. Bachelor of Science (Agriculture) & Pre-Veterinary Studies

- English 12
- Pre Calculus Math 12
- Chemistry 12
- two other acceptable university-preparatory classes at the grade 12 level
- Minimum final grades:
  - English 65%
  - Pre Calculus Math 65%
  - Chemistry 65%
  - Overall Average 70%

Applicants in all majors except Agricultural Business, Agricultural Economics and Plant Science will be required to have Physics 12 or to take the preparatory physics on campus prior to enrolling in university level physics.

It is recommended that applicants also take Biology 12, and where available at the high school level, courses in Agriculture or Food Science.

#### 2. Bachelor of Agriculture - International Food Business

- English 12
- Academic Math 12
- three other acceptable university-preparatory classes at the grade 12 level
- overall average of 75%
- A letter of intent outlining the applicant's volunteer and/or work experience (including any international experience), interests and hobbies, their interest in International Food Business, and how the program relates to their personal and professional goals.

#### 3. Bachelor of Technology

Years one and two of the Bachelor of Technology - Environmental Landscape Horticulture program are satisfied by completion of the Diploma in Technology Managed Landscapes or a landscape-related program approved by the Department of Environmental Sciences in the Faculty of Agriculture. Applicants must a cumulative GPA of at least 2.0 in the Diploma program to gain admission.

#### 4. Diploma in Engineering

- English 12
- Pre Calculus Math 12
- Chemistry 12
- Physics 12
- one other acceptable university-preparatory class at the grade 12 level
- Minimum final grades:
  - English, Chemistry, Mathematics, Physics - 65%
  - Other subjects - 60%
  - Overall average - 70%

#### 5. Diploma in Technology Business Management

- English 12
- Math 11
- Chemistry 11 or Biology 11 or Agriculture
- Science 10
- four grade 12 level electives at the university-preparatory or general level
- Minimum overall final average of 60%

Applicants to the Dairy Farming or Equine concentration are expected to be experienced in the care and handling of dairy animals or horses. A Competency Form outlining practical experience and knowledge in the industry is required. These forms can be found online at [dal.ca/applynow](http://dal.ca/applynow)

#### 6. Diploma in Technology Managed Landscapes

- English 12
- Math 12
- Biology 12
- Chemistry 11
- one other acceptable university-preparatory elective at the grade 12 level
- Minimum overall final average of 60%

#### 7. Diploma in Technology Plant Science

- English 12
- Math 11
- Chemistry 11 or Biology 11 or Agriculture
- Science 10
- four grade 12 level electives at the university-preparatory or general level
- Minimum overall final average of 60%

#### 8. Diploma in Technology Veterinary Technology

- English 12
- Pre-Calculus Math 12 or Academic Math 12 with a 70% or higher
- Chemistry 12
- Biology 12
- one other acceptable university-preparatory elective at the grade 12 level
- Minimum overall final average of 60%

### B. Faculty of Architecture and Planning

#### 1. School of Architecture

##### 1.a Bachelor of Environmental Design Studies (BEDS)

##### 1. Admission Criteria

The Admissions Committee gives priority to applicants with a combination of academic performance and creative ability. Well-rounded personal and academic experience is beneficial, as well as experience in drawing, craft, and computer applications.

##### 2. Minimum Academic Requirements

The minimum requirements for admission are:

- a portfolio of design work that demonstrates creativity and/or artistic skill;
- two years in a university degree program (10 full-year classes, 20 half-year classes, or a combination), with a 2.5 grade point average (B- average), including the following classes:
  - a full-year class (or two half-class) in mathematics or natural sciences, for which Grade 12 math is a prerequisite: e.g., algebra, calculus, trigonometry; biology, chemistry, engineering, physics;
  - a full-year class (or two half-year classes) in humanities or social sciences: e.g., art history, classics, literature, music, history, philosophy, anthropology, political science, psychology, sociology;
  - a half-year class that emphasizes written composition (often designated by a university as "writing requirement" or "writing intensive.")

##### 2.a Post-Secondary Institutions

The Admissions Committee may grant up to one year of university credit for an applicant who has attended a post-secondary institution that is not considered a university. Two or more years at a college or an institute of technology plus one year of university is normally acceptable.

##### 2.b Mature Students

An application will be considered from a Mature Student – an individual who will be at least 25 years old at the time of registration in the BEDS program and does not meet the minimum academic requirements for admission (two years of university, required classes, 2.5 GPA). All mature students must have completed at least one full year at a university. In the application, a Mature Student should describe related work experience and any other pursuits and skills that may serve as grounds for admission.

### 2.c Transfer Students

The School of Architecture welcomes applications from transfer students from other architecture schools in Canada and abroad. Admission and level of entry is based on classes completed elsewhere that are equivalent to required classes at Dalhousie; the level of achievement in the design portfolio and on the applicant's total years of university. To meet professional accreditation standards, the School cannot offer a level of entry that would permit a student to obtain the MArch degree with less than six full years of university, including two years of general studies.

### 3. Documents

A BEDS applicant must submit all of the following items before the application can be reviewed:

1. To be submitted to the Registrar's Office:

Admissions, Registrar's Office  
PO Box 15000

Dalhousie University  
Halifax, NS B3H 4R2

- Undergraduate application form
- Undergraduate application fee (see University Fees in this Calendar)

To confirm receipt of the items above, please contact the Registrar's Office: (902) 494-2450.

2. To be submitted to the School of Architecture:

Admissions, School of Architecture

Dalhousie University  
5410 Spring Garden Road  
PO Box 15000

Halifax, NS B3H 4R2

- An official academic transcript from all previous post-secondary institutions;
- A portfolio of design work (about 10-15 items) that demonstrates creativity and/or artistic skill.
- A letter written by the applicant, describing his/her background and interest in architecture and in the BEDS program.
- Two letters of recommendation, including at least one from an academic instructor;
- Evidence of competency in English for applicants whose native language is not English (see University Admission Requirements in this Calendar).

To confirm receipt of the items above, please contact the Architecture Office: arch.office@dal.ca or (902) 494-3971. For additional application instructions, please visit <http://archplan.dal.ca>

### 4. Application Deadline

The deadline for undergraduate applications from Canada and all other countries is March 1. Transfer applications are reviewed three times every year: in February, June, and October. For an application to be considered, all items must be received by February 1, June 1 or October 1.

## 2. School of Planning

### 2.a Bachelor of Community Design

Admission to the Bachelor of Community Design program is limited. Not all applicants who meet the minimum requirements can be accepted.

Admission to the program is based on academic performance.

#### High School Applicants

- Satisfactory completion of grade 12 or equivalent with at least five academic university preparatory classes including:
    - English
    - Academic math
    - one science
    - two additional university preparatory classes
- Biology, geology or geography are recommended classes for students interested in this field. Only applicants with a minimum average of 70% will be considered.

#### Applicants with Previous Post-Secondary Experience

- Satisfactory completion of the required academic grade 12 subjects as outlined or university level classes in these subject areas.
- Applicants must have a minimum GPA of at least 2.0.

- All applicants, both high school and transfer, are admitted to the first year of the program. Following admission, a limited number of transfer students may be considered for registration in second year planning classes based on availability of space and level of academic preparedness (including number and subject area of class credits transferring from previous post-secondary study), among other requirements. Students must complete the Expedited Program form available from the Registrar's Office, to be considered for admission to the second year class. For more information, please contact the School of Planning directly.

## C. Faculty of Arts and Social Sciences

### 1. Bachelor of Arts

- English
- four other acceptable university-preparatory classes
- Minimum final grades:
  - English - 65%
  - Other Subjects - 60%
  - Overall Average - 70%

### 2. Bachelor of Music, BA Music and other Music degree programs

- Satisfy the requirements for Bachelor of Arts
- Demonstrate proficiency as instrumental or vocal performer in an audition/interview
- Demonstrate knowledge of the basic rudiments of music theory (roughly equivalent to Grade II theory, Royal Conservatory of Music in Toronto), aural dictation and keyboard skills. Each is assessed through written diagnostic tests as part of the audition/interview.
- Submit the supplementary application form to the Department of Music.

It is recommended that students apply early for the purposes of admission, audition, and music scholarship consideration. Audition dates are listed on the supplementary form and all audition procedures should be completed by June 30.

Applicants who, in the estimation of the Auditioning Committee, show considerable musical talent but are in need of more emphasis on preparatory skills will be required to take preparatory classes. Applicants with significant background deficiencies will be advised to seek further preparation through private instruction before reapplying.

Students wishing to transfer from another institution into the second or third year of their chosen Music program must take validation examinations in music history, theory, aural and keyboard skills, and their applied major instrument before transfer of credits can be considered. Failure to pass an examination will necessitate enrolment in the appropriate first- or second-year class. Validation examinations must be written at the same time as the audition/interview. Transfer applications are subject to the June 1 deadline.

### 3. Diploma in Costume Studies (two years)

- Satisfy the admission requirements for Bachelor of Arts
- Minimum 65% in Grade 12 English

Applicants are asked to submit a brief letter outlining their interest in the program, their background in sewing, costume study/design and/or the theatre. University credits will enhance applications. Due to the special nature of this program, transfer credits for university work are not offered.

## D. Faculty of Computer Science

Other factors are considered in addition to marks. Students who wish to provide additional information may include an autobiographical letter or a letter of reference from a teacher.

### 1. Bachelor of Computer Science

- English
- Pre-calculus mathematics
- three other acceptable university-preparatory classes
- Minimum final grades:
  - English and mathematics - 65%
  - Other subjects - 60%
  - Overall average - 70%

## 2. Bachelor of Informatics

- English
- Academic mathematics
- three other acceptable university-preparatory classes
- Minimum final grades:
  - English and mathematics - 65%
  - Other subjects - 60%
  - Overall average - 70%

## E. Faculty of Engineering

### 1. Bachelor of Applied Science in Food Science

(admission for this program is currently under review, contact the Registrar's Office for more information)

- English
- Pre-calculus mathematics
- three other acceptable university-preparatory classes
- Minimum final grades:
  - English, mathematics - 65%
  - Other subjects - 60%
  - Overall average - 75%
- It is recommended that students take two of the following science subjects: physics, biology, chemistry.

### 2. Bachelor of Engineering

#### 2.a From High School

- English
- Pre-calculus mathematics
- Physics
- Chemistry
- one other acceptable university-preparatory class
- Minimum final grades:
  - English, chemistry, mathematics, physics - 65%
  - Other subject - 60%
  - Overall average - 70%

#### 2.b Transfer Students

Students wanting admission with advanced placement in the BEng degree program are advised that at least one half of the class work must be completed at Dalhousie including the final two study terms with a full class load.

#### 2.c Associated Universities Transfers

On completion of the Engineering Diploma at an Associated University, a student may be eligible for admission to the Bachelor of Engineering program at Dalhousie. Applicants must complete an Application for Admission form (available from the Registrar's Office), and submit the application plus an official transcript from their Associated University, verifying completion of the program entrance requirements, to the Registrar by the application deadline.

## F. Faculty of Health Professions

Some programs in the Faculty of Health Professions have been established to meet the needs of the Maritime or Atlantic provinces. Admission of applicants outside the preferred region may be limited.

### Affirmative Action

The Faculty of Health Professions recognizes that Affirmative Action is required to increase the admission of and number of graduates from underrepresented groups; Aboriginal peoples, African Canadians and Persons with (dis)Abilities. The constituent Units of the Faculty will develop and implement Affirmative Action policies that are consistent with the Human Rights Commission.

As a matter of priority, the Faculty will develop strategies to identify and create recruitment and support systems that will encourage and support members of these underrepresented groups to apply to and graduate from the Faculty of Health Professions

### Statement Regarding Criminal Records Check

The Faculty of Health Professions of Dalhousie University does not require a Criminal Records Check or other screening procedure (e.g., Vulnerable Sector Screen) as a condition of admission into its programs. However, **students should be aware that such record checks or other screening procedures will be required by facilities outside the University used for clinical, fieldwork or co-**

**op placements or experiences related to an academic class assignment which in some instances, may be a requirement for graduation.** It is the student's responsibility to have such procedures completed.

Such facilities may refuse to accept students on the basis of information contained in the record check or other screening procedure. If the student is unable to complete a clinical requirement due to a failure to meet the record check or screening requirements of the facility, or if the student is refused access to the facility on the basis of the information provided, such a student may fail the class, and as a result in some instances, may not be eligible for progression or graduation.

Students should check with their School/College for details concerning any record checks or screening requirements relevant to clinical, fieldwork, or placements in their particular program. Note that facility requirements may change from time to time and are beyond the control of the University.

Students should also be aware that some professional regulatory bodies may require a satisfactory record check as a condition of professional licensure.

### Deposit

Due to the large number of applications, a non-refundable deposit of \$200 (applicable to tuition fees) is required on admission. For transfer students, this deposit is payable within three weeks of notification of acceptance.

## 1. School of Health and Human Performance

### 1.a Bachelor of Science (Health Promotion)

- English
- Biology or Chemistry
- three other acceptable university-preparatory classes
- Minimum final grades:
  - English - minimum 70%
  - Biology or Chemistry - minimum 70%
  - Overall average - 70%

#### Transfer students

Students already engaged in a university program can transfer into the Health Promotion program. A minimum grade point average of 2.30 (on a 4.30 scale) or higher is required. Experienced persons in the workplace may be admitted as mature students.

The deadline for receipt of applications to the program is June 1st of each year. Students applying directly from high school must apply by March 15 for scholarship consideration.

### 1.b Bachelor of Science (Kinesiology)

Admission to this program is competitive. Admission from high school requires a minimum average of 75% or better in five grade 12 subjects including:

- English (minimum 70%)
- Academic mathematics (minimum 70%)
- Students are encouraged to have grade 12 classes in Biology or Chemistry or Physics.

#### Transfer Students

In order to be admitted to the Kinesiology program, students transferring from other university programs are expected to have a minimum GPA of 2.30 (on a 4.30 scale) for consideration.

The deadline for receipt of applications to the program is June 1st of each year. Students applying directly from high school must apply by March 15 for scholarship consideration.

### 1.c Bachelor of Science (Recreation)

#### Therapeutic Recreation

The minimum requirement for entry into the Bachelor of Science (Recreation) program is academic Grade 12 with an average of 70% in five university preparatory subjects, including:

- English (minimum 70%)

#### Transfer Students

In order to be admitted to the Bachelor of Science (Recreation) program, students transferring from other university programs are expected to have a minimum GPA of 2.3 (on a 4.30 scale) for consideration.



The deadline for receipt of applications to the program is June 1st of each year. Students applying directly from high school must apply by March 15 for scholarship consideration.

### 1.d Bachelor of Science (Recreation)/Bachelor of Management

A five year combined degree program is offered with a primary focus on Recreation Administration. The minimum requirement for entry into the Bachelor of Science (Recreation)/Bachelor of Management program is academic grade 12 with an average of 70% in five university preparatory subjects, including:

- English (minimum 70%)
- Academic mathematics (minimum 70%)

#### Transfer Students

In order to be admitted to the Bachelor of Science (Recreation)/Bachelor of Management program, students transferring from other university programs are expected to have a minimum grade point average of 2.3 (on a 4.30 scale) for consideration.

The deadline for receipt of applications to the program is June 1st of each year. Students applying directly from high school must apply by March 15 for scholarship consideration.

## 2. School of Health Sciences

### 2.a Bachelor of Health Science (Four-Year Entry-Level Program)

Since all professional streams of the BHSc are limited enrolment programs, these requirements define eligibility. Not all applicants who meet the minimum requirements will be accepted into the program.

Requirements differ based on the previous education and background of the applicant.

#### 1. Selection criteria

The selection criteria used by the Admissions Committee include:

- Place of residence
- Academic performance
- Non-academic performance

**1.a Place of Residence** Priority consideration is given to permanent residents of the Maritime provinces (NS, NB, PE), then to permanent residents of other Canadian provinces/territories and finally to all other applicants.

**Applicants are considered to be from the Maritime provinces if:**

- The principal residence of the applicant's parent(s) or guardian is located in the Maritime provinces; or

If the applicant is independent of his/her parent(s) or guardian, he/she must have lived and worked on a full-time basis in the Maritime Provinces for a minimum of one full year and not have attended school on a full-time basis.

#### 1.b Assessment of Academic Performance

Assessment of academic performance based on the applicant's transcripts accounts for 80% of the applicant's overall total score.

#### High School Applicants

- Completion of academic Grade 12 with at least five Grade 12 university preparatory classes, including:
  - English
  - Academic Math
  - two Sciences
- Diagnostic Cytology: Biology, Chemistry
- Diagnostic Medical Ultrasound: Biology, Physics
- Nuclear Medicine Technology: Physics, Chemistry
- Radiological Technology: Physics and either Biology or Chemistry
- Respiratory Therapy: Chemistry and either Biology or Physics
- Overall average of 75% in the five university preparatory classes used to meet admission requirements
- No grade lower than 70% in the five classes

#### Applicants with Previous Post-Secondary Experience

- Completion of classes in English, Math and two sciences as outlined above for high school applicants. If these classes were not taken as part of post-secondary study, they must be at the academic Grade 12 level with a minimum grade of 70%.

- A minimum grade of C in the required subjects if taken at the post-secondary level.
- Minimum cumulative GPA of 2.75 or in most recent year of full-time studies

#### 1.c Assessment of Non-Academic Performance

Assessment of non-academic performance accounts for 20% of the applicant's overall total score.

A letter of intent and resume are required.

Forms and detailed instructions can be found on the School of Health Sciences website [www.dal.ca/SHS](http://www.dal.ca/SHS).

Applicants will be assessed on the following non-academic criteria:

- Demonstrated knowledge of the selected health profession
- Leadership
- Community involvement
- Teamwork

#### 1.d Special Circumstances

In exceptional situations, special consideration may be given by the Admissions Committee to applicants who do not meet all admissions requirements. Applicants will be required to submit a letter stating reasons for special consideration.

#### 2. Personal Suitability

Students in the professional streams included in the BHSc program work with clients who trust them to provide safe and competent care. A criminal records check will be required for only those students accepted into the BHSc program.

#### 3. Affirmative Action

In keeping with the Dalhousie University Faculty of Health Professions Affirmative Action Policy, the School of Health Sciences is committed to increasing the number of students who identify as African Canadian, Aboriginal Peoples and persons with disabilities.

Applicants wishing to apply under the Affirmative Action Policy must indicate on their admissions application and meet the minimum admissions requirements.

#### 4. Application Submission

Application form, fee and all official transcripts should be sent to the Registrar's Office.

All other supporting documents should be sent directly to the School of Health Sciences.

Application deadline is **February 15**.

Applicants must submit the following:

- Completed application form and fee
- For high school applicants, an official high school transcript
- For other applicants, an official transcript from all previous post-secondary institutions
- letter of intent
- resume

forms and detailed instructions on the School of Health Science website [www.dal.ca/SHS](http://www.dal.ca/SHS)

#### 5. Notification

Each applicant is notified of the status of their application by mail, normally by the end of April. Those applicants who are put on the waiting list may expect to hear about acceptance as late as September.

#### 6. Deposit Fee

A non-refundable deposit of \$200 (applicable to tuition fees) is required within three weeks of receipt of written notification of acceptance in order to reserve a place in the program.

### 2.b Bachelor of Health Sciences (Post-Diploma Program)

The Bachelor of Health Science, Post-Diploma program, is a configuration of the BHSc developed for practitioners in the following professional streams:

- Diagnostic Cytology
- Diagnostic Medical Ultrasound
- Medical Laboratory Technology
- Nuclear Medicine Technology
- Radiological Technology
- Respiratory Therapy

The objective of the post-diploma program is to provide registered technologists and therapists the opportunity to obtain a degree in health science. It is not intended as an opportunity to merely refresh skills or competencies.

The program comprises 60 credit hours of university study (equivalent to two years full-time study). In recognition of the reality that potential students are likely to be working full-time, the program is available on a part-time basis.

Note: Respiratory Therapists wishing to apply to the Anaesthesia Assistant Certificate (AAC) must fulfil the admission requirements and follow the process for application to the Post-Diploma Program.

### 1. Admission Requirements

- Successful completion of a diploma program in the profession for which you are applying\*
- Two years of post-diploma work experience in that profession
- Evidence of good standing with the applicable Canadian professional association or college.

\* For Diagnostic Medical Ultrasound, completion of advanced training in ultrasound following a diploma in another allied health profession, plus at least two years work experience in ultrasound, may be substituted.

### 2. Documentation Required

- Completed Dalhousie application form plus application fee (see Application for Admission form)
- Official transcript of diploma program, plus official transcripts from any other post-secondary institution attended
- Current registration number with applicable Canadian professional association or college, or photocopy of current membership card
- Letter of intent
- Resume with two contact references (two letters of reference for AAC program)

### 3. Guidelines for Letter of Intent

This letter provides the opportunity for applicants to expand upon their experience, any advanced or specialty education they may have and their interest in undertaking university studies.

Information to be included:

- Work experience
- Educational initiatives undertaken since diploma completion
- Other professional activities, e.g., in professional association
- How applicant thinks this program will contribute to her/his professional development
- Personal and professional motivation
- Readiness for university education

## 3. School of Health Administration

### 3.a Diploma in Health Services Administration

Applicants must meet the Dalhousie University undergraduate admission requirements. It is recommended that students not apply directly from High School and have work or volunteer experience in the Health Services industry. A complete application consists of the following documents:

- Application and fee
- An official transcript from high school and previous post-secondary institutions
- One letter of reference
- Resume

### 3.b Diploma in Emergency Health Services Management

Applicants must meet the Dalhousie University undergraduate admission requirements. It is recommended that students not apply directly from High School and have work or volunteer experience in the Health Services industry. A complete application consists of the following documents:

- Application and fee
- An official transcript from high school and previous post-secondary institutions
- One letter of reference
- Resume

## 4. School of Nursing

### 4.a Bachelor of Science (Nursing) - 4 Year

Admission to the Bachelor of Science Nursing program is limited. Not all applicants who meet the minimum requirements can be accepted.

Requirements differ based on the previous education and background of the applicant.

#### 1. Selection criteria

The selection criteria used by the Admissions Committee include:

- Place of residence
- Academic performance

#### 1.a Place of Residence

Owing to the limited enrolment and the large number of applicants, this program primarily serves permanent residents of Nova Scotia but each year a limited number of places are also available for well-qualified residents of other Canadian provinces and international students.

#### Applicants are considered to be from Nova Scotia if:

- The principal residence of the applicant's parent(s) or guardian is located in Nova Scotia; or
- If the applicant is independent of his/her parent(s) or guardian, he/she must have lived and worked on a full-time basis in Nova Scotia (not attending school on a full-time basis) for a minimum of one full year; or
- The applicant, or his/her parent(s), guardian or spouse does not meet the preceding requirements as the direct result of a recent employment transfer in or out of Nova Scotia.

#### 1.b Academic performance

##### High School Applicants

- Satisfactory completion of grade 12 or equivalent with at least five academic university preparatory classes including:
  - English
  - Biology
  - Chemistry
  - Academic Math
- A minimum grade of 70% in the required subjects.
- A minimum overall average of 70% in the five university preparatory classes used to meet admission requirements

##### Applicants with Previous Post-Secondary Experience

- A minimum grade of 70% in the required academic grade 12 subjects as outlined above for High School applicants; or
- A minimum grade of B- in the required subjects at the Post-Secondary level.
- A minimum cumulative GPA of 2.5 based on overall Post-Secondary career or most recent year of studies (30 credit hours).

### 2. Special Cases

In exceptional circumstances, special consideration may be given by the Admissions Committee to applicants who do not meet all admission requirements. These decisions are at the discretion of the Admissions Committee and are not subject to appeal.

### 3. Affirmative Action

The School of Nursing has an Affirmative Action Policy for residents of Nova Scotia who belong to the indigenous Black and Aboriginal population. Applicants wishing to apply under the Affirmative Action Policy must indicate on the self identification section of the application form. Applicants must meet the minimum admission requirements.

### 4. Final Date for Receipt of Applications for Admission

March 15

### 5. Notification

Each applicant is notified of the status of their application by mail, normally by the end of May. Those applicants who are put on the waiting list may expect to hear about acceptance as late as September. Incomplete and late applications will not be considered.

### 5.a Bachelor of Science (Nursing) (Arctic Nursing)

A program for Inuit is available. Please contact the School of Nursing for information.

### 6. Deposit Fee

Due to the large number of applications a non-refundable deposit of \$200 (applicable to tuition fees) is required on admission.

For High School students the \$200 deposit is payable by May 15 in order to reserve a place in the program.

For all other applicants the \$200 deposit is payable within three weeks of receipt of written notification of acceptance in order to reserve a place in the program.

The following guidelines have been established for the School of Nursing: if the deposit is not received by the deadline the place will be offered to another applicant without further notice. Students who have paid their deposits but who have not appeared at the School of Nursing by the first day of the Orientation Program will be considered to have withdrawn from the School unless they have written permission from the Admissions Committee.

## 5. College of Pharmacy

### 5.a Bachelor of Science (Pharmacy)

Applicants to the BSc Pharmacy program must fulfill the requirements of a first year BSc at Dalhousie University as outlined in the Degree Requirements section of this calendar. Equivalent subjects from other universities will be given equal status for purposes of determining admission.

Classes required for admission are the following Dalhousie classes:

- CHEM 1011.03/1012.03 or 1021.03 /1022.03
- MATH 1000.03 or 1215.03
- STAT 1060.03 or 2060.03
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- ENGL 1000X/Y.06 or any two English courses designated as a writing requirement (ie. ENGL 1010.03, 1020.03, 1040.03, 1050.03 or 1100.03) or equivalent
- One full credit or two half credits in any Social Science classes
- Minimum grade of 70% in each prerequisite class
- Applicants must present at least one year of study in which they successfully complete five full credits of study (30 credit hours) over the fall and winter terms.

Transfer credits will not be granted for students who exceed the minimum admission requirements. The problem-based curriculum which integrates science, pharmaceutical science and pharmacy practice requires that students will complete all class work in the four year program.

Incomplete applications and applications submitted after the deadline, February 1 (see Application Dates for details), will not be considered.

### 1. Selection Criteria

The selection criteria used by the Admissions Committee include:

- Place of residence
- Academic performance
- Assessment of non-academic criteria

A score out of 100%, is calculated for each applicant based on academic performance and assessment of non-academic criteria.

### 1.a Place of Residence

This is the only College of Pharmacy for the Maritimes and therefore preference is given to Maritime applicants. Attendance at a Maritime university does not, by itself, constitute having established residence in the Maritime provinces.

Applicants are considered to be from the Maritimes if:

- The principal residence of the applicant's parent(s) or guardian is located in the Maritime provinces, or
- The applicant (or spouse) has been employed full-time in the Maritime provinces for the preceding 12 consecutive months.

Applicants whose parent(s), guardian or spouse do not meet the residency requirements as a direct result of a recent employment transfer either into or out of the Maritime provinces would not necessarily be expected to conform to the above guidelines.

Exceptions to these guidelines will be considered on an individual basis.

Residency will be determined for each applicant on February 1st of the year for which admission is being sought.

A limited number of students from outside the Maritimes are accepted into the first year class each year.

### 1.b Academic Performance

Applicants are chosen for evaluation of non-academic criteria based on an initial screening of academic performance. Academic performance is calculated on cumulative GPA. In the case of academic credits currently in progress, the initial screening will be based on Fall-term grades. The final assessment of academic performance is based on the applicants' grades and accounts for 60% of the applicants' overall total score. Applicants should note that admission is on a competitive basis so that the ability to obtain consistently better than average grades would be an asset for the applicant. An academic record containing failures or poor grades makes the prospect of admission very unlikely.

### 1.c Assessment of non-academic criteria

Only those applicants who have obtained a high level of academic performance on the initial screening are invited for evaluation of non-academic criteria. Applicants will be invited to participate in an interview. Applicants will be assessed on the following non-academic criteria:

- motivation
- ability to relate to others
- self-appraisal
- maturity
- professional attitude
- problem solving

The assessment of non-academic criteria accounts for 40% of the applicants' overall total score.

### 2. Notification

Applicants will be informed of the status of their applications no later than late July. Those applicants who are put on the waiting list may expect to hear about acceptance as late as September.

### 3. Deposit Fee

In addition to the deposit requirement (page 13), the following guidelines have been established for the College of Pharmacy: if the deposit is not received, the place will be offered to another applicant without any further notice. Students who have paid their deposits but who have not appeared at the College by the first day of the College of Pharmacy Orientation Program will be considered to have withdrawn from the College unless they have written permission from the Admissions Committee.

### 4. Special Cases

In exceptional circumstances, special consideration may be given to applicants who do not meet all admission requirements. These decisions are at the discretion of the Admission Committee and are not subject to appeal.

### 5. Affirmative Action

The College of Pharmacy has an Affirmative Action Policy for residents of the three Maritime provinces who belong to the African Canadian and Aboriginal population. Applicants wishing to apply under the Affirmative Action Policy must check "yes" on the Supplemental Form. Applicants must receive a minimum of 65% in each of the five prerequisites listed.

## 6. School of Social Work

### 6.a Bachelor of Social Work

The study and practice of social work is intellectually, emotionally and physically demanding. It is important for potential applicants to be familiar with the expectations and ethics of the profession before applying to the Bachelor of Social Work program in order to self assess for readiness. This material can be found on the websites for the Canadian Association of Social Workers and the Canadian Association for Social Work Education.

Admission to the Bachelor of Social Work degree is limited. Not all applicants who meet the minimum requirements can be accepted. A specified number of places are offered once a year to the most qualified candidates as selected by the School's Admissions Committee. Equal consideration is given to part-time and full-time applications. Applicants indicate if they are applying for on-site or

distance study and the applications for each delivery method are given separate consideration. It is not possible to transfer between on-site and online delivery methods.

### 1. Required preparation for Social Work

- Academic requirements for the Bachelor of Social Work degree are the same for the on-campus and the on-line distance delivery method.
- The minimum academic requirement is five general university credits in subject areas other than social work.
- Applicants must have a minimum cumulative grade point average of 2.7 (B- or 70%) on a 4.3 scale.

There are no specific class pre-requisites for the BSW program. Potential social work applicants are advised to take social science classes (sociology, psychology, women's studies, and English are a few suggestions).

### 2. Application Process

Application and all supporting documents must be received by February 15. Please visit <http://www.socialwork.dal.ca> for detailed instructions on how to prepare and submit your application.

Applications for admission are assessed once a year and enrolment is in September only. Each applicant is notified by mail of the Admissions Committee's final recommendation to the University Registrar.

The BSW application is self-administered. The application can be downloaded including detailed instructions and forms for completing the application process. A full application includes the following: (Note: only two out of the three references are required).

- Dalhousie Undergraduate Application for Admission
- BSW Application Information and Instructions
- BSW Applicant's Checklist, Part B
- BSW Form Personal Statement Cover Sheet
- BSW Form Recommendation 1. Academic
- BSW Form Recommendation 2. Work
- BSW Form Recommendation 3. Volunteer
- BSW Form Work & Volunteer Experience Summary

#### 2a. Affirmative Action

The School of Social Work has an affirmative action policy for applicants who are Acadian, Aboriginal, African Canadian, members of other racially visible groups, persons with (dis)abilities and for Lesbian, Gay, Bisexual, Transgender, Two-Spirited, Queer and Intersex (LGBTQTQI) people. The school is committed to admitting and graduating the highest possible number of students who qualify under this policy. Members of these groups who have five general (non social work) university credits that average B- are encouraged to apply under this policy. Applicants make their request in a place provided on the Social Work Statement cover sheet, which is part of the BSW application package. Each candidate is considered individually on the basis of her/his qualification, rather than in relation to other applicants. The admissions prerequisites and selection criteria are otherwise the same for all candidates.

### 3. Selection criteria

The selection criteria used by the Admissions Committee include:

- academic achievement
- work and volunteer experience
- references
- social work statement

Interviews are not part of the admission process unless specifically requested by the Admissions Committee.

In the assessment of applications, priority is given to those who have completed or who are about to complete an undergraduate degree and who have related work/volunteer experience.

#### 3.1 Academic Achievement

An initial screening is made on the basis of academic achievement. Grades from the last 60 credit hours attempted (equivalent to two years of full-time study), including failures, are used to determine the cumulative admission average. Repeated classes with lower grades will be excluded from the GPA calculations. Credits from non-university programs, including college level credits, do not qualify for consideration and are not included in the cumulative

university average. A minimum cumulative GPA of 2.7 (B- or 70%) is necessary for an application to be considered.

#### 3.2 Relevant work and/or volunteer experience

Relevant work and/or volunteer experience in areas of social or human services that bear a direct relationship to social work can contribute meaningfully to the applicant's preparedness for social work practice.

#### 3.3 References

The BSW application requires two out of the following three reference forms: (academic, work, volunteer). These assist the Admission Committee in assessing the candidate's personal suitability and readiness for professional education in social work.

#### 3.4 Social Work statement

Candidates write a statement that asks them to discuss a current social issue and their motivation to study social work. This also assists the Admission Committee in assessing the candidates' personal suitability and readiness for professional education in social work.

#### 3.5 Canadian Residency Requirement for Distance Study

The online (distance delivery) option is only available to residents of Canada as defined by Canada Customs and Revenue Agency.

### 4. Studying by Distance Delivery

Taking a social work degree via distance delivery in your own community will give you access to a challenging, top quality, accredited education in social work. You will have access to a well structured, web based learning environment and have opportunities to apply new learning in supervised field work. Classes are delivered through an on-line learning management system known as Blackboard. Students are expected to participate in ongoing discussions in the classes. This requires students to post comments on the class discussion boards, to respond to other students' postings, and to work in small groups as required. The web-based classes provide the opportunity for a high-level of interactivity amongst students and between students and instructors. Please note that this delivery method differs significantly from correspondence classes. Regular ongoing access to a home computer is essential for effective interactivity in your classes.

If you are thinking about studying by distance we suggest you visit <http://www.distanceeducation.dal.ca>.

## G. Faculty of Management

### 1. Bachelor of Commerce Co-op

- English
- Academic mathematics \*\*
- three other acceptable academic classes
- Minimum final grades:
  - English, Math - 70%
  - Other subjects - 60%
  - Overall Average - 75%

\*\* Required Math for Commerce:

- NS - Math 12 (academic or advanced) or Pre-Calculus 12 or Calculus 12
- PEI - Math 621 or 611
- NB - Math 120, 121, 122
- NFLD - Math 3204, 3205 or 3207
- Western Canada - Math 12, Math 30, Math 31, Math 40
- Ontario - MDM4U or MHF4U or MCV4U or OAC

#### Transfer Students

Transferring into the Dalhousie Commerce Co-op Program from another university program is usually quite easy, and we endeavour to give such students as many transfer credits as possible.

Regardless of what program in which they were previously enrolled, students who have earned at least four full credits (or eight half-credits) in the following areas will usually be able to enter directly into the second year of Commerce Co-op at Dalhousie:

- Business in a Global Context (half-year class)
- Micro Economics (half-year class)
- Macro Economics (half-year class)
- Core Business Applications (Computer Science) (half-year class)
- Business Communications (written) (half-year class)
- Business Communications (oral) (half-year class)
- Introduction to Financial Accounting (half-year class)
- One other full-year (or two half-year) classes, in any area of study
- Mathematics for Commerce (half year class)

Otherwise, students will normally be placed in the first year of the program, but may be able to use transfer credits to reduce their class loads during some of their terms.

Transfer to the Bachelor of Commerce Co-op Program will not be allowed after September of the second year. Students transferring into this program will be assessed a co-op transfer fee.

Students transferring into the Bachelor of Commerce Co-op Program should note:

1. In order to ensure that all students pay the same co-op fees, students who transfer into the second year of the Bachelor of Commerce Co-op Program will be charged a transfer fee equivalent to the co-op fee that would have been paid in the first year of the program.
2. Due to the co-op structure of the program, a **minimum** of three years in the Dalhousie program will be required in order to complete the Commerce Co-op degree.
3. To receive a major, more than half the major classes must be completed at Dalhousie.
4. A maximum of eight and one half full credits may be transferred into the Commerce Program (17 half credits).

### International Students

The work term requirements of the Bachelor of Commerce Co-op Program may involve job placement problems for some visa students. All commerce students must bear in mind that, although Management Career Services will assist students in the job search process, it is ultimately the students' responsibility to secure suitable employment for each of the three required co-op work terms.

## 2. Bachelor of Management

- English
- Math \*\*
- three other acceptable academic classes
- Minimum final grades:
  - English, Math - 65%
  - Other subjects - 60%
  - Overall Average - 70%

\*\* Required Math for Bachelor of Management:

- NS - Math 12 academic or advanced or pre-calculus.
- PEI - Math 621A, 621B, 611B
- NB - Math 120, 121, 122
- NFLD - Math 3204 or Math 3205 or 3207
- Western Canada - Math 12/Math 30/MATH 31/Math 40
- Ontario - Math MDM4U or MHF4U or MCV4U

## H. Faculty of Science

### 1. Bachelor of Science and Bachelor of Science Co-op

- English
- Pre-calculus Math
- three other acceptable university-preparatory classes
- Minimum final grades:
  - English, Math - 65%
  - Other subjects - 60%
  - Overall Average - 75%
- It is recommended that students take two science subjects.

### 2. Integrated Science Program (DISP)

- Satisfy requirements for Bachelor of Science
- At least one grade 12 science class
- Minimum grades:
  - English 75%
  - Mathematics 80%
  - Overall average 80%

### 3. Diploma in Meteorology

- For students entering from another university, a 15 Credit BSc or preferably, a 20 Credit BSc, in physics or mathematics or chemistry with appropriate physics classes
- Strong background in mathematics and physics
- Classes taken should also include statistics and computer science
- Dalhousie also offers an integrated program that leads to a BSc in physics (20 credits) and the Diploma in Meteorology. (See the Physics and Atmospheric Science Department entry, page 564 for details.)

## I. Faculties of Dentistry, Law, Medicine, and Graduate Studies

For information concerning admission into these faculties, consult the appropriate calendar, or contact the appropriate faculty office directly.

## III. Application Submission

It is the responsibility of each applicant to ensure that the application file is complete. The following must be submitted by each applicant to the Registrar's Office:

- A completed application form
- The appropriate application fee for the program (refer to Application for Admission form)
- For students applying directly from high school, an official record of high school work
- An official academic transcript from all previous post-secondary institutions (if applicable)
- Evidence of competency in English for applicants whose first language is not English (see Section 7 on English Language Tests, page 9)
- Supplementary information as required for specific programs
- Mature applicants should also enclose a letter

Documents, once submitted, become the property of Dalhousie University and cannot be returned.

### 1. January Admissions

Admission of first-year students in January is not recommended because the number of introductory classes in the winter term is very limited. Part-time students and transfer students may be admitted for classes beginning in January in BA, BCSc, BSc, BEDS, and Special Student programs. The application deadline for January admission is November 15.

### 2. Response to Applications

Dalhousie will respond to your application as promptly as possible and will advise you of any missing documentation. Please notify the Registrar's Office if your address changes.

When documentation is complete, applications are forwarded to the appropriate admissions committee. Although every effort is made to obtain decisions quickly, there will be some delay at times, particularly with limited enrolment programs. There may also be some delay in admission decisions for programs starting beyond the next academic session.

As soon as decisions are made, applicants will be advised by mail.

### 3. Early acceptance

Applicants currently attending high school, who have good academic records and a competitive admission average may be given early acceptance, conditional on satisfactory completion of work in which they are currently enrolled.

### 4. Final acceptance

Applicants must successfully complete high school classes in the required subjects with a minimum average of 70%. An official transcript of final grades must be submitted to the Registrar's Office by August 1st.

# University Regulations

## General

1. The Senate is charged with the internal regulations of the University, including all matters relating to academic affairs and discipline, subject to the approval of the Board of Governors. Within the general policies approved by Senate, academic requirements are administered by the Faculty concerned.
2. All students must agree to obey all the regulations of the University already made or to be made. Students must also comply with the regulations of the Faculty in which they are registered, and pay the required fees and deposits before entering any class or taking any examinations. Additionally, students are advised that this Calendar is not an all-inclusive set of rules and regulations but represents only a portion of the rules and regulations that will govern the student's relationship with the University. Other rules and regulations are contained in additional publications that are available to the student from the Registrar's Office and/or the relevant Faculty, Department or School.
3. Students are bound by the regulations of the home faculty regardless of the faculty in which the student takes classes.
4. Students should be aware that certain classes at the University involve required laboratory work where potentially hazardous materials are in use. These may include animals, other biological materials which may include crops and products, tissues, fluids, wastes, but also microorganisms and toxins as well as a wide variety of chemicals. Examples of physical hazards may include noise, radioactive isotopes and non-ionizing radiation (e.g. lasers). Since there are potential health risks associated with the improper handling of such materials resulting in exposure, Dalhousie University requires that, as a condition of taking a class where such materials are to be used, students must read and agree to comply with the instructions for the safe handling of such materials. In the event that students do not comply with the instructions for the safe handling of such materials, students will receive no credit for the required laboratory work unless other acceptable alternatives are arranged with the instructor. In many cases, alternate arrangements are not possible and students should consider enrolling in a different class.

## Rescission of Acceptance into a Program

Dalhousie University reserves the right to rescind any acceptance of an applicant into a program or to rescind an offer of admission of an applicant into a program. Such rescission shall be in writing and may be made by the President or the Vice-President (Academic) and Provost, in consultation with the appropriate Dean, at any time prior to the applicant's registration being confirmed by the Registrar. Any such rescission shall be reported to the Senate in camera.

## Official Examination Regulations

1. Candidates will not be admitted to the Examination Room more than thirty minutes after the beginning of the examination. Candidates will not be permitted to leave the examination within the first 30 minutes.
2. Candidates are required to present their valid Dalhousie ID card at all examinations scheduled during the official examination periods and sign the signature list when used.
3. No articles such as books, papers, etc. may be taken into the examination room unless provision has been made by the examiner for reference books and materials to be allowed to the students. All electronic computing, data storage, electronic dictionary and communication devices must be turned off, placed and sealed in the opaque storage bag on the exam writing surface. Calculators may be used at the discretion of the instructor.
4. Candidates may not leave their seats during an examination except with the consent of the invigilator.
5. If more than one book is used, the total number should be marked in the space provided above. The other books should be properly marked and placed inside the first book. All books supplied must be returned to the invigilator.

6. Candidates found communicating with one another in any way or under any pretext whatever, or having unauthorized books, papers, electronic computing, data storage, or communication devices in their possession, even if their use be not proved, will be investigated by the Chief Invigilator. A written report will be submitted to the Faculty Academic Integrity Officer.
7. After the first thirty minutes have elapsed, students may hand in their examination book(s) to an invigilator and quietly leave the examination room. Candidates may not leave the examination room during the last 15 minutes of the examination.

## Policy in the Event that a Formal Examination Cannot be Completed at the Regularly Scheduled Time

Formal examinations, up to three hours in length, are scheduled by the Registrar each December and April during formal examination periods, as laid out in the Calendar. If, in the unusual event that one of these examinations must be postponed or abandoned at short notice, the following policies will apply.

1. If more than 50 percent of the time allocated for the examination has elapsed, students' work up to the premature end of the examination, but prorated for the actual time written, will lead to the mark to be obtained from the formal examination.
2. If less than 50 percent of the time allocated for any examination has elapsed, the examination will be rewritten as soon as possible, normally on a day when examinations are not scheduled. Students will be informed by the Registrar of the time and place of the rewrite on the Website of the Registrar (<http://www.dal.ca/exams>).
3. In all cases in which a formal examination cannot be written at its scheduled time and special arrangements must be made, it is essential that faculty ensure that all students in the class are treated fairly and equitably and according to the evaluative criteria in the class description given to students at the beginning of the term.  
If an examination is terminated as under point #1, any student who feels disadvantaged by not having been able to write an examination for the length specified in the class description, may appeal through the appropriate departmental or school appeal mechanism for an examination of the specified length. Appeals will be in writing and in a timely fashion. If the appeal is granted, arrangements for such a makeup examination will be made between the student and the class professor.
4. If a formal examination cannot be written at its scheduled time, it is the responsibility of students to check the Registrar's Website for when the examination will be rewritten. Announcements will be made as soon as possible after the original time, normally within 24 hours, and rewrites will normally take place within the regular examination period.

## Policy for the Scheduling of Classes/Examinations

Normally, the University schedules and conducts classes on weekdays, i.e., Monday to Friday, and sometimes Saturday, and examinations on weekdays and Saturdays, but not Sundays or statutory Holidays. No examinations or classes should be scheduled on Good Friday, Easter Saturday or Easter Sunday. Otherwise, exams will be scheduled full days Monday through Friday and Saturday; and sometimes Sunday after 12 noon. However the University reserves the right, in exceptional circumstances and with the approval of Senate, to schedule classes or examinations on Sundays or statutory holidays, as the case may be.

## Requests for an Alternative Final Examination Time

A student requesting an alternative time for a final examination will be granted that request only in exceptional circumstances. Such circumstances include illness (with medical certificate) or other mitigating circumstances outside the control of the student. Elective arrangements (such as travel plans) are not considered acceptable grounds for granting an alternative examination time. In cases where it is necessary to make changes to examination arrangements late in the term, or Senate has approved exceptional examination arrangements, a special effort will be made to accommodate difficulties the changes may cause for individual students.

The decision whether to grant a student's request for an alternative examination time lies with the instructor of the course concerned as does the responsibility for making the alternative arrangements.

This policy may also be applied at the discretion of the instructor to tests and examinations other than final examinations.

## Retention of Student Work

### Faculties of Architecture and Planning and Engineering

All work executed by students as part of their academic programs in the Faculties of Architecture and Planning and Engineering automatically becomes the property of the University and may be retained for exhibition or other purposes at any time and for an indefinite period.

### Faculty of Computer Science

The Faculty of Computer Science has the right to retain the original or a copy of any work handed in by students. This will only be used for evaluation or for administrative purposes. The permission of the originator of the work is required if it is to be used in any other way.

### Communication with Students

1. All students must report their local address while attending the University to the Registrar's Office, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly. This may be done online at <http://dalonline.dal.ca>
2. Email is an authorized means of communication for academic and administrative purposes within Dalhousie. The University will assign all students an official email address. This address will remain in effect while the student remains a student and for one academic term following a student's last registration. This is the only email address that will be used for communication with students regarding all academic and administrative matters. Any redirection of email will be at the student's own risk. Each student is expected to check her or his official email address frequently in order to stay current with Dalhousie communications.
3. Students who change their name while attending Dalhousie must provide proof of name change to the Registrar's Office.

## Freedom of Information and Protection of Privacy

The Freedom of Information and Protection of Privacy Act (FOI/PPA) provides for the protection of an individual's right to privacy but also requires that certain records be disclosed upon request unless they are exempted from disclosure. The Act requires that the University not disclose personal information if that information would constitute an unreasonable invasion of personal privacy. Applicants to Dalhousie are advised that information they provide along with other information placed in a student file will be used in conjunction with university practices for internal university use and will not be disclosed to third parties except in compliance with the FOI/PPA Act or as otherwise required by law.

## Release of Information About Students

The following information is available, without application through the Freedom of Information and Protection of Privacy Act:

### I. Disclosure to students of their own records

1. A transcript is a complete history of a student's academic record at Dalhousie. Partial transcripts, e.g., a portion of a student's record pertaining to registration in a particular degree, faculty or level of study only, are not issued.
2. Students have the right to inspect their academic record. An employee of the Registrar's Office will be present during such an inspection.
3. Students will, on submission of a signed request and payment of a fee where appropriate, have the right to receive transcripts of their own academic record. These transcripts will be marked "ISSUED TO STUDENT". Official transcripts will be sent on a student's request to other universities, or to business organizations, etc. The University will not release copies of transcripts if students owe monies to the University.
4. If transcripts are issued for a student while a senate discipline case is pending and the committee subsequently makes a decision that affects the student's

transcript, revised transcripts will be sent to recipients if transcripts are issued while the case was pending.

## II. Disclosure to Faculty, Administrative Officers, and Committees of the University

Information on students may be disclosed without the consent of the student to University officials or committees deemed to have a legitimate educational interest.

## III. Disclosure to Third Parties

1. The following information is considered public information and may be released without restriction:
  - Name
  - Period of Registration
  - Certificates, Diplomas, Degrees awarded
  - Field of Study (as relates to degree awarded)
  - Hometown and Awards/Distinctions\*
 \*As indicated in the convocation program.
2. Information will be released without student consent to persons in compliance with a judicial order or subpoena or as required by federal or provincial legislation.
3. Necessary information may be released without student consent in an emergency, if the knowledge of that information is required to protect the health or safety of the student or other persons. Such requests should be directed to the Registrar.
4. In compliance with Statistics Canada requirements, a student's national personal identification number assigned by the university or college first attended will routinely appear on a student's transcript of record.
5. The Federal Statistics Act provides the legal authority for Statistics Canada to obtain access to personal information held by educational institutions. The information may be used only for statistical purposes, and the confidentiality provisions of the Statistics Act prevent the information from being released in any way that would identify a student.

Students who do not wish to have their information used are able to ask Statistics Canada to remove their identifying information from the national database by contacting us by:

Email: [PSIS-SIEP\\_contact@statcan.gc.ca](mailto:PSIS-SIEP_contact@statcan.gc.ca)  
 Mail: Institutional Surveys Section  
 Centre for Education Statistics  
 Statistics Canada, Main Building  
 SC2100-K Tunney's Pasture  
 Ottawa, ON K1A 0T6

Students should also be aware that the Maritime Provinces Higher Education Commission (MPHEC) collects data on behalf of Statistics Canada, and that it uses the data for similar purposes. Statistics Canada will notify the MPHEC of any student choosing to have their personal information removed from the national database, and their information will subsequently be removed from the MPHEC's database.

Further information on the use of this information can be obtained from the Statistics Canada Website: <http://www.statcan.gc.ca>.

6. Other than in the above situations, information on students will be released to third parties only at the written request of the student, or where the student has signed an agreement with a third party, one of the conditions of which is access to her/his record (e.g., in financial aid). This restriction applies to requests from parents, spouses, credit bureaus and police.

## Accommodation Policy For Students

Dalhousie University recognizes the diversity of its students and is committed to providing a learning environment and community in which students are able to participate without discrimination on grounds prohibited by the Nova Scotia Human Rights Act. In particular, the University is committed to facilitating students' access to the University's academic programs, activities, facilities and services.

The University's commitment to safeguarding students and employees from prohibited discrimination is set out in the Statement on Prohibited Discrimination, and the procedures for addressing alleged violations of the Statement by employees are set out in the Statement on Prohibited Discrimination Procedure for Complaints against an Employee of the University.

As stated in the Statement on Prohibited Discrimination:

The University operates in accordance with the Nova Scotia Human Rights Act. The Act prohibits discrimination in certain activities including the provision of or access to services and facilities, accommodation, publications and employment. Discrimination is defined as making “a distinction, whether intentional or not, based on a characteristic, or perceived characteristic [see list below] that has the effect of imposing burdens, obligations or disadvantages on an individual or class of individuals not imposed upon others or which withholds or limits access to opportunities, benefits and advantages available to other individuals or classes of individuals in society.” The Act prohibits discrimination based on the following grounds or characteristics:

- i) age
- ii) race
- iii) colour
- iv) religion
- v) creed
- vi) sex
- vii) sexual orientation
- viii) physical disability or mental disability
- ix) an irrational fear of contracting an illness or disease
- x) ethnic, national or aboriginal origin
- xi) family status
- xii) marital status
- xiii) source of income
- xiv) political belief, affiliation or activity
- xv) association with an individual or a class of individuals having characteristics referred to in (i) to (xiv)

The University recognizes that its obligation to provide a learning environment and community free from prohibited discrimination includes the obligation to make accommodations for students in instances where a student's learning environment or the University community in which they operate has a discriminatory effect on the student's ability to fully participate in, and have access to, University academic programs, activities, facilities and services. In particular, the university is obliged to make every reasonable effort short of undue hardship to take substantial, timely and meaningful measures to eliminate or reduce the discriminatory effects of the learning and community environment, including facilities, policies, procedures, and practices.

The purpose of this policy is to set out clear procedures to be followed in all instances where a student seeks accommodation to eliminate or ameliorate discrimination on one of the prohibited grounds. This policy replaces existing policies or practices concerning student accommodation.

The Advising and Access Services Centre and the Human Rights and Employment Equity Office are resources available to students seeking accommodation and to units considering or implementing an accommodation plan.

## Policy

### Definitions

1. In this policy, “academic accommodation” means accommodation in relation to the student's participation in an academic program or particular class;

“administrative head” means the individual with day-to-day operational responsibility for a University operation, activity, service or non-academic program;

“non-academic accommodation” means accommodation in relation to University activities and services that are not otherwise considered academic accommodation;

“student” shall include individuals enrolled at the University;

“Student Accommodation Liaison” means the individual or committee assigned responsibility for managing accommodation requests by each Faculty in accordance with section 3 of this policy.

## Role of Student Accommodation Office, Faculty and Administrative Heads

2. Subject to the terms of this policy, the Advising and Access Services Centre will be responsible for administering student requests for accommodation, in consultation with the Faculty's Student Accommodation Liaison in relation to academic accommodation, and in consultation with the relevant administrative head in relation to non-academic accommodation.
3. Each Faculty shall either assign a senior academic administrator or a Faculty, School or Department committee the responsibility to act on behalf of the Faculty in relation to academic accommodation requests under this Policy. Such individuals or committee shall be referred to in this policy as the Student Accommodation Liaison.
4. Prior to the commencement of each academic year, the Student Accommodation Liaison shall be responsible for approving parameters for academic accommodations relative to the Faculty's particular academic program and class requirements.

### Requests for accommodation

5. It is the student's responsibility to make a request for accommodation in accordance with this policy. The request for accommodation must be made reasonably in advance of the event or process in relation to which accommodation is being sought so that a decision can be made. Except in rare circumstances when significant psychological or mental health issues arise, there should be no “after-the-fact” accommodation. The University will consider a request for accommodation made by a third party (physician, family member, caregiver, advocate or other representative) only where the student has provided prior written consent.
6. A request for accommodation shall be made by the student in writing to the Advising and Access Services Centre, and shall contain the following information:
  - a) the reasons for the accommodation (*i.e. particulars of the discriminatory impact on the student on one of the prohibited grounds*) and any supporting documentation;
  - b) the accommodation being requested and/or any suggestions as to how the accommodation can be achieved;
  - c) where a medical condition is relevant to the request, copies of medical reports or additional medical documentation to substantiate the request and/or to assist in identifying the most appropriate means of accommodation; and
  - d) where the request relates to academic accommodation in relation to a learning disability, a current psycho-educational report describing the nature of the learning disability.

### Assessment and Decisions concerning accommodation

7. The assessment by the Advising and Access Services Centre is a two-step process. First, the Advising and Access Services Centre screens the requests to ensure that only requests arising in relation to one of the prohibited grounds of discrimination are permitted to proceed. If the request does arise in relation to one of the prohibited grounds, The Advising and Access Services Centre shall proceed to the second step, and shall consider all relevant factors in making a preliminary assessment as to whether an accommodation could be made without imposing an undue hardship to the University. In making such an assessment, The Advising and Access Services Centre will usually consult with the student making the request. Relevant factors include, but are not limited to, the following:
  - a) Linkage – whether the proposed accommodation will have the practical effect of eliminating or reducing the identified barrier;
  - b) Safety – whether the proposed accommodation would pose a safety risk to faculty, staff or other students or to the student seeking accommodation;
  - c) Financial Cost – what are the costs (estimate out-of-pocket expenses to put the accommodation in place together with any long-term costs to sustain the proposed accommodation), and would such costs be prohibitive;
  - d) Size and nature of the program or service – how disruptive would the proposed accommodation be to the program or service, considering the number of students, faculty and staff and the nature and inter-relationships of their roles;
  - e) Impact on academic requirements – whether the proposed accommodation will substantially undermine the academic requirements of the program; and



- f) Alternatives – where a requested accommodation appears to create an undue hardship based on the above factors, whether an alternative accommodation may be available.
8. Where the request is for academic accommodation, the Advising and Access Services Centre, in consultation with the class instructor, shall assess the recommendation in light of the factors set out in section 7 above, and the parameters for academic accommodation approved by the Faculty responsible for the delivery of the class, and shall make a decision concerning the accommodation. Where the circumstances are not addressed by the approved parameters, the Advising and Access Services Centre shall also consult with the Student Accommodation Liaison. The Advising and Access Services Centre shall inform the student, those who are necessary for the implementation of the decision (such as the class instructor), and the Student Accommodation Liaison of the decision. Except in extraordinary circumstances, decisions concerning accommodation shall be communicated within five working days of the student's request. A request can be expedited at the request of the student if circumstances warrant. In consultation with the Student Accommodation Liaison, and class instructor as required, the Advising and Access Services Centre may review accommodation plans from time to time to determine whether any adjustments to the accommodation plan are necessary.
9. Where the request is for non-academic accommodation, the Advising and Access Services Centre shall work with the appropriate administrative head to determine what accommodation should be provided, consulting others, including the student making the request, as necessary. The Advising and Access Services Centre shall communicate the decision to the student. Accommodation plans may be reviewed from time to time to determine whether any adjustments to the accommodation plan are necessary.
10. The Advising and Access Services Centre in consultation with the Student Accommodation Delegates and the administrative heads, as appropriate, will monitor accommodation plans from time to time to ensure that they have been implemented in accordance with this policy.

### Appeals

11. There shall be an Accommodation Appeals Committee comprising two members appointed by the Vice-President Finance and Administration, two members appointed by the Vice-President Academic and Provost, two members appointed by the Vice-President Student Services, and three students appointed by the Vice-President Student Services.
12. Where a student believes that his or her request for accommodation has not been handled in accordance with this policy or is not satisfied with the type of accommodation provided, the student may appeal such decision by providing written notice to the Advising and Access Services Centre within 10 working days of the date of the decision. Upon receipt of such notice, the Advising and Access Services Centre shall ask the Vice-President Academic to select a hearing panel comprising three employees and two student members of the Accommodation Appeals Committee to hear the appeal.
13. The Accommodation Appeals Committee hearing panel may uphold the initial decision concerning the accommodation or may determine that an alternate form of accommodation should be provided. The decision of the hearing panel is final, and cannot be appealed further.

### Confidentiality

14. Particulars of requests for accommodation, including supporting documentation, shall be treated as strictly confidential, and shall not be disclosed to other persons without the consent of the student requesting accommodation, except and to the extent that such disclosure is reasonably necessary for the effective implementation of the accommodation plan.

### Cooperation

15. All faculty, staff and students shall cooperate with accommodation plans implemented under this policy. Failure to cooperate may be considered prohibited discrimination under the Statement on Prohibited Discrimination.
16. Notwithstanding anything in this policy, students have the right at any time to seek the assistance of the Nova Scotia Human Rights Commission.

### Procedures

1. Requests for accommodation under section 5 of the policy shall be on Form A.
2. The notice of appeal described under section 10 of the policy shall be on Form B.

## Support Services

Dalhousie University endeavours to provide a broad range of support services to all of its students. Students wishing to obtain assistance from the University shall be expected to undertake a reasonable measure of self-advocacy to ensure that they are provided with the support services necessary. Such support services may include personal counselling, academic counselling, academic advising, and academic skill training.

**NOTE:** Accommodation of a student's needs due to disability will be facilitated if the student self-discloses and makes prior arrangements. Accommodation may be hindered if advance notification and/or prior arrangements have not been made.

## Policy on the Submission of Student Papers

Any instructor may require student assignments to be submitted in both written and electronic (computer-readable) form, e.g., a text file or as an email attachment, as defined by the instructor. Use of third-party originality checking software does not preclude instructor use of alternate means to identify lapses in originality and attribution. The results of such assessment may be used as evidence in any disciplinary action taken by the Senate.

### Procedures

If an instructor plans to use originality-checking software in a class, students shall be informed in the class syllabus that their written work may be submitted to a text-matching software service, which is meant to assure students that everyone will be evaluated on the basis of their own work and to warn students that plagiarism is likely to be detected. The planned use of originality-checking software will also be included in the oral presentation of the class syllabus in the initial class meeting.

Students shall also be informed in the class syllabus that they are free, without penalty of grade, to choose an alternative method of attesting to the authenticity of their work.

Students shall inform instructors no later than two weeks after the commencement of classes of their intent to choose an alternate method.

Instructors shall provide students with at least two possible alternatives that are not unduly onerous and that are appropriate for the type of written work.

Alternatives shall be chosen from the following:

- a) Submitting copies of multiple drafts demonstrating development of the work;
- b) Submitting an annotated bibliography;
- c) Submitting photocopies of sources; and
- d) Other alternatives devised by the instructor, provided that they are not unduly onerous.

## Intellectual Honesty

A university should be a model of intellectual honesty. As such Dalhousie University shares in the academic values of honesty, trust, respect, fairness and responsibility (Centre for Academic Integrity, 1999 - of which Dalhousie University is a member). Failure to meet the University's standards with respect to these values can result in an academic offence. The length of time a student has attended university, the presence of a dishonest intent and other circumstances may all be relevant to the seriousness with which the matter is viewed.

Violations of intellectual honesty are offensive to the entire academic community, not just to the individual faculty member and students in whose class an offence occurs.

Instructors are responsible for setting examinations and assignments as part of the learning process and for evaluating those examinations and assignments, including ensuring that any rules stated for the procedures used in an examination or assignment are followed. Any violation of such stated rules that could result in a student gaining an unfair or unearned advantage may be considered to be an academic offence.

### Examples of Academic Offences

There are many possible forms of academic dishonesty. Since it is not possible to list all instances of academic dishonesty, the following list of examples should be considered only as a guide. The omission of a dishonest action from this list does not prevent the University from prosecuting an alleged instance of that action.

## A. Plagiarism

Members of academic communities are privileged to share in knowledge generated through the efforts of many. In return, each member of the community has the responsibility to acknowledge the source of the information used and to contribute knowledge that can in turn, be trusted and used by others. Consequently, the University attaches great importance to the contribution of original thought to learning and scholarship. It attaches equal importance to the appropriate acknowledgement of sources from which facts and opinions have been obtained.

Dalhousie University defines plagiarism as the submission or presentation of the work of another as if it were one's own.

Plagiarism is considered a serious academic offence that may lead to the assignment of a failing grade, suspension or expulsion from the University. If a penalty results in a student no longer meeting the requirements of a degree that has been awarded, the University may rescind that degree.

Some examples of plagiarism are:

- failure to attribute authorship when using a broad spectrum of sources such as written or oral work, computer codes/programs, artistic or architectural works, scientific projects, performances, web page designs, graphical representations, diagrams, videos, and images;
- downloading all or part of the work of another from the Internet and submitting as one's own; and
- the use of a paper prepared by any person other than the individual claiming to be the author.

The proper use of footnotes and other methods of acknowledgement vary from one field of study to another. Failure to cite sources as required in the particular field of study in the preparation of essays, term papers and dissertations or theses may, in some cases, be considered to be plagiarism.

Students who are in any doubt about how to acknowledge sources should discuss the matter in advance with the faculty members for whom they are preparing assignments. In many academic departments, written statements on matters of this kind are made available as a matter of routine or can be obtained on request. Students may also take advantage of resources available through the Writing Centre at [writingcentre.dal.ca](http://writingcentre.dal.ca) or the Dalhousie Libraries at [library.dal.ca/services/infolit](http://library.dal.ca/services/infolit).

## B. Irregularities in the Presentation of Data from Experiments, Field Studies, etc.

Academic research is based on the presentation of accurate information and data that are obtained honestly. The trustworthiness of our findings is essential to building knowledge in and across fields of study. Therefore, the falsification of data in reports, theses, dissertations and other presentations is a serious academic offence, equivalent in degree to plagiarism, for which the penalties may include the assignment of a failing grade, suspension or expulsion from the University or the withdrawal of a degree previously awarded.

## C. Other Irregularities

Dalhousie University strives to provide equal opportunities for learners to demonstrate and to be recognized for their abilities. Any behaviour intended to gain unearned advantage over another person violates this principle. A member of the University who attempts, or who assists any other person in an attempt, to fulfill, by irregular procedures, any requirements for a class, commits an academic offence and is subject to a penalty.

In the absence of specific approval from the instructor of a class, all students should assume that every assignment is to be completed independently, without any form of collaboration.

Students should take reasonable precautions to prevent other students from having access, without permission, to their tests, assignments, essays or term papers.

The following are some examples of irregular procedures. The list should be used only as a guide since it is not possible to cover all situations that may be considered by the Senate Discipline Committee to be irregular.

- writing an examination or test for someone else;
- attempting to obtain or accepting assistance from any other person during an examination or test;
- during the time one is writing an examination or test, having material that is not specifically approved by the instructor;

- without authorization, obtaining a copy of an examination or test, topic for an essay or paper, or other work;
- without authorization from the faculty member in charge of that class, submitting any work for academic credit when one is not the sole author or creator;
- without authorization submitting any work that has been previously accepted for academic credit in any other class in any degree, diploma or certificate program, or has been completed as part of employment within the University, for example, as research activity. A repeated class is considered to be a separate class.

## D. Aiding in the Commission of an Academic Offence

No student may encourage or aid another student in the commission of an academic offence, for example,

- by lending another student an assignment knowing that he or she may copy it for submission;
- by allowing another student to copy answers during an examination.

## E. Misrepresentation

Any person who provides false or misleading information during an investigation of a suspected academic offence is guilty of an offence.

## Discipline

1. Members of the University, both students and staff, are expected to comply with the general laws of the community, within the University as well as outside it.
2. Alleged breaches of discipline relating to student activities under the supervision of the Dalhousie Student Union are dealt with by the Student Union. Alleged breaches of discipline relating to life in the residences are dealt with by the residence discipline policy unless the President determines that some non-residence University interests are involved. Senate is charged with the authority to deal with cases of alleged academic offenses, see examples above, as well as with certain other offenses that are incompatible with constructive participation in an academic community.
3. On report of a serious breach of the law, or a serious academic offence deemed by the President, or in his or her absence by a Vice-President or the Dean of a Faculty, to affect vital University interests, a student involved may be temporarily suspended and denied admission to classes or to the University by the President, Vice-President or Dean, but any suspension shall be reported to the Senate, together with the reasons for it, without delay.
4. No refund of fees will be made to any student required to lose credit for any class taken, required to withdraw or who is suspended or dismissed from any class or any Faculty of the University.

## Academic Dishonesty

### Faculty Discipline Procedures Concerning Allegations of Academic Offences

#### I. Preamble

These procedures deal with allegations of academic offences and do not deal with violations of the student code of conduct. The purpose of these procedures is to delegate assessment of certain allegations of academic offences to the Faculty level.

#### Guideline for Evaluators

An alleged first or later breach of any academic standard by a student should never be dealt with by an evaluator, but in all instances, should be referred to the Academic Integrity Officer in accordance with these procedures. Any attempt by any person or body other than the Senate, the Senate Discipline Committee, or the Academic Integrity Officers to impose a penalty for an alleged offence is null and void and leaves the student still liable to discipline for that offence. Further, a student remains liable to discipline for a suspected offence notwithstanding a failure on the part of an evaluator to report the allegation in accordance with these procedures.

Where an allegation of a breach of academic standards has been made or is pending, the evaluator should not reveal the mark or grade to anyone until the Vice Chair (Academic Administration) has confirmed the disposition of the matter by the Senate Discipline Committee or the Academic Integrity Officer.

## II. Academic Integrity Officers

1. Academic Integrity Officers are associated with the Faculties of Dalhousie University.
2. The Academic Integrity Officer shall act between the student and instructor, and may appear at Hearing Panels of the Discipline Committee or the Discipline Appeals Board to present the case against the student.
3. The Academic Integrity Officer is the Dean of the Faculty. The Dean may further delegate this role to one or more members of his/her academic staff except those who are Senate Officers, who are otherwise involved in the student discipline process, or who otherwise are in a potential conflict of interest relative to this role. Annually the name of the delegate(s) shall be communicated in writing to the Vice-Chair (Student Affairs) who shall report to Senate.
4. The Academic Integrity Officers shall meet as a group with the Senate Discipline Committee (SDC) at least once a year to discuss relevant policy issues and training requirements with a view to maximizing consistency and predictability in the administration of academic offences across the University. Such meetings will be convened and chaired by the Vice-Chair (Student Affairs).
5. **Penalties:**  
Penalties shall follow the guidelines contained within the University's Academic Regulations and the Senate Discipline Committee terms of reference set out in Section 10 of the Senate Constitution, which are reproduced below for convenience.  
"The range of penalties which may be imposed by the Senate Discipline Committee be circumscribed only by the requirement that such penalty or penalties be of an academic nature and, without restricting the generality of the foregoing, may include any one or more of:
  - 1) notation of the fact of discipline on the offender's transcript for a period of one or more years, but not exceed five years;
  - 2) repeat of the assignment that triggered the discipline;
  - 3) a failing grade or mark or assessment in the piece of work triggering the discipline;
  - 4) failure of the class or seminar or program;
  - 5) failure of the academic year;
  - 6) suspension for an academic term or year (to a maximum suspension of three academic years);
  - 7) expulsion from the University;
  - 8) loss of a current or continuing scholarship, or both, or loss of eligibility to receive or to maintain scholarships or prizes or bursaries; and
  - 9) removal from the Dean's List."
6. **Faculty Procedures**  
When an academic offence is suspected, the instructor shall submit a signed statement outlining the basis for the allegation, together with all relevant supporting evidence, to the Academic Integrity Officer of the Faculty which is responsible for the delivery of the course at issue, or in the case of an allegation in relation to a graduate thesis or other non course graduate materials, to the Academic Integrity Officer of the Faculty of Graduate Studies, within 10 working days of becoming aware of the alleged offence, but in any event no later than the deadline for submission of final grades to the Registrar, except in extraordinary circumstances, as determined by the Academic Integrity Officer.
7. Upon receipt of the material from the instructor, the Academic Integrity Officer shall determine whether or not the material supports a *prima facie* case that the student has committed an academic offence. If no *prima facie* case is made out, no further steps are taken in relation to the allegation, and the instructor and student will be so advised in writing.
8. If a *prima facie* case is established, then the Academic Integrity Officer will take the following further steps:
  - a) Check the academic discipline database maintained by the Senate Office to determine if the student(s) has a record of prior academic offence(s);
  - b) With the exception of cases involving two or more students facing allegations arising from the same fact situation ("common allegation") which shall proceed in accordance with paragraph 9, if the student(s) has a record of prior academic offence(s), forward the allegation to the Senate Discipline Committee;
  - c) If the allegation appears to be a first offense, and in all cases of two or more students facing a common allegation, inform the student(s) in writing of the nature of the allegation, the instructor's statement, the evidence, the procedures to be followed, the possible penalties, and possible sources of advice and support (will be a standard document);
  - d) Convene a meeting with the student(s), the student(s)'s advisor, if any, and the instructor within five working days upon receipt of the allegation by the student, which time may be extended at the request of the student, instructor, or Academic Integrity Officer, in appropriate circumstances.;
  - e) If the meeting does not take place within the time set out above, the Academic Integrity Officer has the discretion to convene another meeting with the student(s), the student(s)'s advisor, if any, and the instructor. The Academic Integrity Officer also has the discretion to convene additional meetings as may be reasonably required. In the event an initial meeting does not occur within a reasonable time after a *prima facie* case is established, the Academic Integrity Officer shall refer the allegation to the Senate Discipline Committee.
9. Notwithstanding paragraph 8b, in the case of two or more students facing allegations arising from the same fact situation ("common allegation"), the Academic Integrity Officer has the authority to convene a meeting with all such students in accordance with paragraphs 8d and 8e and to make findings for all such students under these Procedures, regardless of the fact that one or more of such students may have a record of prior academic offence(s). If the Academic Integrity Officer's assessment is that there is sufficient evidence to support a finding that a student facing a common allegation has committed an academic offence, for any such student who has no record of prior academic offence(s), subject to paragraph 14, the Academic Integrity Officer shall assess an appropriate penalty for the student in accordance with these Procedures; and for any such student who has a record of prior academic offence(s), the Academic Integrity Officer shall forward the matter to the Senate Discipline Committee for assessment of an appropriate penalty.
10. Following the meeting convened in accordance with paragraph 8, the Academic Integrity Officer shall make a preliminary assessment of whether there is sufficient evidence to support a finding that the student has committed an academic offence, and if there is sufficient evidence, make a preliminary assessment of what penalty would be appropriate in the circumstances. In making the latter assessment, the Academic Integrity Officer shall exercise broad discretion in considering possible mitigating circumstances including but not limited to extraordinary personal circumstances and lack of educational experience.
11. If the Academic Integrity Officer's assessment is that there is insufficient evidence to support a finding that the student has committed an academic offence, s/he shall inform the student in writing with a copy to the Instructor within five working days of the meeting. This does not preclude an Academic Integrity Officer from proceeding with the allegation at a later date, should new evidence become available.
12. If the Academic Integrity Officer's assessment is that there is sufficient evidence to support a finding that the student has committed an academic offence, AND that the appropriate penalty for the student's conduct is any of the penalties described in paragraph 5, above, except those listed in subparagraphs 5 to 9 the Academic Integrity Officer shall provide the student with the option of accepting the finding and the proposed penalty, or of proceeding to the Senate Discipline Committee for a full hearing. The option shall be presented to the student within five working days of the meeting, and the student shall have two working days to respond. In the event that the student elects to accept the finding and proposed penalty, the Academic Integrity Officer shall so advise the Vice-Chair (Student Affairs).
13. Within 14 calendar days of the Vice-Chair (Student Affairs) being advised of the finding and agreed penalty under paragraph 12, the Vice-Chair (Student Affairs), or in his or her absence, the Chair or Vice-Chair (Academic Programs), and a student Senator appointed by the Dalhousie Student Union shall jointly review the finding and agreed penalty to determine whether the process is consistent with the Faculty Discipline Procedures Concerning Allegations of Academic Offences. If so, they shall ratify the matter on behalf of Senate and the Vice-Chair shall notify the student and the Academic Integrity Officer of such ratification. For ratification to occur, the decision must be unanimous. The finding and agreed penalty shall stand, despite possible insubstantial procedural errors. The Vice-Chair (Student Affairs) shall ensure that the offence is recorded on the Senate Discipline database and that the Registrar and any others are notified of the finding and penalty for immediate implementation. If the Vice-Chair (Academic Administration) and/or the student Senator have any material concerns about the process, the Vice-Chair (Student Affairs) shall consult with the Academic Integrity Officer to determine whether the concerns can be resolved. If the Vice-Chair (Academic Administration) and the Academic Integrity Officer are unable to resolve any concerns, the matter shall be referred back to the Academic Integrity Officer for further consideration under these Procedures, after which the Vice-Chair

(Academic Administration) and a student Senator shall jointly re-consider ratification. Should ratification still not occur, the matter shall be referred to the Senate Discipline Committee for a hearing.

14. If the Academic Integrity Officer's assessment is that there is sufficient evidence to support a finding that the student has committed an academic offence, but that the appropriate penalty for the student's conduct is one of those listed in subparagraphs 5 to 9 of paragraph 5 of these Procedures, the Academic Integrity Officer shall, within five working days of the meeting, notify the student in writing, with a copy to the instructor, that the matter will be forwarded to the Senate Discipline Committee for a full hearing.
15. Should a student request that an allegation be referred back to the Academic Integrity Officer after it has been forwarded to the Senate Discipline Committee, the Academic Integrity Officer has the discretion to grant such a request. A student's request shall be in writing, and delivered to the Vice-Chair (Student Affairs) within five working days of the date the allegation letter is sent to the student by the Vice-Chair (Student Affairs).
16. Prior to a hearing by the Senate Discipline Committee of an allegation against a student, the Academic Integrity Officer shall provide a written allegation to the Senate office identifying the evidence initially presented by the instructor pursuant to paragraph 6 and any additional evidence obtained by the instructor in the course of the assessment of the matter. The written allegation shall not include reference to whether or not any meeting(s) did occur pursuant to paragraph 8d or 8e, any statements that may have been made by the student at such meeting(s), or any alternate versions of the facts and circumstances that may have been presented by one or more students at such meeting(s). The student shall have the opportunity to provide a written submission in response prior to the hearing by the Senate Discipline Committee. Notwithstanding the foregoing, in the event of a statement made by a student at a hearing of the Senate Discipline Committee that is inconsistent with a statement previously made by that student in the meeting(s) with the Academic Integrity Officer, then the Academic Integrity Officer may refer to statements that may have been made by the student at such meeting(s).
17. Confidentiality must be maintained by those involved in each case when an academic offence is suspected and the instructor submits an allegation to the Academic Integrity Officer, except as is reasonably necessary to implement the finding and agreed penalty or as required in subsequent disciplinary proceedings related to the same matter.

## Senate Discipline Committee

### Jurisdiction of the Senate Discipline Committee

1. The Senate Discipline Committee has jurisdiction to hear:
  - a) Complaints referred to the Senate Discipline Committee under the Code of Student Conduct ("Code Complaints"); and
  - b) Allegations of academic offences referred to the Senate Discipline Committee under the Faculty Discipline Procedures Concerning Allegations of Academic Offences ("Integrity Allegations").
2. For the purpose of these procedures, the following definitions shall apply:
  - a) **Allegation** means a Code Complaint or an Integrity Allegation as the context requires.
  - b) **University Representative** means the President of the University or his/her designate in the case of Code Complaints, or the Academic Integrity Officer in the case of Integrity Allegations.
3. The Senate Discipline Committee's jurisdiction extends to Allegations against a student who, before or during the course of the disciplinary process involving him or her, but prior to adjudication, has:
  - i) been compelled to withdraw academically;
  - ii) chosen to withdraw from the class, the program, or the University prior to being disciplined; or;
  - iii) chosen not to register at the University.
4. In the case of Integrity Allegations, a Hearing Panel of the Senate Discipline Committee may:
  - a) dismiss the allegation; or
  - b) impose any of the following:
    - i) notation of the fact of discipline on the offender's transcript for a period of one or more years, but not exceeding five years;
    - ii) repeat of the assignment that triggered the discipline;
    - iii) a failing grade or mark or assessment in the piece of work triggering the discipline;
    - iv) an imposed limit on the grade that can be given for the assignment or class;

- v) failure of the class;
  - vi) suspension for an academic term or year (to a maximum suspension of three academic years);
  - vii) expulsion from the University;
  - viii) any other remedy of an academic nature that is within the power of Senate to grant.
5. In the case of a Code Complaint, a Hearing Panel of the Senate Discipline Committee may:
    - a) dismiss the complaint; or
    - b) impose any of the penalties set out under the Code of Student Conduct
  6. In the case where an Allegation is proven and is not dismissed under section 4(a) or 5(a), the Hearing Panel of the Senate Discipline Committee may consider any mitigating or aggravating circumstances in its determination of the appropriate penalty.

### Initiating a Hearing / Pre-Hearing Procedures

7. To initiate a hearing of the Senate Discipline Committee the University Representative shall submit a written request to the Senate Vice-Chair (Student Affairs), or designate. The request shall include a written submission outlining the Allegation together with all supporting evidence, documentation and a list of the witnesses on which the University Representative intends to rely.
8. The Senate Vice-Chair (Student Affairs) shall provide the student with a notice of the Allegation that shall include:
  - a) The material filed by the University Representative under section 7;
  - b) Notice of the deadline for the student to submit a written defence, any supporting evidence and a list of individuals who will attend at the hearing on the student's behalf; and
  - c) Notification of the student's right to be represented.
9. The student shall provide the Senate Vice-Chair (Student Affairs) with a written defence, supporting evidence and a list of the individuals who will also be attending, as well as their capacity (ie. witness, support person, advocate) no later than the date specified in the notice of allegation. Any evidence or documentation provided after the deadline for submission may be ruled inadmissible by the Hearing Panel at the hearing.
10. The Chair of the Senate Discipline Committee shall constitute a Hearing Panel in a timely manner comprising three faculty and two students. No faculty member who is a current instructor of the accused student may serve as a member of the Hearing Panel. The student member of a Hearing Panel shall not be a member of the class from which the complaint originates. In the event that no student members of the Committee are able to participate on a Hearing Panel due to the provisions of this paragraph, the Dalhousie Student Union shall appoint an ad hoc member to the applicable Hearing Panel. The Committee Chair or an alternate faculty member shall chair the hearing.
11. The Student and University Representative shall be notified of the date, time and location of the hearing, as well as the names of all individuals who will be in attendance, no less than 10 working days in advance of the hearing.
12. Preliminary objections or issues must be raised as far in advance of the hearing as reasonably possible. The Chair of the Hearing Panel has sole discretion to rule on any preliminary issues or objections raised by either party that must be dealt with prior to the commencement of the hearing. The Hearing Panel may rule on any preliminary issues or objections raised at the commencement of the hearing.

### Hearing Procedures

13. The Chair of the Hearing Panel shall determine procedures for the hearing in a manner that is consistent with the principles of natural justice and these Procedures.
14. In extenuating circumstances, the Chair of the Hearing Panel may decide to proceed with the hearing in the absence of one faculty member of the Hearing Panel.
15. In the event that the student fails to appear at the hearing, the Hearing Panel shall satisfy itself that reasonable efforts were made to notify the student and may proceed in the student's absence.
16. The student may participate at an oral hearing in person, by way of teleconference, or by such other means approved in advance by the Hearing Panel. The student may waive the right to an oral hearing and choose to proceed solely by written submissions.
17. Hearings shall be in camera.
18. At the commencement of the hearing, the Chair of the Hearing Panel shall explain the procedures to be followed and provide an opportunity for introductions as well as any questions, objections, or opening statements.

19. The University Representative shall present the Allegation and witnesses, if any. The student and any members of the Hearing Panel may question the University Representative and the University Representative's witnesses following the presentation of the Allegation.
20. The student may present his or her defence and witnesses, if any, following the University Representative's presentation. The University Representative and any members of the Hearing Panel may question the student and any of the student's witnesses following the presentation of the defence.
21. At the discretion of the Chair of the Hearing Panel, the parties may make final arguments following the presentations. The student shall have the last word.
22. At the discretion of the Hearing Panel, any evidence sought to be admitted by either party from witnesses who are not available to give evidence in person may be received in writing or in some other form.
23. The student is considered innocent until the Allegation is proven on a balance of probabilities, the burden of which lies with the University Representative.
24. The decision of the Hearing Panel shall be by majority.
25. The Hearing Panel shall report its decision including reasons for the decision and any penalty imposed, to the Vice-Chair (Student Affairs) who shall forward a copy of the decision to the student and the University Representative.
26. An audio recording of each oral hearing shall be made. The recording and all correspondence and documentary evidence relating to appeal proceedings shall be kept in accordance with the records management policies of the University Secretariat. The student may obtain a copy of the audio recording by making written request to the Senate Vice-Chair (Student Affairs) and may use such recording only for the purpose of an appeal of the decision in question.
27. Appeals from decisions of the Senate Discipline Committee may be made to the Senate Appeals Committee in accordance with the Senate Appeals Committee -Jurisdiction and Appeals Procedures.
28. The Senate shall maintain a confidential database of discipline decisions for the purposes of general reporting and proper adjudication of repeat offences.

## University of King's College

The University of King's College Registrar shall notify the Dalhousie Registrar in the event that academic discipline proceedings have been commenced in relation to a Dalhousie student, and shall advise the Dalhousie Registrar of the outcome of such proceedings, including any sanctions imposed against the student. Where the student has been previously sanctioned for academic misconduct, the Dalhousie Registrar will provide the University of King's College Registrar with particulars of the offence and the sanction imposed.

## I. Commentary on Penalties

### A. Proactive Measures

Dalhousie University emphasizes education and proactive engagement, therefore a Proactive Measure, which is a form of recommendation, may be prescribed as an educational aid in addition to a Penalty. It may include but not necessarily be restricted to suggesting that the student seek some form of professional help from the Advising and Access Services Centre or Counseling Services or elsewhere which, for example may be time management or stress management, etc., and/or an apology for the infraction. The main purpose of a Proactive Measure is to help the student learn how to reduce the likelihood of future violations of academic integrity. It is important to note that it is the student's responsibility to decide whether or not to follow the Proactive Measure since it is not a formal Penalty but rather a recommendation. Therefore, there is normally no oversight by the University (AIO or SDC) to ensure that a Proactive Measure is followed.

### B. Consequence

A Consequence is an outcome of the application of a Penalty. A Consequence is not imposed by the University's academic integrity policies but arises from the University's academic policies. For example the consequences of the Penalty of a failing grade may include but not necessarily be limited to: failure in a program, delay of graduation, loss of full-time student status, change in visa status (for a visa student), loss of eligibility for student aid, removal from the Dean's list. Similarly a notation on a transcript may have serious unforeseen consequences for future opportunities, etc. This list is not intended to be exhaustive. Therefore, while the university's academic integrity procedures (AIO or SDC) may foresee some consequences, ultimately the student bears the responsibility for any consequences of a Penalty.

## Code of Student Conduct

### I. Background

Dalhousie University is a community of faculty, staff and students, involved in teaching, research, learning and other activities. Students are members of the University for the period of their registration in an academic program and are subject to the disciplinary authority of the University during that time.

The University does not stand in loco parentis to its students. In the exercise of its disciplinary authority, the University treats students as adults free to organize their own personal lives, behaviour and associations subject only to the law, and to University regulations that are necessary to protect:

- the integrity and proper functioning of the academic and non-academic programs and activities of the University or its faculties, schools or departments;
- the peaceful and safe enjoyment of University facilities by other members of the University and the public;
- the freedom of members of the University to participate reasonably in the programs of the University and in activities on the University's premises;
- the property of the University or its members.

Other than this, regulation of student behaviour by the University is neither necessary nor appropriate.

Members of the University, including students, are not immune from the criminal and civil law. Provisions for non-academic discipline should not attempt to shelter students from the normal responsibilities of adult citizens nor add unnecessarily to these responsibilities. Thus, conduct that violates the Criminal Code or other statute should ordinarily be dealt with by the police and criminal courts. In cases, however, in which criminal or civil proceedings would not adequately protect the University's interest and responsibilities as defined above, proceedings may be brought under the Code of Student Conduct.

The University may also define standards of professional conduct for students in programs where these are appropriate, and this Code is not intended to replace or supersede such standards.

## II. Code Of Conduct

### A. Definitions

1. In this Code, the word "premises" includes lands, buildings and grounds of the University, or other places or facilities used for the provision of the University's programs or services or for University-approved events and activities.
2. In this Code, "student" means a person:
  - a) engaged in any academic work or placement which leads to the recording and/or issue of a mark, grade or statement of performance by the appropriate authority in the University or another institution; and/or
  - b) registered in, enrolled in, or attending any course, or otherwise participating as a learner in any activity which entitles the person to the use of a University library, library materials, library resources, computer facility or dataset.
3. In this Code, the words "Dalhousie University" refer to Dalhousie University and include any institutions affiliated with it, where such inclusion has been agreed upon by the University and the affiliated institution, with respect to the premises, facilities, equipment, services, activities, students and other members of the affiliated institution.
4. Unless otherwise stated, a student will only be liable for conduct that she or he knew or ought reasonably to have known would constitute conduct prohibited under this Code.
5. Nothing in this Code shall be construed to prohibit peaceful assemblies and demonstrations, or lawful picketing, or to inhibit freedom of speech.

### B. Application

Conduct shall be deemed to be an offence under this Code, when committed by a student of Dalhousie University, provided that such conduct:

1. occurs on the premises of Dalhousie University;
2. occurs elsewhere in the course of activities sponsored by Dalhousie University (or by any of its faculties, schools or departments), or where the conduct is alleged to adversely affect, disrupt or interfere with another person's reasonable participation in Dalhousie University programs or activities; or
3. occurs in the context of a relationship between the student and a third party and involves the student's standing, status or academic record at the University.

However, this Code will not apply to conduct that:

4. is specifically assigned to another disciplinary body within the University; or
5. is subject to action as an alleged failure to meet standards of professional conduct as required by a college, faculty or school; or
6. is subject to action under a residence discipline policy unless some non-residence University interests are deemed to be involved, in which case the President may specifically authorize proceedings under this Code; or
7. is committed by a student in her or his capacity as an employee of the University unless some non-employment University interests are deemed to be involved, in which case the President may specifically authorize proceedings under this Code;
8. is subject to the disciplinary authority of the Dalhousie Student Union.

## C. Offences

### 1. Offences Against Persons

- a) No student shall assault another person sexually, or threaten any other person with sexual assault or commit an act of sexual harassment toward another person.
- b) No student shall otherwise assault another person, threaten any other person with bodily harm, or cause any other person to fear bodily harm.
- c) No student shall create a condition that unnecessarily endangers the health or safety of other persons.
- d) No student shall threaten any other person with damage to such person's property, or cause any other person to fear damage to her or his property.
- e) No student shall engage in a course of vexatious conduct, harassment or discrimination that is directed at one or more specific persons and that is based on the age, race, colour, religion, creed, sex, sexual orientation, physical disability, mental disability, an irrational fear of contracting an illness or disease, ethnic or national or aboriginal origin, family status, marital status, source of income, political belief or affiliation or activity of that person or of those with whom he or she associates.
- f) No student shall engage in unwelcome or persistent conduct that the student knows, or ought to reasonably know, would cause another person to feel demeaned, intimidated or harassed. Examples of such conduct include, but are not limited to:
  - i) following another person, or anyone known to that person;
  - ii) unwanted communication with another person or anyone known to that person;
  - iii) watching the residence or place of work of another person or anyone known to that person;
  - iv) threatening another person or any member of the family, friends or colleagues of the other person;
  - v) coercing, enticing or inciting a person to commit an act that is humiliating or demeaning to that other person or to others.

### 2. Disruption

No student shall, by action, threat or otherwise, disrupt, obstruct or adversely affect any activity organized by Dalhousie University or by any of its faculties, schools or departments, or the right of other persons to carry on their legitimate activities, to speak or to associate with others.

### 3. Offences Involving Property

- a) No student shall take without authorization, misuse, destroy, deface or damage the property of Dalhousie University, or property that is not her or his own, or information or intellectual property belonging to Dalhousie University or to any of its members.
- b) No student shall possess the property of Dalhousie University, property in the custody of Dalhousie University, or property that is not her or his own, if the student knows that property to have been taken without authorization.
- c) No student shall create a condition that unnecessarily endangers or threatens destruction of the property of Dalhousie University or of any of its members.

### 4. Unauthorized Use of University Facilities, Equipment or Services

- a) No student shall use any facility, equipment or service of the University, or enter or remain on any premises, to which he or she does not have legitimate access, or contrary to the expressed instruction of authorized persons.
- b) No student shall use any University computing equipment, facility, network or system for any disruptive or unauthorized purpose, or in a manner that violates any law, Dalhousie University regulations, policies and procedures or in any way that is incompatible with the principles in the

Acceptable Use of Information Technology Resources sections. Examples of inappropriate use of computer equipment, facilities, networks and systems include, but are not limited to:

- i) copying, removing or distributing software and/or data without authorization;
- ii) using another person's account, or misrepresenting themselves as another user;
- iii) disclosing confidential passwords, access codes, etc., assigned to themselves or others;
- iv) interfering with the work of others using computing equipment, facilities, networks, systems or accounts;
- v) displaying, transmitting, distributing or making available information that is discriminatory, obscene, abusive, derogatory, harassing or otherwise objectionable;
- vi) breaching terms and conditions of software licensing agreements;
- vii) interfering with the normal operation of computing equipment, facilities, networks or systems by, among other things, flooding the network with messages, sending chain letters or pyramid solicitations;
- viii) using the University's computing equipment, facilities, networks and systems for profit or commercial gain.
- c) No student shall destroy, misplace, misfile, or render inoperable any stored information such as books, film, data files or programs from a library, computer or other information storage, processing or retrieval system.

### 5. Aiding in the Commission of an Offence

No student shall encourage or aid another student in the commission of an offence defined in this Code, or encourage or aid behaviour by a non-student which, if committed by a student, would be an offence under this Code.

### 6. Alcohol and Drug Use

No student shall contravene the Liquor License Act of Nova Scotia or a provision of the Campus Alcohol Policy, nor shall any student possess, use or sell a drug to which access is restricted by the Narcotics Control Act.

### 7. False Information and Identification

- a) No student shall knowingly furnish false information to any person or office acting on behalf of the University.
- b) No student shall forge, alter or misuse any document, record or instrument of identification.
- c) No student shall knowingly furnish false information to any person regarding his or her standing, status or academic record at Dalhousie University.

### 8. Unauthorized Possession of a Firearm or Weapon

No student shall possess a firearm or other weapon on the University premises without the specific written permission of the Chief of Security.

### 9. Contravention of University Regulations

When a rule, regulation or policy of the University prohibits or proscribes certain conduct but does not provide any penalty for breaches of the rule, regulation or policy, breaches shall be dealt with under this Code.

### 10. Other

No student shall contravene any provision of the Criminal Code or any other federal, provincial or municipal statute on the premises of the University or in the course of the University's programs or services, or University-approved events or activities.

## D. Procedures

1. Whenever possible and appropriate, reason and informal measures shall be used to resolve issues of individual behaviour before resort is made to formal disciplinary procedures.
2. Any person may make a complaint against any student for misconduct. A complaint shall be prepared in writing and directed to the Vice-President, Student Services. Any complaint should be submitted as soon as possible after the event takes place. All complaints shall be presented to the accused student in written form. Along with notice of the complaint the accused student shall be advised of her/his right to be represented throughout the process, including by a Student Advocate.
3. The Vice-President, Student Services, or designate shall conduct an investigation to determine if the complaint has merit and/or if it can be disposed of informally by mutual consent of the parties involved on a basis acceptable to the Vice-President, Student Services, or designate. If an informal

disposition of the complaint results, such disposition shall be final, and there shall be no subsequent proceedings.

4. An agreement that a student will withdraw from the University for a period of time, or not re-register, may be part of an informal disposition of a complaint. In such instances this will not be recorded on the student's academic record, but a "block" on further registration may be entered in the student information system.
5. The Vice-President, Student Services, shall report annually to Senate regarding the number and nature of complaints that are disposed of informally.
6. If the complaint cannot be resolved informally through the procedures described in Section 3, or if in the judgment of the Vice-President, Student Services, it is not appropriate for the complaint to be so resolved, the Vice-President, Student Services, shall refer the complaint to the Senate Discipline Committee for a formal hearing. In determining whether to refer a case to the Senate Discipline Committee, the Vice-President, Student Services, may seek advice from a student Discipline Advisor or other appropriate source.
7. Where there are criminal or civil proceedings pending against the student for conduct related to the complaint, the Vice-President, Student Services, may defer prosecution of the complaint on such terms and conditions as are appropriate in the circumstances (including an interim suspension) until the conclusion of all or part of such proceedings where the circumstances of the case warrant. Conviction of a criminal offence will be considered prima facie evidence of a parallel offence under this Code.
8. Any statements an accused student makes to the Vice-President, Student Services, or designate in the course of an attempt to resolve a complaint informally may not be submitted to the Senate Discipline Committee as evidence.
9. Hearings shall be conducted by the Senate Discipline Committee according to procedures determined by the Committee. In other than exceptional circumstances, a hearing by the Senate Discipline Committee shall occur within 60 calendar days of the referral of a complaint to the Committee.
10. The President or designate shall appoint a person to present the complaint.
11. If a student fails to appear at a hearing, the hearing may proceed, provided that the student has been given adequate notice. Except in the case of a student charged with failing to obey the summons of the Committee or University official, no student may be found to have violated the Student Code solely because the student failed to appear before the Committee. In all cases, the evidence in support of the complaint shall be presented and considered.

## E. Sanctions

1. In each case in which the Senate Discipline Committee determines that a student has violated the Student Code, the sanction(s) shall be determined and imposed by the Committee.
2. The following sanctions may be imposed upon any student found to have violated the Student Code:
  - a) **Warning** – A notice in writing to the student that the student is violating or has violated institutional regulations.
  - b) **Probation** – A written reprimand for violation of specified regulations. Probation is for a designated period of time and includes the probability of more severe disciplinary sanctions if the student is found to be violating any institutional regulation(s) during the probationary period.
  - c) **Loss of Privileges** – Denial of specified privileges for a designated period of time.
  - d) **Restitution** – Compensation for loss, damage or injury. This may take the form of appropriate service and/or monetary or material replacement.
  - e) **Discretionary Sanctions** – Work assignments, service to the University or other such discretionary assignments that are considered appropriate by the Discipline Committee.
  - f) **Conditions** – Conditions may be imposed upon a student's continued attendance.
  - g) **University Suspension** – Suspension of the student from the University for a specified period of time, after which the student is eligible to return. Conditions for readmission may be specified.
  - h) **University Expulsion** – Permanent separation of the student from the University.
3. More than one of the sanctions listed above may be imposed for any single violation.
4. Other than expulsion from the University and suspension for the duration of its effect, disciplinary sanctions shall not be made part of the student's academic record, but shall be kept on file in the Office of the Vice-President, Student Services, for use in the event of further breaches of this Code.

5. No student found guilty of an offence under this Code shall refuse to comply with a sanction or sanctions imposed under the procedures of this Code. Such refusal will constitute grounds for the imposition of additional sanctions.
6. The Committee may direct that a sanction be held in abeyance if a student's registration at the University is interrupted for any reason.

## F. Interim Suspension

In the following circumstances, the President of the University, or a designate, may impose an interim suspension prior to the hearing before the Committee.

1. Interim suspension may be imposed only: (a) to ensure the safety and well-being of members of the University community or preservation of University property; (b) to ensure the student's own physical or emotional safety and well-being; or (c) if the student poses a threat of disruption or of interference with the operations of the University or the activities of its members.
2. During the interim suspension, students may be denied access to specified campus facilities (including classes) and/or any other University activities or privileges for which the student might otherwise be eligible, as the President or the designate may determine to be appropriate.
3. A student who is the subject of an interim suspension may request a hearing before the Senate Discipline Committee on the issue of the interim suspension itself. This request shall be submitted in writing, with reasons, to the Secretary of Senate. The Committee shall hear the matter, including submissions by the President or designate, within ten working days, and shall have the authority to confirm, negate, or alter the terms of the interim suspension.

## Protection of Property

1. Dalhousie University is the owner and/or occupier of the lands and buildings which comprise its campuses. In addition to all other processes set out in this Calendar (including the Code of Student conduct), the University reserves the right to exercise all rights and remedies available to it pursuant to any statute, by-law, regulation, ordinance, order, or otherwise, in order to protect campus property and those who use it.
2. Without limiting the foregoing, Dalhousie University may issue a notice against a student pursuant to the *Protection of Property Act* prohibiting entry to all or part of the campuses or prohibiting a particular activity or activities on all or part of the campuses, where circumstances warrant. Such a notice may be issued either separately or in conjunction with the procedures set out in the Code of Student Conduct. The notice may be in force for the period stated in the notice which will normally be for up to one calendar year. If considered appropriate by the Vice-President, Student Services, a notice may be renewed for further periods.
3. A notice under the *Protection of Property Act* may also be issued by Dalhousie University in relation to the Student Union Building at the request of the Student Union. In the case of urgent or emergency situations, such a notice may be issued immediately. If the Student Union request is to have a prohibition extend beyond seven days for a registered Dalhousie University student, the Student Union shall make a written request to the Vice-President, Student Services, providing detailed reasons for the request and the process followed leading up to the request for the notice, including details of when the student was advised that his or her behaviour or activities were inappropriate and ought to cease, the reasons provided to the student, and whether the student was afforded the opportunity to respond or to rectify behaviors or cease the inappropriate activity.
4. A Dalhousie University student may appeal any notice issued against him or her under the *Protection of Property Act* in writing to the Vice-President, Student Services.

## Senate Appeals Committee

### Jurisdiction of the Senate Appeals Committee

1. The Senate Appeals Committee has appellate jurisdiction.
2. The Senate Appeals Committee is not an investigative body.
3. The Senate Appeals Committee does not receive or determine:
  - a) allegations of discrimination, which are addressed under the Statement on Prohibited Discrimination, or
  - b) requests for accommodation, which are addressed under the Accommodation Policy for Students.
4. The Senate Appeals Committee shall consider the following appeals initiated by students:

- a) Academic appeals from decisions or the refusal to make decisions at the Faculty level regarding academic standards, academic evaluation, academic progression, academic advancement, or the application of other University or Faculty academic regulations.
- b) Discipline appeals from decisions of the Senate Discipline Committee.
5. An appeal may be initiated on the following grounds:
  - a) the decision under appeal was made without jurisdiction,
  - b) a denial of natural justice, or
  - c) unfairness in the application of the relevant regulations regarding academic standards, academic evaluation, academic progression, academic advancement, or other University or Faculty academic regulations.
6. The Senate Appeals Committee shall not consider appeals:
  - a) by students in an academic appeal who have not exhausted the approved appeal processes of the relevant Faculty,
  - b) by students from the decision of a Faculty regarding professional unsuitability, said appeals falling under the jurisdiction of the Senate Steering Committee,
  - c) by a Faculty or faculty members,
  - d) by applicants for admission to University programs, or
  - e) by applicants for scholarships, awards or bursaries.
7. A Hearing Panel of the Senate Appeals Committee may:
  - a) dismiss the appeal,
  - b) allow the decision under appeal to stand, despite possible insubstantial procedural errors,
  - c) in an academic appeal, allow the appeal, with an appropriate remedy within the authority of Senate,
  - d) in a discipline appeal, allow the appeal and:
    - a) quash the decision of the Senate Discipline Committee in its entirety,
    - b) re-hear the matter itself, with the consent of the Appellant and the Faculty, or
    - c) direct a re-hearing on the merits by a newly constituted panel of the Senate Discipline Committee, no members of which were on the hearing panel whose decision was under appeal.
8. In an academic appeal, the Hearing Panel shall not conduct a substantive evaluation of the work of a student, but if unfairness in the evaluation procedure is established, the Panel may direct a re-evaluation of the work to be conducted by qualified persons designated by the Panel.
6. The Appellant is entitled to an oral hearing, in accordance with the principles of natural justice. The Appellant may participate at an oral hearing in person, or at their expense, by way of teleconference, or by such other means approved in advance by the Hearing Panel. The Appellant may waive the right to an oral hearing and choose to proceed solely by written submissions.
7. Each party is responsible for presenting to the Hearing Panel all relevant evidence and submissions for the Panel to consider in the determination of the appeal. Written submissions are required from each party and shall contain:
  - a) copies of all documents relevant to the appeal,
  - b) supporting arguments,
  - c) a list of all witnesses for that party and a brief description of their anticipated evidence, and
  - d) the decision and any remedy being sought.
8. Written submissions shall be made:
  - a) by the Appellant, within 15 calendar days of the Senate Vice-Chair (Student Affairs) requesting the submission, and
  - b) by the Respondent, within 15 calendar days of receiving the Appellant's submission.
 but these timelines may be extended or abridged by the Senate Vice-Chair (Student Affairs), or designate, in appropriate circumstances.
9. The hearing of each appeal shall be in camera. The Chair of the Hearing Panel shall determine procedures for the hearing in a manner that is consistent with the principles of natural justice and these Procedures. In extenuating circumstances, the Chair of the Hearing Panel may decide to proceed with the hearing in the absence of one faculty member of the Hearing Panel.
10. The decision of the Hearing Panel shall be by majority. The Hearing Panel shall deliver written reasons for its decision to the Senate Vice-Chair (Student Affairs). The decision of the Hearing Panel shall be final and binding on the parties, with no further appeal.
11. An audio recording of each oral hearing shall be made. The recording and all correspondence and documentary evidence relating to appeal proceedings shall be kept for a period of three calendar years from the date of the decision of the Hearing Panel, in accordance with the policy of the University Secretariat.

## Appeals Procedures

1. An appeal shall be initiated by submitting a written Notice of Appeal to the Senate Vice-Chair (Student Affairs), or designate, containing:
  - a) the name, Banner identification number and mailing address of the Appellant,
  - b) a copy of the decision giving rise to the appeal,
  - c) a description of the matter under appeal,
  - d) the grounds for the appeal, and
  - e) the remedy sought by the Appellant.
2. An academic appeal alleging the refusal to make a decision at the Faculty level shall be submitted with reasonable promptness. All other appeals shall be submitted within 30 calendar days of the date that the decision under appeal was sent to the student. An extension of time to submit an appeal may be permitted by the Senate Vice-Chair (Academic Administration), or designate, if the Appellant establishes reasonable grounds for granting the extension.
3. The parties to an appeal are the student, as Appellant, and the Faculty, as Respondent. In an academic appeal, the Dean of the applicable Faculty shall designate one or more representatives to respond to the appeal. In a discipline appeal, the Academic Integrity Officer of the applicable Faculty, or designate, shall respond to the appeal.
4. Upon receiving notice of an academic appeal, the Senate Vice-Chair (Student Affairs) shall require a statement from the Dean of the applicable Faculty confirming that all appeal processes of the Faculty have been exhausted.
5. For each appeal, the Chair of the Committee shall constitute a Hearing Panel in a timely manner. The Hearing Panel shall consist of four faculty members and one student member of the Committee, and shall choose its own Chair. None of the faculty members of a Hearing Panel shall be a member of the Faculty from which the appeal originally emanates or belong to the department or program in which the student is or was enrolled. The student member of a Hearing Panel shall not be a member of the class, department, program, School or College from which the appeal emanates. In the event neither student member of the Committee is able to participate on a Hearing Panel due to the provisions of this paragraph, the Dalhousie Student Union shall appoint an ad hoc member to the applicable Hearing Panel.

## Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability Faculty of Health Professions

The Faculty of Health Professions, acting through its Committees on Studies at the School/College and Faculty levels, and in consultation with the Directors and Dean, may suspend or terminate a student from a program if the student is judged to be unsuitable for the profession in which s/he is studying. Because of the nature of the study and practice of the various health professions, which places care givers in a position of special trust, certain impairments or some types of conduct unbecoming to a member of a health profession may be grounds for suspension or dismissal.

The following list includes examples of behaviors that might indicate unsuitability for the various health professions. The nature of these behaviors is such that, should any of them ever be repeated, grievous harm could be caused to clients.

This list should not be considered to be all inclusive:

1. a criminal act (e.g., assault, sexual assault, fraud, and drug trafficking) which according to established Faculty processes was determined to be of such a nature as to bring disrepute to the profession, or by which in the opinion of the Faculty, the student demonstrated poor judgment, lack of integrity or (other) unsuitability for the profession; or evidence that, on the balance of probability, the student had committed such an act;
2. being under the influence of alcohol or drugs while participating in client care, any other professional activity, or any activity related to the practice of the health profession;
3. in accordance with provisions of the Nova Scotia Human Rights Act, the occurrence of a health condition that impairs essential performance required for the health profession;
4. unethical behaviour as specified by the code of ethics/standard of practice of the health profession.

The student's situation will be considered with discretion throughout the investigation of the allegation of unsuitability and these deliberations shall determine whether suspension, dismissal or neither is recommended. The principles of natural justice and due process will be observed in all investigations.



Any member of the University community can bring to the attention of the Director behaviors that are deemed unsuitable. These behaviors will be investigated and allegations heard.

Appeals will follow the appeal procedure for academic matters within the Faculty of Health Professions notwithstanding that the criteria are different. At the University level, appeals will require formation of an *ad hoc* Senate Committee.

Where the rules of a faculty, such as Health Professions, expressly provide that suitability, fitness, or aptitude for the practice of the profession is a requirement for advancement or graduation, or both, and a Faculty determines that a student should be suspended or dismissed or otherwise should not advance or graduate because of unsuitability for the relevant profession, an appeal from the Faculty decision may be made to an ad-hoc appeal committee established by the Senate Steering Committee. The Ad-hoc Appeal Committee shall: (1) hear an appeal by a student from the decision of a Faculty regarding suitability, fitness or aptitude for the practice of the relevant profession when: a) the student has exhausted the approved appeal regulations and procedures of the relevant Faculty; and b) the student alleges that there were irregularities or unfairness in the application of the regulations in question. The Ad-hoc Appeal Committee shall not hear appeals: a) by students on a matter involving a requested exemption from the application of Faculty or University regulations or procedures; b) on substantive aspects of a finding of unsuitability.

## Acceptable Use of Information Technology Resources

### A. Purpose

The purpose of this policy is to outline appropriate use of Information Technology Resources owned, leased, controlled and/or operated by the University.

### B. Application

This policy applies to all individuals who have been granted a NetID and/or Banner account by the University.

This policy does not replace other policies, procedures or guidelines concerning the use of specific IT Resources or data management but rather sets out a minimum standard of acceptable use.

### C. Definitions

In this Policy,

“User Account” means a NetID and/or Banner account issued by the University;

“Information Technology Resources”, or “IT Resources”, means computing equipment, peripherals, facilities, networks or systems owned, leased, controlled or operated by the University, including those purchased through research funds;

“User” means an individual who has been issued a User Account.

### D. Policy

#### 1. Accounts

1.1 Authorized access to IT Resources requires a User Account. User Accounts are non-transferable.

1.2 Users are responsible for any and all uses of their User Account and are expected to take reasonable steps to ensure the security of their User Account.

#### 2. Acceptable Use

2.1 Users shall use IT Resources for authorized purposes only.

2.2 No User shall use IT Resources for any disruptive or unauthorized purpose, or in a manner that violates any law, University regulations, policies or procedures. Examples of unacceptable uses of IT Resources include, but are not limited to, the following:

- 2.2.1 using another person’s User Account, or misrepresenting themselves as another User;
- 2.2.2 disclosing passwords or other access codes assigned to themselves or others;
- 2.2.3 interfering with the normal operation of IT Resources by, among other things, unauthorized network interception, network traffic,

flooding the network with messages, sending chain letters or pyramid solicitations;

- 2.2.4 copying, removing or distributing proprietary software and/or data without authorization;
- 2.2.5 breaching terms and conditions of software licensing agreements;
- 2.2.6 accessing, displaying, transmitting, or otherwise making available information that is discriminatory, obscene, abusive, derogatory, harassing or otherwise objectionable in a university setting;
- 2.2.7 destroying, misplacing, misfiling, or rendering inoperable any stored information on a University administered computer or other information storage, processing or retrieval system;
- 2.2.8 unauthorized use of IT Resources for profit or commercial gain; and
- 2.2.9 attempting to or circumventing security facilities on any system or network.

#### 3. Consequences of Unacceptable Use

- 3.1 If there is reason to suspect that a User has violated this policy, the Assistant Vice-President, Information Technology Services or the Information Security Manager may temporarily revoke or restrict User Account access privileges of any User, pending further investigation by the Information Security Manager
- 3.2 To aid in the investigation of a suspected violation of this policy, the Information Security Manager may examine a User’s User Account information, including, but not limited to, emails, files, and any other material or data connected with the User Account, provided that s/he obtains the Assistant Vice-President Information Technology Services’ prior written approval. If the User in issue works within the Information Technology Services Department, then approval must be obtained from the President
- 3.3 If the investigation concludes that a violation of this policy has occurred, the Assistant Vice-President Information Technology Services may restrict, suspend or revoke the User’s access to any or all of the University’s IT Resources, and may
  - 3.3.1 in the case of students, initiate disciplinary proceedings under the Code of Student Conduct;
  - 3.3.2 in the case of employees, refer the matter for consideration of discipline in accordance with applicable collective agreements or human resource policies, as appropriate.

# Academic Regulations

These regulations apply to all students in the College of Arts and Science and the faculties of Agriculture, Architecture and Planning, Computer Science, Engineering, Health Professions and Management. Students in the faculties of Architecture and Planning, Computer Science, Engineering and Health Professions should also consult the regulations specific to their, faculty, school or college found in the appropriate sections of this calendar.

## PLEASE NOTE:

A student is governed by the academic regulations in place at the time of initial enrolment as long as the degree is completed within the time permitted (see Section 15, page 34), and that subsequent changes in regulations shall apply only if the student so elects. Students applying the old academic regulations should consult the calendar of the appropriate year.

It is the student's responsibility to maintain documentation of registration and subsequent changes. For environmental and financial reasons, the Registrar's Office will rely solely upon computer records and will not maintain paper records of changes to a student's registration.

## 1. Definitions

For definitions of some commonly used terms, see page 3.

Within these regulations, reference to the Student Appeals Committee should be interpreted as the Student Affairs Committee in the Faculty of Arts and Social Sciences, as the Committee on Studies and Appeals in the Faculty of Science, the Undergraduate Committee on Studies in the Faculty of Health Professions, the Undergraduate Academic Appeals Committee in the Faculty of Management, the Academic Appeals Committee in the Faculty of Engineering, the Appeals Committee in the Faculty of Computer Science, the Appeals Committee in the Faculty of Agriculture and the dean's office in the Faculty of Architecture and Planning.

## 2. Class Selection

### 2.1 Numbering of Classes

Classes are numbered to indicate their general level. Those in the 1000 series are introductory degree level classes at Dalhousie. Classes in the 2000, 3000, 4000 series are usually first available to degree level students in the second, third and fourth year respectively. Often these classes have pre requisites. Some departments, schools, colleges have minimum grade requirements for entry into classes above the 1000 level. Such requirements are listed in the calendar entries for the departments, schools, colleges concerned.

Classes listed in the 0100 series are introductory technology level classes at Dalhousie. Classes in the 0200 series offer more detailed exploration of a discipline at the Technology level. 0200 level classes usually have prerequisites or require background knowledge.

Classes listed in the 0001-0099 series are university preparatory classes.

An example of a class identifier is as follows: CHEM 1011

CHEM ..... subject code

1011 ..... class number & level

Classes with numbers below 0100 normally do not carry credit.

### 2.2 Academic Advice

At Dalhousie, academic advice is available to all students prior to registration. To find out who your advisor is, see the advising website ([www.dal.ca/advising](http://www.dal.ca/advising)) and click on "Where to go for advising."

Academic advisors at Dalhousie strive to enable students to make a successful transition to university, to take responsibility for learning, how to set academic, career and personal goals as well as to develop strategies for achieving them. Specifically, academic advisors at Dalhousie help students:

- assess and clarify their interests, academic abilities and life goals;
- develop suitable educational plans consistent with their goals;
- select appropriate classes and complementary educational experiences;
- interpret institutional rules and requirements;
- develop decision-making skills;
- resolve academic problems, conflicts and concerns;
- evaluate their progress towards their goals;
- by referring them as necessary to other resources.

## 3. Workload

### 3.1 Regular Year

#### 3.1.1 College of Arts and Science

Five full credits (30 credit hours) per academic year shall be regarded as constituting a normal workload for a student. Students wishing to increase their workload to six half credits (18 credit hours) in any term and have a sessional GPA greater than 3.00 need to contact the Registrar's Office. Students with a GPA less than 3.00 will need to contact the appropriate Assistant Dean to request permission.

#### 3.1.2 Rowe School of Business

Five full credits (30 credit hours) per academic year shall be regarded as constituting a normal workload for a student. However, winter term of third year and first term of fourth year require BComm Co-op students to take six half credits. For this reason, BComm Co-op students must apply to exceed the normal workload policy (see below).

During the work term, the work assignment shall constitute the normal workload.

Note that the second and third summers are regular academic and workterms for co-op students.

Students wishing to increase their workload to six half credits (18 credit hours) in any term and have a sessional GPA greater than 3.00 need to contact the Registrar's Office. Students with a GPA less than 3.00 will need to contact the Undergraduate Advising Office, Suite 2086, Rowe Building. Such permission will not normally be granted for more than one half credit per term, nor to any student who is in his/her first year of study or who, in the preceding academic term, earned a term GPA of less than 3.00 on a full load of classes. Students are not permitted to take more than six classes in any single academic term.

#### 3.1.3 Faculty of Agriculture

A normal full-time course load for students registered in degree programs in Agriculture is considered to be five classes per semester. A normal full-time course load for students registered in the technology programs is five to six classes per semester, depending on the program. Students wishing to increase their workload to six classes per semester (degree) or seven classes per semester (technology) with a sessional GPA greater than 3.00 should contact the Registrar's Office. Students with a GPA less than 3.00 will need the permission of the faculty advisor and the Assistant Dean - Students.

#### 3.1.4 Faculties of Architecture and Planning, Computer Science, Engineering, Health Professions and Bachelor of Management

For normal workloads, see the individual school or college section of the calendar. Written permission from the school or college Committee on Studies or the Program Administrator for Bachelor of Management is required if the normal workload is to be exceeded. Applications from students who give good reasons for wishing to take an overload will be considered. Such permission will not normally be granted to any student in the first year of study, or to any student who, in the preceding academic term, obtained a grade point average of less than 3.00.

### 3.2 Summer Session

It is recommended that students take only one full credit in each of the May - June or July - August parts of term. Students who want to exceed the recommended number of credits should speak to an academic advisor in their faculty, school or department.

## 4. Registration

1. It is a student's responsibility to register. Registration instructions are available on the web at <http://www.registrar.dal.ca>. Registration for classes is completed using Dal.online. The timetable of classes for 2013-2014 and registration dates are available in March - June.
2. A student is considered registered after selection of classes. Selection of classes is deemed to be an agreement by the student for the payment of all assessed fees.
3. All students are required to obtain ID card or validate an existing ID card at the DalCard Office.
4. Space in class. Enrolment is limited in all classes, and admission does not guarantee that space will be available in any class or section. However, no student in a graduating year may be excluded from a class required by that student to meet degree program requirements because of lack of space. This rule does not apply to elective classes or to preferred sections of classes. Any student in a graduating year who encounters such a situation should immediately consult the department chair, school director or dean.
5. Students may be removed from classes for which they do not have prerequisites. Prerequisite waivers can be granted only by the instructor and must be submitted in writing, with the instructor's signature, to the Registrar's Office.

ID cards are mandatory and must be presented to write an officially scheduled examination. In addition, some services such as the issuance of bursary or scholarship cheques, library privileges, Dalplex and Langille Athletic Centre require the presentation of a valid Dalhousie ID card.

## 5. Class Changes and Withdrawal

### 5.1 Class Changes

It is recognized that some students may wish to make changes in programs already arranged. Class changes will normally be completed during the first two weeks of classes. (For Summer term information, see the Summer School Schedule.) The last dates for adding and deleting classes are published in the schedule of Academic Class Add/Drop Dates, page 1 of this calendar. Class changes should be made on the Web at [www.dal.ca/online](http://www.dal.ca/online)

Please note that dropping or changing classes may affect your eligibility for student aid.

### 5.2 Withdrawal

Non-attendance does not, in itself, constitute withdrawal.

Withdrawals are effective when a student withdraws from classes on the Web at [www.dal.ca/online](http://www.dal.ca/online) or written notification is received at the Registrar's Office.

In the Faculty of Health Professions students who wish to withdraw from the university must obtain written approval from the appropriate school or college and submit the appropriate forms to the Registrar. Students should not discontinue attendance at any class until their withdrawal has been approved.

Students withdrawing voluntarily from the University should consult the individual faculty regulations and the Fees section of this Calendar.

When the work of a student becomes unsatisfactory, or a student's attendance is irregular without sufficient reason, the faculty concerned may require withdrawal from one or more classes, or withdrawal from the Faculty. If a student is required to withdraw from a Faculty such a student may apply to another Faculty. However, in assessing the application, previous performance will be taken into consideration.

## 6. Counting of Credits for Two Dalhousie Programs

### 6.1 Undergraduate Degrees

Students who hold one undergraduate degree from Dalhousie and who wish to gain a second undergraduate degree must fulfil the requirements of the second degree and meet the following stipulations:

1. Only credits that are applicable to the program for the second degree may be counted for credit.
2. Each credit carried forward must have a grade of C or higher.

#### 6.1.1 College of Arts and Science

For the honours degree, a minimum of ten new full credits are to be taken, in accordance with "Degree Requirements" listed elsewhere in this calendar.

For the major (20 credit) BA degree, a minimum of ten new full credits, or the equivalent, must be taken. At least six of these are to be beyond the 1000 level in a new major subject, and at least three of the six must be beyond the 2000 level.

For the major (20 credit) BSc degree, a minimum of 10 new full credits, or the equivalent, must be taken. At least seven of these are to be beyond the 1000 level in a new major subject, and at least four of the seven must be beyond the 2000 level.

For the 15 credit degree, a minimum of 7.5 new credits must be taken. At least four of these are to be beyond the 1000 level in a new area of concentration, and at least two of the four must be beyond the 2000 level. Normally, two credits will be in a subject other than the area of concentration.

Students may obtain a second BSc by completing the above requirements. More than one BA is not awarded.

#### 6.1.2 Management

For the BComm co-op degree a minimum of 10 new full credits (plus three work terms) must be taken, of which at least eight must be in the core area and include the three work term half class credits.

For the BMgmt degree (20 credits), a minimum of 10 new full credits must be taken, and all core requirements met.

#### 6.1.3 Health Professions

For degrees in the Faculty of Health Professions no more than half the credits required for an undergraduate degree may be carried forward from an earlier degree.

#### 6.1.4 Architecture and Planning

For the BEDS degree, a minimum of one third of the credits required in the third and fourth years must be taken while registered in the BEDS program.

#### 6.1.5 Computer Science and Engineering

For the BCSc, BINF, and BEng degrees, a minimum of 10 new credits must be taken.

#### 6.1.6 Transfer Credits from Dental Hygiene

Students who have completed the Diploma in Dental Hygiene at Dalhousie University may receive five credits towards a BA or BSc.

#### 6.1.7 Agriculture

For the BSc (Agr) a minimum of 10 new full credits must be taken.

## 6.2 Counting of Credit for two Dalhousie Diplomas in Technology Programs

Students who hold one technology diploma from Dalhousie and who wish to gain a second technology diploma must fulfill the requirements of the second diploma and meet the following stipulations:

- a. Only credits that are applicable to the program for the second diploma may be counted for credit.
- b. Each credit carried forward must have a grade of C or higher.
- c. At least half of the credits in the second diploma must be new credits.

## 6.3 Counting of Credit from Diploma in Technology to Undergraduate Programs

Students who have completed technology level classes may be eligible to receive degree level credit for such classes, to a maximum of 60 credit hours, evaluated on a class by class basis with a minimum grade of "C". Students who successfully complete a Technical Diploma program in the Faculty of Agriculture and apply to the Bachelor of Science (Agriculture) program will receive a minimum of 30 credit hours toward the degree.

## 6.4 Counting of Credit from College of Continuing Education Classes toward Diploma in Technology Programs

Special permission to complete a limited number of select continuing education classes in the Faculty of Agriculture may be granted to students enrolled in technology diploma programs. These classes must be approved in advance by the Dean or designate. Any student who wishes to explore this option should contact their academic advisor.

## 7. Transfer Students

### 7.1 Transfer Credits - All Faculties

At Dalhousie transfer credits may be granted for classes which are offered by a recognized university or equivalent institution of higher learning and which are judged to be comparable to classes offered at Dalhousie and to be appropriate to a student's academic program at Dalhousie. Transfer credit will be granted for any class in which a final mark of C or higher was obtained.

Transfer credits are subject to the approval of the appropriate department/school/college. For classes not within the purview of a Dalhousie department/school/college, the Registrar's Office will assess transfer credits. Students may appeal, in writing, a negative decision and should justify the inclusion of such classes in the student's proposed program. Copies of calendar descriptions are necessary. Such descriptions are not normally included with university transcripts, and it is the student's responsibility to provide them.

Bachelor of Commerce and Bachelor of Management require class syllabi that includes the length of the class, topics covered, evaluation, textbook used, and required reading.

College of Arts and Science and Faculty of Management classes that are more than 10 years old may not be used to fulfil degree requirements unless a waiver is granted. See Regulation 15, page 34 for information on other faculties.

Transfer credits may be counted towards fulfilment of the concentration, major or honours or Commerce/Management core area requirement of a bachelor's degree with specific advance approval from the appropriate department/school/college at Dalhousie.

To obtain a first degree or diploma, at least half of the credits, including at least half in the field of concentration or major or minor, must normally be taken at Dalhousie.

For the BComm Co-op degree, a minimum of 10 full credits (plus three workterms) must be taken, of which at least eight must be in the core area and include the three workterm half-class credits.

For the BMgmt degree, a maximum of 10 full credits may be counted towards the program. Of these credits only four can be at the 1000 level and three commerce elective.

In the Faculty of Health Professions to obtain a first degree, all or most of the advanced work of the program (i.e., at least half the credits taken in the second and subsequent years of study) must be taken at Dalhousie.

Note: Transfer credits will not be awarded for work completed while a student was academically ineligible.

### 7.2 Architecture and Planning

For the BEDS degree, at least one third of the credits required in the third and fourth years must be taken while registered in the BEDS program at Dalhousie. Classes taken to qualify for admission are not converted to transfer credits unless they are equivalent to BEDS classes. For the Bachelor of Community Design, at least half of the credits must be taken at Dalhousie, including half in the major field.

### 7.3 Computer Science

For the BCS and BINF degrees, at least half of the credits must be taken at Dalhousie. Ten CSCI classes, including six of the third and fourth year CSCI classes, must be taken at Dalhousie.

### 7.4 Engineering

For the BEng degree, at least half of the credits, including the final two study terms with a full class load, must be taken at Dalhousie. For the Bachelor of Applied Science, at least half of the credits for the degree must be taken at Dalhousie, including half in the major field.

### 7.5 Procedures

As soon as the student's record has been assessed the Registrar's Office will inform the student which transfer credits have been awarded. The number of credits which have been approved, and which Dalhousie classes may not be taken, will be included in the letter. If more credits have been approved than can be applied to the student's program, the Registrar's Office will decide the appropriate

transfer credits. Transfer credits awarded on admission appear on a Dalhousie transcript as credits only; no marks are shown.

If by registration time the student has not received written confirmation of transfer credits, the student should check with the Registrar's Office. Information, although incomplete, may be available and may be helpful in choosing Dalhousie classes.

Before selecting classes the student should consult with the appropriate department/school/college to determine how the transfer credits will fit into the student's specific academic program at Dalhousie.

### 7.6 Classes Taken at Other Universities on Letter of Permission

A student who wishes to take classes at other institutions while registered at Dalhousie must obtain approval in advance on a form available online at [www.dal.ca/lop](http://www.dal.ca/lop). A Letter of Permission will be provided if all the following conditions are met:

- the student is in good academic standing, i.e., students who have been academically dismissed or are on probation are not eligible
- the student has not exceeded the allowable number of transfer credits
- the class at the other institution is acceptable for transfer to Dalhousie
- the workload will not exceed Dalhousie's limitations
- the class is not offered at Dalhousie in the term in which the student wishes to take it; or the student has a scheduling conflict; or the class is full; or the student is living outside the local area.

The departments of French, German, Russian Studies, and Spanish and Latin American Studies have special arrangements whereby up to five full credits taken at other universities may be considered as part of a student's program at Dalhousie (see Regulation 13, page 34).

No credit will be given for any classes taken at another university while a student is not in good standing at Dalhousie. See page 3 of this calendar for the definition of "good standing".

## 8. Advanced Standing

Students possessing advanced knowledge of a subject will be encouraged to begin their studies in that subject at a level appropriate to their knowledge, as determined by the department/school/college concerned. However, such students must complete, at Dalhousie, the full number of credits required for the particular credential being sought.

## 9. Part-Time Students

Part-time students are reminded of the university policy that limits programs of study to 10 years from the date of initial registration in the College of Arts & Science, Faculty of Agriculture and the Faculty of Management. See Regulation 15, page 34 for details on duration of study. Note also, regulation 7 above concerning the number of credits that must be completed at Dalhousie.

### 9.1 College of Arts and Science

Part-time students are admitted to most of the programs offered in the College of Arts and Science. Admission requirements and regulations are the same for all students.

### 9.2 Faculty of Management

The Faculty of Management is committed to providing students the opportunity to obtain a degree/diploma through full-time study and part-time study where the latter is feasible.

### 9.3 Faculty of Health Professions

Because of the restriction on the duration of undergraduate studies (see Academic Regulation 15, page 34), the opportunity for part-time study is limited in the majority of programs.

The exceptions are the undergraduate programs in the School of Health and Human Performance, and the School of Social Work.

### 9.4 Faculty of Architecture and Planning

Part-time study is not available in the Bachelor of Environmental Design Studies (BEDS) program. Part-time study is available in the Bachelor of Community Design (BCD) program.

## 9.5 Faculty of Engineering

Because of the restriction on the duration of undergraduate studies, (see Regulation 15, page 34), the opportunity for part-time study is limited.

## 9.6 Faculty of Computer Science

Part-time students may be admitted to the Bachelor of Computer Science and Bachelor of Informatics program.

## 10. Audit of Classes

Students who have been admitted to a faculty may audit many of the classes offered with the permission of the instructor. Registration for an audit is available from the first day of classes until the last day to add a class. Students auditing classes will not be eligible to write examinations in the audited class and will not in any circumstance be granted credit for it. Fees are payable as indicated under Fees. A class may not be changed from credit to audit or from audit to credit status after the last date for dropping classes without 'W' (see the schedule of Academic Class Add/Drop Dates).

## 11. Experimental Classes—College of Arts and Science

Experimental classes, on any subject or combination of subjects to which arts or sciences are relevant, and differing in conception from any of the classes regularly listed in departmental offerings, may be formed on the initiative of students or faculty members.

If formed on the initiative of students, the students concerned shall seek out faculty members to take part in the classes.

Whether formed on the initiative of students or on the initiative of faculty members, the faculty members who wish to take part must obtain the consent of their department.

The class may be offered over the regular session or for one term only.

A class shall be considered to be formed when at least one faculty member and at least eight students have committed themselves to taking part in it for its full length.

Classes may be formed any time before the end of the second week of classes in the fall term to run the regular session or fall term, or any time before the end of the second week of classes in the winter term. If they are formed long enough in advance to be announced in the calendar, they shall be so announced, in a section describing the Experimental Program; if they are formed later, they shall be announced (a) in the *Dalhousie Gazette*, (b) in the *Dal News*, (c) on a central bulletin board set aside for this purpose.

One faculty member taking part in each experimental class shall be designated the rapporteur of the class with responsibility for (a) advising the curriculum committee of the formation and content of the class; (b) obtaining from the curriculum committee a ruling as to what requirement or requirements of distribution, concentration, and credit the class may be accepted as satisfying; (c) reporting to the Registrar on the performance of students in the class; (d) reporting to the curriculum committee, after the class has finished its work, on the subjects treated, the techniques of instruction, and the success of the class as an experiment in pedagogy (judged so far as possible on the basis of objective comparisons with more familiar types of classes).

Students may have five full credit experimental classes (or some equivalent combination of these with half-credit classes) counted as satisfying class for class any of the requirements for the degree, subject to the rulings of the relevant curriculum committee (above) and to the approval of the departments.

## 12. Summer School

### 12.1 Summer Session

Dalhousie currently offers a Summer session of approximately 16 weeks, May - August. See Regulation 3.2, page 31 for permitted work-load.

## 13. International Exchange and Study Abroad Programs

A number of programs enable Dalhousie University students to pursue part of their studies in another country and culture. For details regarding classes taken at other universities, see Regulation 7.6, page 33.

University-wide programs allow students from a variety of academic departments to take part in a study abroad or exchange program. These are coordinated by the Study Abroad and Exchange Advisor in International Student and Exchange Services (ISES), located in the Killam Library, main floor. Department-specific programs are coordinated by an individual within the department/faculty. Additional information is available at: [www.dal.ca/exchange](http://www.dal.ca/exchange).

It is important to note that there are application deadlines for these programs; plan to apply up to a year prior to departure.

## 14. Preparation for Other Programs

Work in the College of Arts and Science is a prerequisite for various programs in other faculties and other institutions. A brief summary of the academic work required for admission to certain programs is given here. Further information may be found later in this calendar, or in the Faculty of Graduate Studies calendar or the Dentistry, Law and Medicine calendar.

**Graduate Studies:** The normal requirement for admission to a graduate program is an honours degree or the equivalent.

**Architecture:** Two years of university study are required for entry to the BEDS program in architecture. For details, see the Architecture section in this calendar.

**Dental Hygiene:** Completion of five full credits at the university level of one regular session's duration in the following: biology, psychology, sociology, a writing class, a one term class in introductory statistics and a one term class in introductory chemistry. For details, see the Dentistry, Law and Medicine calendar.

**Dentistry:** See the Dentistry, Law and Medicine calendar.

**Design:** Students completing one year in the College of Arts and Science at Dalhousie may be admitted into the second year of the four year program leading to the Bachelor of Design degree in communication design at the NSCAD University.

**Law:** At least two years of work leading to one of the degrees of BA, BSc, BComm, BMgmt. For details, please see the Dentistry, Law and Medicine calendar.

**Medicine:** A BA, BSc, BComm, or BMgmt degree. For details, see the Dentistry, Law and Medicine calendar.

**Veterinary Medicine:** The equivalent of twenty one-term classes (two years of university study) are required for admission to the Atlantic Veterinary College of the University of Prince Edward Island. Credits must include two mathematics classes, including statistics; four biology classes, including genetics and microbiology; three chemistry classes including organic chemistry; one physics class; two English classes, including one with an emphasis on writing; three humanities and social sciences classes; five electives from any discipline.

## 15. Duration of Undergraduate Studies

### 15.1 College of Arts and Science/Faculty of Management

Students are normally required to complete their undergraduate studies within 10 years of their first registration, and to comply with the academic regulations in force at the time of that registration. This is also the normal limit for transfer credits. However, the student appeals committee of the appropriate Faculty or School may grant permission to continue studies for a reasonable further period, subject to such conditions as the committee deems appropriate and with the stipulation that the student must meet the degree requirements in force when the extension is granted.

### 15.2 Faculty of Health Professions

With the exception of the undergraduate programs in the School of Health and Human Performance and the School of Social Work to which Regulation 15.1 applies, students in the Faculty of Health Professions are normally required to complete their undergraduate studies within six years of first registration in professional classes.

### 15.3 Faculty of Architecture and Planning

Students in the BEDS program are normally required to complete their degree within four years. Students in the Bachelor of Community Design program must complete their degree within 10 years.

## 15.4 Faculty of Computer Science

Students in the BCS degree program are normally required to complete their degree within eight years.

## 15.5 Faculty of Engineering

### 15.5.1 Diploma of Engineering

Students registered in the Diploma of Engineering program are normally required to complete their requirements in a period of time not exceeding four consecutive calendar years from their first date of registration.

### 15.5.2 Bachelor of Engineering (Upper Division)

Students registered in the upper division component of the BEng program are normally required to complete their degree, including any coop education requirements, in a period of time not exceeding five consecutive calendar years from their first date of registration in Term 5.

### 15.5.3 Food Science

Students in the BASc degree program in Food Science are normally required to complete their degree within eight years of their first registration in the program.

## 15.6 Faculty of Agriculture

Students in the Bachelor of Science (Agriculture) are normally required to complete their undergraduate studies within ten years of their first registration. Students in the Bachelor of Technology and the Diploma in Technology are normally required to complete their studies within six years of their first registration. Students in the Diploma in Engineering are normally required to complete their studies within four years.

This is also the normal limit for transfer credits. However, the student appeals committee may grant permission to continue studies for a reasonable further period, subject to such conditions as the committee deems appropriate and with the stipulation that the student must meet the degree requirements in force when the extension is granted.

## 16. Assessment

### 16.1 Method

Examinations may be oral, written (closed or open book) under supervision, or take-home.

Students will be provided with a class outline by the instructor at the first meeting of the class. In order to complete a class satisfactorily, a student must fulfil all the requirements as set down in the class outline. Changes to the outline which affect assessment components, the weight of individual assessment components, or examination requirements with a value of 10 percent or more must have the approval of at least two-thirds of enrolled students in order to be valid.

When collaboration is included as part of class expectations as in group projects or group assignments, the instructor will provide in the class outline, a statement of the degree of collaboration permitted in the preparation and submission of assignments.

Within four weeks after the beginning of each term, class outlines will be placed on file with the appropriate faculty/school/college.

Students should be aware that certain classes at the University involve required laboratory work where potentially hazardous materials are in use. These may include animals, other biological materials which may include crops and products, tissues, fluids, wastes, but also microorganisms and toxins as well as a wide variety of chemicals. Examples of physical hazards may include noise, radioactive isotopes and non-ionizing radiation (e.g. lasers). Since there are potential health risks associated with the improper handling of such materials resulting in exposure, Dalhousie University requires that, as a condition of taking a class where such materials are to be used, students must read and agree to comply with the instructions for safe handling of such materials. In the event that students do not comply with the instructions for the safe handling of such materials, students will receive no credit for the required laboratory work unless other acceptable alternatives are arranged with the instructor. In many cases, alternate arrangements are not possible and students should consider enrolling in a different class.

### 16.1.1 Academic Accommodation for Students with Learning Disabilities

See Accommodation Policy page 20.

## 16.2 Examinations and Tests

Tests are normally scheduled during class time. Tests scheduled outside class time should not conflict with the regularly scheduled classes. Dates and times must be included in the class syllabus.

Periods of approximately three weeks in the spring and one and one-half weeks in December are set aside for the scheduling of formal written examinations by the Registrar. Instructors wishing to have examinations scheduled by the Registrar for their classes must so inform the Registrar at the beginning of the first week of classes in the fall and winter terms. Instructors may also arrange their own examinations at times and places of their choosing during the formal examination periods, with the understanding that in cases of conflict of examinations for an individual student, the Registrar's examination schedule takes priority.

### 16.2.1 College of Arts and Sciences, Faculties of Agriculture, Architecture and Planning, Computer Science, Engineering, Health Professions and Management

No written tests or examinations, with the exception of project presentations and major papers, worth more than 25% of the final grade, may be held in the last two weeks of a term, without the explicit approval of the appropriate faculty, school or college. No tests may be held between the end of classes and the beginning of the official examination period with the exception of those activity modules and laboratory classes in the Faculty of Health Professions in which special facilities are required.

Students may contact the dean's/director's office of the appropriate faculty/school/college for assistance if they are scheduled for more than two examinations on the same day.

## 16.3 Submission of Grades

On completion of a class, the instructor is required to submit grades to the Registrar. Grades are due seven calendar days after an exam scheduled by the Registrar or 14 days after the last class where there is no final exam scheduled by the Registrar. Such grades are to be based on the instructor's evaluation of the academic performance of the students in the class in question.

## 16.4 Incomplete

Students are expected to complete class work by the prescribed deadlines. Only in special circumstances (e.g., the death of a close relative) may an instructor extend such deadlines. Incomplete work in a class must be completed by:

Fall term classes.....	Feb 1
Winter and regular session (September - April) classes .....	Jun 1
May - June classes .....	Aug 1
May - August classes .....	Oct 1
July - August classes.....	Oct 1

Exceptions to this rule will normally be extended only to classes which require field work during the summer months. At present the list of these classes consists of:

- ENVS 3000, 3001, 4901, 4902;
- HPRO 4495;
- LEIS 4597;
- NURS 2220, 3290 and 4240;
- PHAR 3000;
- SUST 3002, 3950
- Management Internship
- Classes in the Bachelor of Agriculture - International Food Business

Students taking any of these classes in their final year should note that they will not be able to graduate at the spring convocation.

The Registrar's Office is not permitted to accept a late clearance of INC or late grade changes other than those due to errors. If there are exceptional circumstances, a recommendation should be forwarded to the undergraduate

coordinator or the Committee on Studies of the appropriate faculty/school. Unless INC is changed it counts in the GPA and has a grade point value of 0.00 - it is a failing grade.

## 16.5 Supplementals

### *Faculties of Engineering and Health Professions*

In classes where supplementals are available, a student must have achieved a grade of "FM" in the class in which the supplemental is to be written.

On re-examination the grade awarded for the class will be recorded on the student's transcript along with a notation that the grade was earned by supplemental examination. In the Faculty of Health Professions, the highest grade that can be awarded is "C" for professional classes and "D" for other classes. Only the supplemental grade will be included in the grade point average. Supplemental exams will be administered by the participating faculty/school/ college. Students should check directly with their faculty/school/ college for detailed information on the awarding of FM grades and eligibility for supplemental examinations.

### *Rowe School of Business*

All students who fail a core Bachelor of Commerce class will have an opportunity to write a supplemental exam. The following terms and conditions apply to the writing of supplemental exams.

- The class must offer a final examination as part of the normal evaluation process.
- The minimum final grade for the class must be FM to be eligible to write a supplementary exam.
- The supplemental exam is to be written within four calendar weeks following the original final exam at a time determined by the Commerce Program Manager.
- The grade obtained on the supplemental exam replaces the final exam grade in the calculation of the overall mark. However, under no circumstances shall the final grade in the class be raised higher than a D.
- There is a \$25 non-refundable fee per exam.
- Students may write only one supplementary exam at the 2000 level, one at the 3000 level and one at the 4000 level.

If you have questions about supplementary exams, please contact the Undergraduate Academic Advising Office.

## 16.6 Correction of Errors in Recorded Grades

Students must request correction in the calculation or recording of final grades by:

Fall term classes .....	Feb 1
Winter and regular session (September - April) classes.....	Jun 1
May - June classes.....	Aug 1
May - August classes.....	Oct 1
July - August classes .....	Oct 1

## 16.7 Reassessment of a Final Grade

Students who have questions about final grades that are assigned are encouraged to discuss them with the class instructor. In addition, students may consult the chair of the department, director of the school/college, dean of the faculty, the Student Advocate or the Ombud. If their concerns cannot be resolved, students may also use the formal process that follows for the re-assessment of final grades.

Once a final class grade has been submitted to the Registrar, a student who wishes to have a final grade re-assessed should make a written request to the Registrar and pay the requisite fee of \$50 per class. The request must identify the specific component which the student wishes re-assessed and the grounds for the request. Such requests must be made by:

Fall term classes .....	Mar 1
Winter and regular session (September - April) classes.....	Jul 1
May - June classes.....	Sept 1
May - August classes.....	Nov 1
July - August classes .....	Nov 1

When such a request is received, the Registrar will forward it to the dean of the faculty or director of the school/college offering the class. The re-assessment will be conducted according to procedures developed for the purpose by the faculty/

school/college. These should reflect the nature of the academic disciplines and assessment involved, and should provide for a review of the assessment by a qualified person or persons not responsible for the original evaluation.

The student will be notified, by the Registrar's Office, of the outcome of the re-assessment. If the re-assessment results in the assignment of a grade that is different (higher or lower) from the original one, the new grade will replace the original one and the \$50 will be refunded.

Students who wish information about grade re-assessment procedures should contact their faculty/school/college office.

## 16.8 Special Arrangements for Examinations, Tests and Assignments

At the discretion of the instructor, alternate arrangements for examinations, tests or the completion of assignments may be made for students who are ill, or in other exceptional circumstances.

Where illness is involved, a certificate from the student's physician will be required. This certificate should indicate the dates and duration of the illness, when possible should describe the impact it had on the student's ability to fulfil academic requirements, and should include any other information the physician considers relevant and appropriate. To obtain a medical certificate, students who miss examinations, tests or the completion of other assignments should contact the University Health Services or their physician at the time they are ill and should submit a medical certificate to their instructor as soon thereafter as possible. Such certificates will not normally be accepted after a lapse of more than one week from the examination or assignment completion date.

For exceptional circumstances other than illness, appropriate documentation, depending on the situation, will be required.

Requests for alternate arrangements should be made to the instructor in all cases. The deadline for changing a grade of ILL is:

Fall term classes.....	Feb 1
Winter and regular session (September - April) classes.....	Jun 1
May - June classes.....	Aug 1
May - August classes.....	Oct 1
July - August classes.....	Oct 1

Requests to change grades after these deadlines must be submitted in writing to the appeals committee of the appropriate school, college or faculty.

NOTE: Any student whose request for special arrangements has been denied and wishes to appeal, should refer to Appeals, page 39.

## 17. Academic Standing

Students' academic standing is normally assessed at the end of each term.

### 17.1 Grade Scale and Definitions

Grade	Grade Point Value	Definition	
A+	4.30	Excellent	Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
A	4.00		
A-	3.70		
B+	3.30	Good	Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
B	3.00		
B-	2.70		
C+	2.30	Satisfactory	Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefitting from his/her university experience.
C	2.00		
C-	1.70		
D	1.00	Marginal Pass	Evidence of minimally acceptable familiarity with subject matter, critical and analytical skills (except in programs where a minimum grade of 'C' is required).
FM	0.00	Marginal Failure	Available only for Engineering, Health Professions and Commerce.

F	0.00	Inadequate	Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.
INC	0.00	Incomplete	
W	Neutral and no credit obtained	Withdrew after deadline	
ILL	Neutral and no credit obtained	Compassionate reasons, illness	
P	Neutral	Pass	
TR	Neutral	Transfer credit on admission	
Pending	Neutral	Grade not reported	

### 17.1.1 Grade Point Average (GPA)

The Grade Point Average is calculated by summing the values obtained by multiplying the grade points obtained in each class in accordance with the scale in 17.1, by the number of credit hours of each class then dividing that sum by the total credit hours attempted. A Term GPA includes only those classes attempted in a single term and the Cumulative GPA includes all classes attempted while registered in a level of study (see definition, page 3). If a class has been repeated, only the highest grade awarded is included.

### 17.2 Grade Points on Admission

Transfer credits on admission count as credits without grade points, i.e., they are neutral in the calculation of the GPA.

### 17.3 Grade Points on Letter of Permission

Classes taken on a Letter of Permission at a Canadian university, where a letter grade system is used, the appropriate Dalhousie letter grade and corresponding grade points will be assigned. For institutions not using letter grades, the grade will be translated into a Dalhousie grade and corresponding grade points assigned. For institutions outside of Canada, a grade of P (pass) or F (fail), as appropriate, will be recorded.

### 17.4 Repeating Classes for which a Passing Grade has been Awarded

With the permission of the department/school/college concerned, a student may repeat any class for which a passing grade has previously been awarded. The original passing grade will nevertheless remain on the transcript and a second entry will be recorded with the new grade and the notation "repeated class". No additional credit will be given for such a repeated class, and only the highest grade will be included in the calculation of the GPA.

## 18. Good Standing

Students who meet the required GPA are considered to be in good academic standing. In the Faculties of Agriculture, Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Health Professions, Management, and Science a cumulative GPA of 2.00 is required.

## 19. Probation

### 19.1 Faculties of Agriculture, Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering (Lower Division, Years 1 and 2 and Bachelor of Applied Science), Health Professions, Management and Science

**19.1.1** - Students with a cumulative GPA of less than 2.00 and greater than or equal to 1.70 who have completed at least four full credits will be placed on academic probation.

**19.1.2** - Students on probation are allowed to continue to register on probation provided their term GPA is at least 2.00. Students will be returned to "good standing" when they achieve a cumulative GPA of 2.00. Students on probation who do not achieve a term GPA of 2.00 will be academically dismissed.

**19.1.3** - Students require a cumulative GPA of 2.00 to graduate. Therefore, no one will be allowed to graduate while on probation.

## 19.2 Faculty of Engineering (Upper Division, Years 3 and 4)

**19.2.1** - Students in the Bachelor of Engineering (Upper Division) with a cumulative GPA of less than 2.00 and greater than or equal to 1.70 who have completed at least two full credits will be placed on academic probation.

**19.2.2** - Students on probation may continue to register provided their term GPA is at least 2.00. Students will be returned to "good standing" when they achieve a cumulative GPA of 2.00. Students on probation who do not achieve a term GPA of 2.00 will be academically dismissed.

**19.2.3** - Students require a cumulative GPA of 2.00 to graduate. Therefore, no one will be allowed to graduate while on probation.

## 20. Academic Dismissal

### 20.1 Academic Dismissal - Faculties of Agriculture, Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering (Lower Division, Years 1 and 2 and Bachelor of Applied Science), Health Professions, Management and Science

**20.1.1** - Students with a cumulative GPA of less than 1.70 who have completed at least four full credits will be academically dismissed for a 12 month period.

#### NOTES:

Faculty of Architecture and Planning students who have been academically dismissed may apply for readmission. Bachelor of Environmental Design Studies students applying for readmission to the School of Architecture are required to submit a portfolio and further evidence of academic abilities that will be evaluated with the current BEDS admissions. Readmission is not guaranteed. In evaluating applications for readmission to the Bachelor of Community Design program, the School of Planning will consider evidence regarding the preparedness of the student to succeed academically after resuming studies. Students who have been dismissed twice from either program will not be readmitted.

BSW students who fail SLWK 4033 or who fail a repeated class, will be dismissed.

BHSC student who fail a required class for a second time will be dismissed.

DDM students who fail the same class twice will be dismissed.

BEng and DipEng students who fail the same class more than once will be dismissed.

**20.1.2** - Students on probation who do not achieve a term GPA of 2.00 or greater will be academically dismissed for a 12 month period.

**20.1.3** - Students who have been academically dismissed will not be allowed to apply for re-admission for at least 12 months.

**20.1.4** - Students who have been academically dismissed for the first time and have subsequently been re-admitted after an absence of a 12 month period may re-register on probation.

**20.1.5** - Faculty of Arts and Social Science students who have been academically dismissed for the second time will not normally be allowed to apply for re-admission for at least three calendar years. Students may, however, petition the Student Affairs Committee for re-admission after two years provided they have met with the Assistant Dean.

**20.1.6** - Faculty of Health Professions students who have been academically dismissed twice will not be allowed to apply for re-admission.

**20.1.7** - Faculty of Engineering students who have been academically dismissed for a second time will not be readmitted to any engineering program at Dalhousie.

**20.1.8** - Faculty of Computer Science students who have been dismissed and who have been required to withdraw from the university for one term or more may be readmitted to a program in the Faculty of Computer Science only once.



**20.1.9** - Faculty of Science students who have been required to withdraw for a second time must meet with the Assistant Dean (Student Affairs) who may recommend that they reapply for re-admission after two calendar years or who may refer the matter to the Faculty Committee on Studies and Appeals.

**20.1.10** - Faculty of Management Students who have been academically dismissed for the second time will not normally be allowed to apply for re-admission for at least three calendar years. Students may, however, petition the Program Director for re-admission after two years.

**20.1.11** - Faculty of Agriculture students who have been academically dismissed for the second time will not normally be allowed to apply for re-admission for at least three calendar years. Students who have been dismissed for either the first or second time may appeal this decision (see section 24 of the academic calendar). -

## 20.2 Faculty of Engineering (Upper Division, Years 3 and 4)

**20.2.1** - Students with a cumulative GPA of less than 1.70 who have completed at least two full credits will be academically dismissed for an eight month period.

**20.2.2** - Students on probation who do not achieve a term GPA of 2.00 or greater will be academically dismissed for an eight month period.

**20.2.3** - Students who have been academically dismissed will not be allowed to apply for readmission for at least eight months.

**20.2.4** - Students who have been academically dismissed for the first time and have subsequently been re-admitted after an absence of an eight month period, may re-register on probation.

**20.2.5** - Students who fail the same class more than once will be dismissed.

**20.2.6** - Students who have been academically dismissed for a second time will not be readmitted to any engineering program at Dalhousie.

## 20.3 Faculty of Health Professions - Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability

See University Regulations, page 29.

### 20.A Policy on Academic Forgiveness

The Academic Forgiveness policy allows a returning student to apply to the Registrar's Office for academic forgiveness of his/her prior cumulative grade point average. The policy is designed for undergraduate and technology students who have had a period of absence from their academic program and have demonstrated acceptable academic performance following their return. The Academic Forgiveness policy is subject to the following regulations.

#### 20.A.1 Regulations

1. Academic Forgiveness applies only to returning undergraduate and technology students who have had an absence of at least three calendar years from their program or faculty at Dalhousie University.

2. For undergraduate students, a minimum of 24 credit hours of coursework, or for Diploma in Technology students, a minimum of eight credit hours, with a grade point average of at least 2.0, must be completed after returning before a written request for Academic Forgiveness may be submitted to the Registrar's Office.

3. Academic Forgiveness will affect the student's cumulative grade point average in all courses taken prior to the minimum three year absence. Academic Forgiveness applies to all courses taken at all colleges/universities during the forgiveness period, not only selected courses or terms.

4. No punitive grades resulting from an Academic Discipline decision will be forgiven.

5. A student can have the Academic Forgiveness policy applied to his or her academic record only one time.

With the approval of the Registrar or designate, in consultation with the Dean, the student will be granted Academic Forgiveness. The student's transcript will remain a record of all coursework completed and original grades obtained.

Courses taken prior to the three or more year absence will not be used in computing the student's cumulative grade point average, with the exception of punitive grades awarded as the result of an Academic Discipline decision. Students will be eligible to retain credit for courses in which they received a passing grade. However students will be required to complete at least half the credits required for their academic program following Academic Forgiveness before they will be eligible to graduate.

The transcript will have "Academic Forgiveness" noted on it at the end of the last term for which the student receives forgiveness.

## 21. Graduation Standing

Note that students entering the College of Pharmacy in September 1997 or later should consult the College of Pharmacy for information on graduation and scholarship standing.

### 21.1 Minimum Cumulative GPA

**21.1.1** - A minimum cumulative GPA of 2.00 is required for the awarding of an undergraduate degree in the Faculties of Agriculture, Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Health Professions, Management and Science.

A minimum cumulative GPA of 2.0 is required for the awarding of Diploma in Technology in the Faculty of Agriculture.

For details on the required standing for graduation in honours programs, see the Degree Requirements section of this calendar for the Faculties of Arts and Social Sciences, Science and the appropriate faculty/school section for honours programs in other faculties.

### 21.2 Graduation with Distinction

**Faculties of Agriculture, Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Science and Management**

A cumulative GPA of at least 3.70 is required to graduate with distinction. For the purpose of determining whether a student will graduate with distinction, all classes taken while registered in a level of study at Dalhousie, including classes taken on letter of permission, repeated classes, and classes for which non-passing grades were obtained, are included. At least half of the classes must be completed at Dalhousie. The notation "Distinction" will appear on the transcript.

### Faculty of Health Professions

A cumulative GPA of at least 3.70 is required to graduate with Distinction from the Faculty of Health Professions programs. For the purpose of determining whether a student will graduate with distinction: credits that are transferred into a degree program from other Dalhousie programs are included in final GPA calculations, credits from programs outside Dalhousie taken prior to program entry are not used in final GPA calculations. Credits taken on Letters of Permission while in the program are used towards Distinction calculations. At least half of the classes must be completed at Dalhousie. Students who have been on the Dean's List for three of the four years of the BSc Pharmacy program and have a cumulative GPA of at least 3.70 or higher will graduate with Distinction

#### Sexton Distinction List

Students in the Faculties of Architecture and Planning, Computer Science, and Engineering who have achieved a cumulative GPA of 3.85 upon graduation will be placed on the "Sexton Distinction List". The notation "Sexton Distinction" will appear on the transcript.

### 21.3 Scholarship Standing

Please see Awards Section, Scholarship GPA, page 608, for information on the GPA required for scholarship purposes.

## 22. Graduation

In order to graduate students must submit an Intention to Graduate Form to the Registrar's Office by the deadlines indicated:

Graduation Month	Deadline
May	December 1
October	July 1

In cases where requests can be accommodated after the deadline, a \$50 fee will be charged.

## 23. Dean's List

### 23.1 Eligibility

Full-time students will be assessed for eligibility for the Dean's list at the end of each academic term. Students who take a minimum of nine credit hours in a term and achieve a term GPA of 3.70 will be placed on the Dean's list.

Part-time students will be considered once at the end of each academic year. For this purpose, a part-time student is one who takes at least nine credit hours during the academic year but less than nine credit hours in any one term in the academic year. The student must achieve a GPA of 3.70 in every term in the academic year.

#### NOTES:

1. The number of students placed on the Dean's list will normally not exceed 15% of the class.
2. Students registered for full year classes, i.e., classes that run from September through April will be considered for the Dean's list when full year class results are available.
3. The notation "Dean's List" will appear on the transcript.

### 23.2 Sexton Scholar List

Students in the Faculties of Architecture and Planning, Computer Science, and Engineering who have taken a full class load, as determined by the faculty and achieved a term GPA of 3.85 will be placed on the Sexton Scholar List.

## 24. Appeals

### 24.1 Appeals for Students with Learning Disabilities

Appeals by students with learning disabilities will follow the usual procedures of the relevant faculty at Dalhousie University. See Accommodation Policy, page 20.

### 24.2 College of Arts and Science/Faculty of Management

Any students who believe they will suffer undue hardship from the application of any of the academic regulations may appeal for relief to the academic appeals committee of the faculty or school in which they are registered. Students wishing to appeal a decision based on faculty/school regulations must complete an "Application for a Waiver of an Academic Regulation" form, available online at [www.dal.ca/campus\\_life/student\\_services/academic-support/grades-and-student-records/appealing-a-grade.html](http://www.dal.ca/campus_life/student_services/academic-support/grades-and-student-records/appealing-a-grade.html) or in the Registrar's Office. The arguments and expectations of the petitioner must be clearly stated.

An appeal from a student, arising from an academic dismissal from the faculty should be addressed to the Assistant Dean in the Faculty of Arts and Social Sciences, the Committee on Studies and Appeals in the Faculty of Science, Director, Bachelor of Commerce, or to the Director, Bachelor of Management, as appropriate.

### 24.3 Faculty of Agriculture

The following are the only grounds that a student may use for appealing Academic Dismissal:

- medically documented/supported personal illness, injury, or trauma
- documented/supported severe traumatic circumstances in immediate family, such as death or serious illness

Faculty of Agriculture Appeal Process, Procedures and Deadlines

- Students must submit a letter to the Registrar requesting that their status be appealed. The letter should clearly demonstrate that the appeal is in accordance with the Grounds for Appeal described above. Documentation supporting any claims made must also be included. All information contained in the letter will be kept confidential.
- Appeals must be received by 4:30 pm on June 15. The Registrar will meet with members of the Academic Coordination Committee to review the appeal.
- Students will be informed of the decision by letter only. All decisions are final.

### 24.4 Faculty of Architecture and Planning

Appeals should be directed to the School of Architecture office or the School of Planning office.

### 24.5 Faculty of Computer Science

Appeals should be directed to the Administrator, Dean's Office.

### 24.6 Faculty of Engineering

Appeals should be directed to the Academic Appeals Committee.

### 24.7 Faculty of Health Professions

#### *School/College Committee on Undergraduate Student Appeals*

Contact the School/College or Faculty of Health Professions office for the complete terms of reference for the Committee on Undergraduate Student Appeals and the application regarding academic appeals.

#### *Faculty Committee on Undergraduate Student Appeals*

The jurisdiction of the Faculty Committee on Undergraduate Student Appeals is to hear academic appeals beyond the school/college level when the approved appeal regulations and procedures of the respective school/college have been fully exhausted by the student. Decisions of the Faculty Committee may be appealed to the Senate Academic Appeals Committee.

The Committee has no jurisdiction to hear student appeals on a matter involving a requested exemption from the application of faculty or university regulations or procedures except when irregularities or unfairness in the application thereof is alleged. This means that only procedural issues and not the merits of the case, are subject to appeal.

## 25. Changes in Regulations

In general, any change to academic regulations which affects a currently registered student adversely will not apply to that student. Any student suffering undue hardship from application of any of the academic regulations may appeal for relief to the appropriate academic appeals committee as in Section 24.

# College of Continuing Education

Location: 1459 LeMarchant Street, Suite 2201  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2526  
Fax: (902) 494-3662  
Website: <http://collegeofcontinuingdal.ca>

## Dean

Cochrane, A. G., BPE (Acadia), MBA (SMU)

## Professors

Fraser, L., BA (Mt. A), BEd, MEd (Dalhousie), EdD (Toronto)  
Holmes, S., BSA (Acadia), MEd (Dalhousie)  
Novack, J., BComm, MPA (Dalhousie)

## Associate Professors

Doyle-Bedwell, P., BA (Hons), JD, LLM (Dalhousie)  
MacDonald, E. G., BBA, BA (UNB), MPA (Dalhousie)  
MacLean, C., BBA (St. FX), MBA (SMU), CMA

For detailed information, please contact the program area directly.

## I. Introduction

Dalhousie University College of Continuing Education was created in July 2003 in response to growing needs nationally to retool personal and organizational skill sets. The College represents a fusion of talents, expertise, heritage and experience of two long standing successful Continuing Education units at Dalhousie.

The programs and services of the College are offered through a number of locations across campus and across Canada, face-to-face and online.

The mandate of the College is to provide leadership and support for Dalhousie in its efforts to meet the learning needs of the communities it serves. Using the tools of program design and delivery, applied research, innovative teaching and technology, consulting, outreach and increased accessibility, the College partners with constituencies far beyond Dalhousie's traditional student population.

The College is committed to enhancing Dalhousie's contribution to regional and national economic, social and cultural development. It reinforces long-standing partnerships and builds new ones. It works closely with other faculties and units at Dalhousie. It connects with community groups, private sector and professional organizations, governments at all three levels, and a wide range of individuals and voluntary agencies.

Built upon this base, Dalhousie University College of Continuing Education programs are well-known and highly regarded outside the region; they serve regional, national, and international constituencies.

## Programs and Services

The College offers a wide range of specific programs and services, special seminars, and specialized consultant resources. These are focused around a number of key development themes. The College continually evaluates and adapts its efforts in order to respond to the new learning needs of individuals, groups and organizations. What follows is a general description of College programs and themes.

College programs and services are focused in two distinct areas - Pathways and Professional Development.

## II. Pathways

Our Pathways Division provides options for those who may require some additional preparation to ensure their success or those who may not be taking a traditional approach to university admission. Pathways programs are: Transition Year Program (TYP), University Preparation classes (UPrep) and English as a Second Language Programs (ESL). We also offer Mature Student Advising for older students returning to learning.

### 1. Transition Year Program

Address: 1400 LeMarchant Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-3730  
Fax: (902) 494-2135  
Website: <http://collegeofcontinuingdal.ca/Transition Year Program>

TYP has served the post-secondary educational needs of the Mi'kmaq and Black Nova Scotian communities for over 40 years. It is a one-year program designed for African-Canadian and First Nations students who wish to enter university but who do not yet meet standard entrance requirements. TYP was established to redress historical and current educational disadvantages to members of the Mi'kmaq and Black Nova Scotian communities.

TYP prepares its students for full admission to regular Dalhousie BA degree programs at the beginning of their second year on campus. Some students may qualify for entry into other degree programs at Dalhousie. The program introduces students to the university in a variety of ways. Its curriculum, which includes a variable number of non-credit classes, can be adapted to individual needs and objectives. TYP core curriculum includes classes in Black and Native Studies, Strategies for University Learning, English and Mathematics. Students may also choose a regular first-year elective. Classroom instruction is complemented by an orientation session, special lectures, campus tours, workshops and field trips. The program's staff are drawn from the Dalhousie University community as well as the Nova Scotian Black and First Nations communities.

African-Canadian, non-status Aboriginal and Metis students accepted into the program may be eligible for university bursaries during their transition year. If they successfully complete TYP, they may become eligible for continued financial assistance as long as they remain in good academic standing and progress toward a first degree.

The admission criteria are somewhat flexible, and the Admissions Committee considers each case comprehensively on its own merits. The candidate's overall maturity, commitment, and focus are vitally important.

Deadline for receipt of complete applications for the following September: April 30th.

### 2. University Preparation Classes

Address: 1459 LeMarchant Street, Suite 2201  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-2375  
Fax: (902) 494-3662  
Website: <http://collegeofcontinuingdal.ca>

Dalhousie offers a "bridging program" for high school and mature students who are not fully prepared to start university or for those needing assistance in a particular subject area while enrolled in university. The university prep classes offered through the College are designed to help students develop their academic skills in a specific subject, improve their marks, complete a prerequisite to enter a specific university program and build confidence before taking a university credit class.

#### University Preparation Classes Offered

The Writing Skills for Academic Study class prepares students for the writing demands in all university level classes and is accepted by Dalhousie in place of NS English 12. University Prep Chemistry is accepted in place of NS Chemistry 12 and may be used as the prerequisite for all Dalhousie first-year chemistry classes. Math 0010: Pre-Calculus and Math 0011: Pre-Calculus Plus are accepted in place of NS Math 12 Pre-Calculus and enable students to pursue university math and science classes. Math 0009.00: Academic Math is accepted in place of NS Math 12 for entrance to the Faculty of Arts, Bachelor of Commerce, Management and Nursing programs. PHYC 0010.00: University Prep Physics is

accepted by Dalhousie in place of NS Physics 12 and enables students to enter Physics 1100.06 and Physics 1300.06. University Prep Biology is also accepted by Dalhousie as an admission requirement to all undergraduate programs.

### 3. English as a Second Language Programs (ESL)

Address: 1459 LeMarchant Street, Suite 2201  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-6060  
Fax: (902) 494-3662  
Website: <http://dal.ca/esl>

#### *English for Academic Purposes (EAP)*

Dalhousie's English for Academic Purposes (EAP) is designed for students planning to pursue a Bachelor's, Master's or PhD at Dalhousie but who do not meet English language requirements of the university. Dalhousie's intensive EAP courses prepare students for success at an English-speaking university by developing reading, listening, writing, speaking, and academic research skills. The EAP courses consist of 30 hours a week of classroom instruction, and include attendance at lectures, academically-relevant visits to museums and exhibits off and on-campus, and cultural events. Students do not have to be conditionally accepted into a Dalhousie academic program to take Dalhousie's EAP courses.

#### *The Global Assessment Certificate Program™ (GAC)*

The Global Assessment Certificate Program™ is an internationally recognized 9.5 month university preparation program that prepares students for success at an English-speaking university. It is designed for students who have applied and been accepted into a Dalhousie undergraduate program but do not meet the University's English language proficiency requirements. The GAC is more than simply an English course. Students prepare for university by studying a variety of subjects including Mathematics, Science, Computing, Business, and Social Science. Students also develop skills in university research, study strategies and time management. All GAC Students live on-campus in one of Dalhousie's residences, close to classes and other important university resources, such as the library, health care services, international student associations, and Dalhousie student services.

#### *Direct Entry to Dalhousie after the EAP and the GAC*

If students meet the academic requirements for admission and complete EAP Level 2, they are not required to provide additional proof of English proficiency, such as TOEFL or IELTS test.

#### *ESL Course Placement*

All students must be placed at an appropriate level before starting any program. Recent official results from a recognized English language placement test, such as IELTS or TOEFL, can be used for placement in classes. Dalhousie also offers a Placement Test, which applicants can take in lieu of other tests.

### 4. Programs and Services for Full and Part-Time Mature Students

Address: 1459 LeMarchant Street, Suite 2201  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-2375  
Fax: (902) 494-3662  
Website: <http://collegeofcontinuingdal.ca>

Applicants who are Canadian Citizens or permanent residents and 21 years of age or older, by the first day of classes, and are not eligible for admission on the basis of regular admission requirements, may apply for admission as a mature applicant. In order to be eligible, the applicant must either have no university-level study, or have attempted less than one year of transferable coursework. The student cannot have been in full-time university-level study for a minimum period of two years.

Applicants must provide a completed application for admission, high school or post-secondary transcripts, any other relevant documents (e.g. SAT scores, if available), and a letter outlining life and work experiences since last attending full-time study. Applicants will be expected to clearly outline their education goals and motivation to succeed at university study. All factors will be considered in the admission decision.

Admission under this policy is restricted to first year of undergraduate programs. Applicants must have completed grade 12 English (or equivalent) with a

minimum grade of 65. Admission to some programs will require completion of other required subjects.

A student admitted on this basis may be restricted in the number of classes he/she can register in during the first year. Otherwise, these students have the same rights, privileges and responsibilities as other students within their program.

Services include pre-admission counselling and university preparation classes such as Writing Skills for Academic Study, Chemistry, Physics, Biology, Academic Math and Pre-Calculus.

### III. Professional Development

In an era of decreasing resources and increasing demand, effective management development and training is crucial in every sector and organization. The College has long provided programs designed to meet the needs of the business, governmental and voluntary sectors.

For more than 30 years Dalhousie University has been a leading Canadian provider of professional development in Engineering, Management and Technology. Our programs are offered in Halifax and major centres across Canada in a variety of formats including seminars, short classes, and certificate programs. Programs are facilitated by instructors from both industry and academia, many of whom have international consulting and lecturing experience.

We offer unique certificate programs that enable participants to consolidate their knowledge and enhance their experience in specific technical areas. Programs are multiple classes assembled to deliver a comprehensive understanding of the critical topic issues.

Those who do not wish to complete a full certificate program are welcome to register for individual classes. Conversely, those who have taken component classes of a certificate program can submit their application for admission to complete the full certificate.

#### Certificates

- Certificate in Computer Science
- Certificate in Information Systems Management
- Certificate in Software: Management and Development
- Certificate in Information Design and Management for the Web
- Business Analysis Certificate
- Technical Writing Certificate
- Certificate in Quality Management
- Certificate in Project Management (Classroom Delivery)
- Certificate in Advanced ISO 9001:2008 Implementation and Management (AIIM):2008
- Certificate in Leadership Development
- Certificate in Negotiation and Conflict Resolution
- Certificate in Environmental Management
- Certificate in Occupational Health and Safety Management
- Certificate in Ergonomic Program Management
- Canadian Risk Management (CRM) Designation
- Home Inspection Certificate

#### The following are available by distance education:

- Certificate in Business Management
- Certificate in Financial Management
- Certificate in Human Resource Management
- Certificate in Local Government Administration
- Certificate in Local Government Financial Administration
- Certificate in Local Government Human Resource Administration
- Certificate in Local Government Law and Ethics
- National Advanced Certificate in Local Government Administration
- Certificate in Fire Service Leadership
- Certificate in Fire Service Administration
- Certificate in Incident Command
- Police Leadership Certificate
- Advanced Police Leadership Certificate
- Introduction to Employment Services
- Improving Non-Profit Governance
- Certificate in Project Management (Online option)
- Certificate in Process Instrumentation and Control (Online option)

The College also works with Dalhousie and external partners to offer specialized programs. Each of these programs incorporates distance education in their delivery.

The Certified Employee Benefit Specialist (CEBS) Program is offered in partnership with the International Foundation of Employee Benefit Plans in Brookfield, Wisconsin. This professional designation program is aimed at benefit managers, consultants, human resource administrators, investment specialists, professionals, insurance company representatives, trust officers and others interested in employee benefits.

The Credit Union Institute of Canada (CUIC) Management Studies and General Studies Programs are offered in cooperation with CUSOURCE and designed for credit union employees across Canada. The Credit Union Director Achievement (CUDA) Program is offered by CUSOURCE and jointly certified by Dalhousie University.

## IV. Consultation

Based on the expertise of its resident and associated faculty, the College offers consulting in the areas of: Municipal Management, Fire and Police Management; Distance Education Design; Survey Research; Adult Education; Workshops, and Focus Groups; Community Development; and Needs Assessment.

# Entrepreneurial Skills Program

Location: Kenneth C. Rowe Management Building  
Dalhousie University  
6100 University Ave  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-6975  
Email: [Entrepreneurship@dal.ca](mailto:Entrepreneurship@dal.ca)  
Website: <http://entrepreneurship.dal.ca>

## Director

Dr. Ed Leach  
Norman Newman Centre for Entrepreneurship

## Program Co-ordinator

Dr. Ed Leach, School of Business  
Telephone : (902) 494-1816  
Fax: (902) 494-1107  
Email: [ed.leach@dal.ca](mailto:ed.leach@dal.ca)  
ESP Website: [http://entrepreneurship.dal.ca/Programs/Entrepreneurial%20Skills%20Program%20\(ESP\)](http://entrepreneurship.dal.ca/Programs/Entrepreneurial%20Skills%20Program%20(ESP))

Dalhousie's Norman Newman Centre for Entrepreneurship, in collaboration with the Centre for Entrepreneurship Education and Development (CEED), offers a Certificate Program in entrepreneurship – the Entrepreneurial Skills Program (ESP), which is open to all Dalhousie University students.

ESP facilitates the development, growth and success of student-run ventures. Through extracurricular, individualized, experiential learning, you will apply skills learned in the classroom to your own ventures. Students participating in the program develop personal portfolios that illustrate their entrepreneurial capabilities. At Dalhousie there is a particular emphasis on ventures that address larger societal needs in the area of sustainability and social responsibility.

## What is the Entrepreneurial Skills Program (ESP)?

The program is designed to be taken over the length of your time as a student at Dalhousie and therefore shouldn't extend time to degree completion. Successful students will earn a certificate in entrepreneurship in addition to their associated Dalhousie University academic degree in their field of study. The program culminates in the development of a personal portfolio that illustrates a student's entrepreneurial capabilities which is then presented to an accreditation panel. Upon successful completion of ESP, students are accredited and receive a certificate indicating venture readiness.

## What's the cost of participating in ESP?

There is an accreditation fee of \$100 paid to the Norman Newman Centre of Entrepreneurship.

## How do I know if ESP is for me?

Like most things, you probably won't know till you know. What we can say is that ESP typically appeals to those students who have an interest in being the masters of their own destiny. If you've got an idea for a business that you want to start, either during University or after graduation, then you owe it to yourself to get involved with ESP.

## What's in it for me? Why would I want to be part of ESP?

Being part of ESP introduces you to a network of like-minded individuals. It's no surprise that successful people surround themselves with talented, energetic and visionary people. If you want to learn more about being in business for yourself, or if you want to get better at being an entrepreneur, then ESP is a good start.

By enrolling in ESP, you become part of a growing cohort of students that are interested in making a difference in their own lives and the lives of others. Aside from networking and peer-to-peer learning opportunities, you will also have access to training subsidies, business coaching, and skills development opportunities that you can leverage to make yourself a better business owner (or make yourself more marketable as an employee). If you participate in Dr. Leach's classes you may be able to pursue your venturing interests while at the same time fulfilling some of the class assignment requirements.

### **If I sign up, how big a commitment are we talking about?**

Students enrolled in ESP are free to choose their degree of involvement. Many students become heavily involved, attending most, if not all, ESP-sponsored events. Others attend a limited number of events. ESP is flexible enough to accommodate you and your personal, academic and professional schedules.

### **Is Dalhousie the only University that offers ESP?**

No. Mount Saint Vincent University also has an active ESP program. On occasion, Dalhousie and MSVU partner to run ESP-sponsored events that are attended by students from both Universities.

ESP sounds like a lot of work – what if it gets too much for me?

Involvement in ESP is entirely optional. You are free to leave the program at any point. Unlike most academic programs, there's no downside risks (mark-related/academic) associated with dropping ESP.

# College of Sustainability

Location: Mona Campbell Building  
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PO Box 15000  
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Email: sustainability@dal.ca  
Website: http://www.ess.dal.ca

## Deans

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Macy, C., BA (Arch) (California at Berkeley), MArch (MIT)  
Shepherd, M., MSc, PhD (Western)  
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## Administrator

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## I. Introduction

The Dalhousie College of Sustainability provides an interdisciplinary forum for collaborative teaching and learning to address global issues in sustainability. A core of cross-appointed Dalhousie teachers are joined by visiting fellows from within the university and from other institutions and advocacy groups to collaborate with students in energetic, problem-based classes and community-based experiential learning opportunities. Teaching is integrated with a broad range of existing Dalhousie degrees and programs, providing a rigorous disciplinary basis for responsive, issues-oriented study. The continual flow of individual students, teachers and community leaders through the College creates an ongoing exchange of ideas, expertise and passions. The College provides a common place at the centre of the Dalhousie community for the study of sustainability-based problems, and hosts an exciting range of public lectures, seminars and other activities.

The undergraduate programs are the first offerings of the College, and will soon be joined by interdisciplinary research, scholarship and graduate programs.

## II. Degree Programs

The College offers unique transdisciplinary undergraduate programs in Environment, Sustainability and Society (ESS) in the Bachelor of Arts, Bachelor of Community Design, Bachelor of Management, Bachelor of Science, Bachelor of Computer Science, Bachelor of Journalism, and Bachelor of Informatics programs.

- Bachelor of Arts (BA): ESS can be subject A or B with any major/honours subject in the Faculty of Arts and Social Science or the Faculty of Science.
- Bachelor of Science (BSc): ESS can be subject A or B with any major/honours subject in the Faculty of Science. ESS can be subject B in the BSc double major or combined honours with Computer Science.
- Bachelor of Management (BMgmt): ESS can be done as a major.
- Bachelor of Community Design (BCD): ESS can be subject B of a double major or honours, double major.
- Bachelor of Computer Science (BCSc): ESS can be done as a minor.
- Bachelor of Journalism (BJH): ESS can be subject B of the BJH combined honours.
- Bachelor of Informatics (BInf): ESS can be done as a major.

## Program Requirements

### A. BA, BSc, Double Major/Combined Honours, Environment, Sustainability and Society

#### i. Environment, Sustainability and Society as Subject A

##### Subject A: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 (one full credit in fall term)
- SUST 2001.06 (one full credit in winter term)
- SUST 3000.03
- SUST 3502.03
- SUST 4000X/Y.06

##### Double Major:

- three full credits ESS electives (at least two credits outside subject B)
- may be combined with minor(s)

##### Combined Honours:

- two full credits ESS electives (at least one credit outside subject B)
- SUST 4900X/Y.06
- Cumulative GPA in Honours subject classes of 3.3, with no individual grade less than C
- may be combined with minor(s)

### Subject B: Any Major/Honours subject in the Faculties of Arts and Social Sciences or Science

For detailed requirements, please consult the Calendar and Academic Advisor for your allied subject.

#### ii. Environment, Sustainability and Society as Subject B

### Subject A: Any Major/Honours subject in the Faculties of Arts and Social Sciences or Science or Computer Science

For detailed requirements, please consult the Calendar and Academic Advisor for your allied subject.

##### Subject B: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 or SUST 2001.06
- three credits (18 credit hours) from the approved list of ESS elective (at least two credits outside subject A and at least two credits above 2000 level)

## General Degree Requirements

For BA and BSc students SUST 1000.06 satisfies the writing requirement. For BA students either SUST 1000.06 or SUST 1001.06 satisfies the Life and Physical Sciences requirement. For BSc students either SUST 1000.06 or SUST 1001.06 satisfies the Social Science requirement. For general BA/BSc degree requirements, please go to page 131, College of Arts and Science Degree Requirements.

### B. BCD Double Major in Community Design and Sustainability

#### Subject A: Community Design

See School of Planning for specific requirements

**Subject B: Environment, Sustainability and Society**

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 (one full credit in fall term)
- SUST 2001.06 (one full credit in winter term)
- SUST 3000.03
- SUST 3502.03
- SUST 3002.03
- SUST 4000X/Y.06
- One credit (six credit hours) from the approved list of ESS electives, outside PLAN
- SUST 1000.06 satisfies the BCD English writing requirement
- SUST 1000.06 and SUST 1001.06 both satisfy the science requirement and social science requirement for BCD students

**C. BCD Honours, Double Major in Community Design (Environmental Planning or Urban Design and Planning) and Sustainability**

Qualified BCD students may apply for the Honours program in year 3. See School of Planning for details.

**Subject A: Environmental Planning or Urban Design and Planning**

See School of Planning for specific requirements

**Subject B: Environment, Sustainability and Society**

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 (one full credit in fall term)
- SUST 2001.06 (one full credit in winter term)
- SUST 3000.03
- SUST 3502.03
- SUST 1000.06 satisfies the BCD English writing requirement
- SUST 1000.06 and SUST 1001.06 both satisfy the science requirement and social science requirement for BCD students

**D. BMgmt Major in Environment, Sustainability and Society**

See Faculty of Management, Bachelor of Management Degree program for general requirements

- SUST 1000.06 (or SUST 1001.06) \*
- SUST 2000.06 or SUST 2001.06
- Three credits (18 credit hours) from the approved list of ESS electives (at least two credits outside MGMT and at least two credits above 2000 level)

\* SUST 1000 or SUST 1001 satisfy the first year ESS Major requirement, however, SUST 1000 also satisfies the BMgmt writing requirement and can be more easily accommodated in the first year BMgmt schedule. SUST 1001 does not satisfy the BMgmt Writing Requirement.

**E. BCS Minor in Environment, Sustainability and Society**

- SUST 1000.06
- SUST 1001.06
- SUST 2000.06 or 2001.06
- two full credits (12 credit hours) from approved list of ESS electives above the 2000 level
- one full credit (six credit hours) from approved list of ESS electives above the 1000 level

**F. BJH Combined Honours in Journalism and Environment, Sustainability and Society**

See University of Kings College, Bachelor of Journalism program for general requirements.

- SUST 1000.06
- SUST 1001.06
- SUST 2000.06 or SUST 2001.06
- two credits (12 credit hours) from approved list of ESS electives above 2000 level
- one credit (six credit hours) from approved list of ESS electives above 1000 level

**G. BInf Major in Environment, Sustainability and Society**

See Faculty of Computer Science, Bachelor of Informatics program for general requirements.

- SUST 1000.06
- SUST 1001.06

- SUST 2000.06 or SUST 2001.06
- two credits (12 credit hours) from approved list of ESS electives above 2000 level
- one credit (six credit hours) from approved list of ESS electives above 1000 level

**III. Class Descriptions****SUST 1000.06: Introduction to Environment, Sustainability and Society 1.**

An interdisciplinary issues-based approach to environment, sustainability and society drawing on themes from across the faculties, this class introduces students to the conceptual frameworks underlying our understanding of the environment and sustainability. Topics include energy, water, climate change, human population, economics, policy, food, urbanization and equity.

NOTE: One full credit in fall term.

FORMAT: ✍ Writing requirement. Team taught lecture/tutorial

**SUST 1001.06: Introduction to Environment, Sustainability and Society 2.**

Drawing on themes from across the disciplines, diverse conceptual frameworks and analytical methods underlying our understanding of the environment and sustainability are explored. Topics include energy, water, climate change, human population, economics, policy, food, urbanization and equity.

NOTE: One full credit in winter term.

FORMAT: Team taught lecture/tutorial

**SUST 2000.06: Humanity in the Natural World: An Introduction to Problem Based Learning.**

This class introduces students to problem-based learning. Students examine the development of environmental thought, ideas of sustainability, and conflicting positions on humanity's place in the natural world. Issues are explored utilizing multiple perspectives drawn from the University. Students undertake group and individual research and develop critical analytical and quantitative skills.

NOTE: One full credit in fall term.

FORMAT: Team taught lecture/tutorial

PREREQUISITE: SUST 1000.06 and SUST 1001.06 or permission of instructors.

**SUST 2001.06: Environment, Sustainability and Governance: a Global Perspective.**

An examination of the interface between human development and the environment at the global level using a problem based approach. Various perspectives are used to explore the link between environmental issues, poverty, consumption, population, economic globalization, urbanization and international organizations. The class includes group project work.

NOTE: One full credit in winter term.

FORMAT: Team taught lecture/tutorial

PREREQUISITE: SUST 1000.06 and SUST 1001.06 or permission of instructors

**SUST 3000.03: Global Approaches to Environmental Decision-Making.**

Examination of the historic and current context for environmental decision-making in terms of public policy, global and domestic economy, political and business agenda-setting, science, technology and ethics. Alternative solutions that support the goal of long-term ecological integrity are examined. Students are encouraged to critically reflect on their 2nd year experience.

FORMAT: Lecture/tutorial/individual research paper

PREREQUISITE: SUST 2000.06 or SUST 2001.06

**SUST 3002.03: Environment, Sustainability and Society Internship.**

Students gain hands-on experience while addressing a question of personal and academic interest relevant to the field of environment and sustainability. Students work as unpaid interns for 8 hours a week over one semester on an approved project with a sponsoring agency.

NOTE: Instructor approval required for registration. Visit: [ess.dal.ca](http://ess.dal.ca) and click on "Community Engagement."

FORMAT: Internship

PREREQUISITE: SUST 2000.06 or SUST 2001.06. Cumulative GPA 3.0 or better. Must be in ESS program.



### SUST 3502.03: The Campus as a Living Laboratory.

In this course students apply the skills and tools of interdisciplinary research and problem solving to current real-life problems on Dalhousie University's campus. Students use qualitative and quantitative research methods to evaluate and assess indicators of progress toward greater campus sustainability and make recommendations based on their analysis.

FORMAT: Lecture/tutorial/group research project  
PREREQUISITE: SUST 2000.06 or SUST 2001.06  
CROSS-LISTING: ENVS 3502.03

### SUST 3950.03: Topics in Environment Sustainability and Society.

This class addresses current interdisciplinary issues in sustainability with topics varying each semester. The class is taught by Dalhousie faculty, and/or visiting scholars.

PREREQUISITE: This class is restricted to students in the Environment, Sustainability and Society (ESS) program, or with permission from the Academic Advisor in the College of sustainability.

RESTRICTION: Must have third year status or above

### SUST 4000.06: Environment, Sustainability and Society Capstone.

Students work in multidisciplinary groups, with community partner organizations to identify real problems and develop meaningful strategies to address them. Groups work with advisors and experts to create detailed plans of action based on strong research and analysis, working in a studio environment.

NOTE: Available Fall/Winter term (starting 2012)

FORMAT: Seminar/studio/group research project

PREREQUISITE: SUST 3502.03 or permission of instructor

### SUST 4800.03: Environment Sustainability and Society Independent Study.

This Independent study class allows fourth-year students to study a topic in Environment, Sustainability and Society not covered in other classes, or in more depth. Student must first consult with a faculty member to arrange the topic of study. An outline of the Independent Study must be approved by the Associate Director Undergraduate of the College of Sustainability.

PREREQUISITE: This class is restricted to fourth-year students in the Environment, Sustainability and Society (ESS) program, or with permission from the Associate Director Undergraduate of the College of Sustainability.

RESTRICTION: Must have completed 90 credit hours, permission required

### SUST 4900.06: Honours Thesis Project.

Independent research project carried out under the supervision of an approved faculty member or affiliated professional.

FORMAT: Thesis class

PREREQUISITE: SUST 3000.03 and SUST 3502.03 and permission of instructor

### SUST 4950.03: Advanced Topics in Environment Sustainability and Society.

This class addresses current interdisciplinary issues in sustainability with topics varying each semester. The class is taught by Dalhousie faculty, and/or visiting scholars.

PREREQUISITE: This class is restricted to students in the Environment, Sustainability and Society (ESS) program, or with permission from the Academic Advisor in the College of Sustainability.

RESTRICTION: Must have third year status or above

## IV. List of Approved ESS Electives

**Note: It is the student's responsibility to check the class calendar for pre-requisites to these classes.**

### College of Sustainability

SUST 2000.06: Humanity in the Natural World: An Introduction to Problem Based Learning.

SUST 2001.06: Environment, Sustainability and Governance: a Global Perspective.

SUST 3000.03: Global Approaches to Environmental Decision-Making.

SUST 3002.03: Environment, Sustainability and Society Internship.

SUST 3502.03: The Campus as a Living Laboratory.

SUST 3950.03: Topics in Environment Sustainability and Society

SUST 4000X/Y.06: Environment, Sustainability and Society Capstone

SUST 4950.03: Advanced Topics in Environment Sustainability and Society

## Faculty of Architecture and Planning

### Planning

PLAN 2010.03: Sustainable Community Design.

PLAN 3005.03: Cities and the Environment in History

PLAN 3010.03: Urban Ecology

PLAN 3020.03: Landscape Design

PLAN 3040.03: Reading the Suburbs

## Faculty of Arts and Social Sciences

### Canadian Studies

CANA 3020.03: Canadian Cultural Landscapes

### Classics

CLAS 2025.03: Nature, the Human, Community, and the Divine in the Pre-Modern West

### Contemporary Studies

CTMP 3150.03: Nature and History

CTMP 3210.03: Intersecting Bodies, Selves and Environments

CTMP 3220.03: The Aesthetics of Nature

### Early Modern Studies

EMSP 2310.03: Women and Gender in Early Modern Science

EMSP 2330.03: Nature Imagined: Literature and Science in Early Modern Europe

EMSP 2410.03: Imagining the Other: The Portrayal of the Non-European World in Early Modern Culture

EMSP 2440.03: Providence, Progress, Degeneration: Early Modern Ideas of Historical Transformation

EMSP 2450.03: The East is Read: Early Modern Conceptions of Asian Thought

EMSP 3000.06: The Study of Nature in Early Modern Europe

EMSP 3330.03: Science and Religion: Historical Perspectives

EMSP 3340.03: Natural Knowledge, Human Nature, and Power: Francis Bacon and the Renaissance

### German

GERM 3550.03: Germany and the Environment

### History

HIST 3210.03: Canadian Cultural Landscapes

HIST 3370.03: North American Landscapes

HIST 3515.03: Food for thought: History and the Culinary Cultures of the Islamic World

### History of Science and Technology

HSTC 2206.03: Bio-Politics: Human Nature in Contemporary Thought

HSTC 3212.03: The Biosphere: Global Perspectives in Science and Philosophy

### International Development Studies

INTD 2001.03: Introduction to Development 1

INTD 2002.03: Introduction to Development 2

INTD 2045.03: Indian Society: Change and Continuity

INTD 3002.03: Development Practice

INTD 3003.03: Development and Activism: Methods of Organization, Manifestation and Dissent

INTD 3114.03: Environment and Development

INTD 3304.03: Sustainable Development in Cuba

### Italian Studies

ITAL 2200.03: Modern Italian Culture

### Philosophy

PHIL 2081.03: Ethics in the World of Business

PHIL 2475.03: Justice in Global Perspective

PHIL 2480.03: Environmental Ethics

PHIL 2485.03: Technology and the Environment

PHIL 2720.03: The Good Life: Well-being, Meaning and Happiness

PHIL 3476.03: Liberalism and Global Justice

### Political Science

POLI 3585.03: Politics of the Environment

POLI 3587.03: International Political Economy

POLI 3589.03: Politics of the Sea I

POLI 4380.03: Politics of Climate Change

POLI 4590.03: Politics of the Sea II

### **Religious Studies**

RELS 2025.03: Nature, the Human, Community, and the Divine in the Pre-Modern West

### **Sociology and Social Anthropology**

SOSA 2045.03: Indian Society: Change and Continuity  
 SOSA 2101.03: Environment and Culture  
 SOSA 2102.03: Political Ecology  
 SOSA 2111.03: Is there an Atlantic Canada?  
 SOSA 2141.03: Good Jobs, Bad Jobs  
 SOSA 2401.03: Food and Eating Across Cultures  
 SOSA 3005.03: Knowledge, Work and Culture in the Contemporary World  
 SOSA 3005.03: Does Industrial Society Have a Future?  
 SOSA 3060.03: Social Change and Development  
 SOSA 3190.03: Social Movements  
 SOSA 3200.03: Environmental Anthropology  
 SOSA 3211.03: Continuity and Change in Rural Societies

### **Faculty of Engineering**

#### **Environmental Engineering**

ENVE 3000.03 / IDIS 2000.03: Fundamentals of Environmental Engineering

#### **Other Engineering Classes**

ENVE 3412.03: Energy and the Environment  
 ENVE 3432.03: Waste Management  
 ENVE 4421.03: Biogeochemistry and Bioremediation  
 ENVE 4651.03: Solar Energy Utilization  
 CIVL 3451.03: Water Quality and Treatment  
 MINE 4815.03: Mining and the Environment

### **Faculty of Health Professions**

#### **Health and Human Performance**

HAHP 3000.03: Community Development

### **Faculty of Management**

#### **Management**

MGMT 3701.03: Resource/Environmental Problem-Solving 1: Sustainable Ecosystems  
 MGMT 3702.03: Resource/Environmental Problem-Solving 2: Sustainable Industries  
 MGMT 4701.03: Advanced Resource/Environmental Management  
 MGMT 4702.03: Advanced Resource/Environmental Management 2

### **Faculty of Science**

#### **Biology**

BIOL 2060.03: Introductory Ecology  
 BIOL 3060.03: Environmental Ecology  
 BIOL 3061.03: Communities and Ecosystems  
 BIOL 3063.03: Resource Ecology  
 BIOL 3065.03: Conservation Biology  
 BIOL 3069.03: Population Ecology  
 BIOL 3225.03: Plants in the Human Landscape  
 BIOL 3601.03: Nature Conservation  
 BIOL 3615.03: Methods in Ecology  
 BIOL 3620.03: Field Survey of Terrestrial Biodiversity  
 BIOL 3623.03: Applied Coastal Ecology - Field intensive, lab and lecture  
 BIOL 3624.03: Urban Freshwater Systems  
 BIOL 3633.03: Spatial Information and GIS in Ecology  
 BIOL 3666.03: Species Invasions  
 BIOL 4001.03: Environmental Impact Assessment  
 BIOL 4065.03: Sustainability and Global Change  
 BIOL 4160.03: Political Ecology  
 BIOL 4335.03: Marine Impacts  
 BIOL 4369.03: Fisheries Oceanography

#### **Chemistry**

CHEM 2505.03: Environmental Chemistry I  
 CHEM 4203.03: Environmental Chemistry II

#### **Earth Sciences**

ERTH 2410.03: Environmental Issues in Earth Sciences

ERTH 3400.03: Fundamentals of Hydrogeology

ERTH 3402.03: Practical Hydrogeology

ERTH 3410.03: Environmental Geology II

ERTH 3420.03: Geochemistry of Aquatic Environments.

ERTH 3440.03: Geomorphology

ERTH 3450.03: Intro to Landscape Simulation

ERTH 3500.03: Geoscience Information Management

ERTH 3601.03: Global Biogeochemical Cycles

### **Economics**

ECON 2213.03: Emerging Giants: The Economic Rise of China and India

ECON 2216.03: Economics of Global Warming

ECON 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates

ECON 2334.03: Globalization and Economic Development: Current Debates

ECON 2850.06: The Science and Economics of Climate Change

ECON 3310.03: Economic Growth in Historical Perspective

ECON 3317.03: Poverty and Inequality

ECON 3332.03: Resource Economics

ECON 3333.03: Theories of Economic Development

ECON 3335.03: Environmental Economics

### **Environmental Science Program**

ENVS 2100.03: Environmental Informatics

ENVS 2410.03: Environmental Issues in Earth Sciences

ENVS 3200.03: Introduction to Environmental Law

ENVS 3225.03: Plants in the Human Landscape

ENVS 3226.03: Economic Botany, Plants and Civilization

ENVS 3300.03: Contaminated Site Management

ENVS 3301.03: Enterprise Sustainability

ENVS 3400.03: Environment and Human Health

ENVS 3501.03: Environmental Problem Solving I

ENVS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory (cross-listed with SUST 3502)

ENVS 3601.03: Global Biogeochemical Cycles

ENVS 3615.03: Methods in Ecology

ENVS 3624.03: Urban Freshwater Systems

ENVS 3633.03: Spatial Information and GIS in Ecology

ENVS 4001.03: Environmental Impact Assessment

ENVS 4002.03: The Science of Wetland Ecosystems

ENVS 4210.03: Environmental Law II: Natural Law and Unnatural Acts

ENVS 4220.03: International Environmental Law for Scientists

### **Geography**

GEOG 2800.03: Climate Change

GEOG 3001.03: Landscape Ecology

GEOG 3005.03: Cities and the Environment

GEOG 3114.03: Environment and Development

GEOG 3210.03: Canadian Cultural Landscapes

GEOG 3370.03: North American Landscapes

GEOG 3400.03: Human Health and Sustainability

GEOG 3440.03: Geomorphology

GEOG 3500.03: Exploring Geographic Information Systems

GEOG 3633.03: Spatial Information and GIS in Ecology

GEOG 4450.03: Introduction to Landscape Simulation

### **Marine Biology**

MARI 3063.03: Resource Ecology

MARI 4335.03: Environmental Impacts in Marine Ecosystems

MARI 4369.03: Fisheries Oceanography

### **Mathematics**

MATH 3400.03: Classical Game Theory

### **Neuroscience**

NESC 2160.03: Animal Behaviour

### **Oceanography**

OCEA 2000.06: Oceanography

OCEA 2800.03: Climate Change

OCEA 3420.03: Geochemistry of Aquatic Environments

OCEA 4000.03: Oceans and Global Change

OCEA 4160.03: Fisheries Oceanography

OCEA 4335.03: Environmental Impacts in Marine Ecosystems

***Physics and Atmospheric Science***

PHYC 2310.03: Energy and the Environment

PHYC 2800.03: Climate Change

PHYC 2850.06: The Science and Economics of Climate Change

***Psychology***

PSYO 2080.03: Social Psychology

PSYO 2160.03: Animal Behaviour

PSYO 4090.03: Development of Social Behaviour (Seminar)

# Faculty of Agriculture

Location: Dalhousie Agricultural Campus  
PO Box 550  
21 Cox Road  
Truro, NS B2N 5E3  
Telephone: (902) 893-6722  
Toll-Free: 1-888-700-6722  
Fax: (902) 895-5529  
Website: <http://www.dal.ca/faculty/agriculture.html>

## Dean & Campus Principal (Interim)

Cook, H., MSc (NS Agricultural College), PhD (Michigan)  
Telephone: (902) 893-6720

## Associate Dean Academic (Acting)

Caldwell, C. D., BSc (Mount Allison), MSc (Dalhousie), PhD (East Anglia)

## Associate Dean Research

TBA

## Associate Dean External & Strategic Partnerships

Donald, R.G., BSc (Mount Allison), MSc (Guelph), PhD (Saskatchewan)

## Assistant Dean (Students)

Jones, K., BA (Standford), JD (California, Davis)

## Assistant Dean (International)

Pitts, N., BSc (Agr), MSc (McGill), PhD (Guelph), BEd, MAEd (St. F X)

## Administrator

TBA

## I. Introduction

The Faculty of Agriculture was established in 1905 as the Nova Scotia Agricultural College, and merged with Dalhousie University in 2012.

Students in the Faculty of Agriculture study a range of undergraduate degree programs including animal science, agricultural business, agricultural economics, aquaculture, environmental landscape horticulture, environmental science, integrated environmental management, international food business, plant science and pre-veterinary medicine.

The Faculty offers diploma and technical programs in business management, engineering, managed landscapes, plant science and veterinary technology, as well as a variety of certificate programs.

Dalhousie's beautiful Agricultural Campus, located just outside Truro in Bible Hill, Nova Scotia, is home to the Faculty of Agriculture's more than 950 students. The campus is well equipped with a range of student services, residences, food and athletic facilities, clubs and societies, all of which lend to a rich and personable student experience. Hands-on learning in the classroom, the lab and the field, give students practical experience and prepare them well for careers on a local, national and global scale.

## II. Faculty

### Professors Emeriti

Hamilton, P. Y., BSc (Agr.) (McGill), MSc (Maine) - Professor Emeritus  
Langille, W. M., BSc (Acadia), MSc (McGill) - Professor Emeritus  
Robinson, A. R., BSc (Agr.) MSc (McGill), PhD (McGill) - Professor Emeritus  
Sanger, P. M., BA (Melbourne), BEd (Acadia), MA (Victoria) - Professor Emeritus  
Stratton, G. W., BSc (Agr), MSc, PhD (Guelph) - Professor Emeritus

### Professors

Ablett, R., BSc (Reading), MSc (Sterling), PhD (Oregon)  
Anderson, D. M., BSA, MSc (Manitoba), PhD (Saskatchewan)  
Asiedu, S. K., BSc (Agr.), MSc, PhD (McGill)  
Astatkie, T., BSc, MSc (Addis Ababa), PhD (Queen's)  
Benkel, B. F., BSc (Brock), PhD (Ottawa)  
Burton, D. L., BSc (Dalhousie), MSc (Guelph), PhD (Alberta)  
Caldwell, C. D., BSc (Mount Allison), MSc (Dalhousie), PhD (East Anglia)  
Clark, J. S., BA (Guelph), MSc (Saskatchewan), PhD (North Carolina)  
Duston, J., BSc (Bath), PhD (Aston)  
Farid, A. H., BSc, MSc (Shiraz), PhD (Alberta)  
Fredeen, A. H., BSA (Saskatchewan), MSc (Guelph), PhD (California)  
Grant, K. G., BA (Acadia), MA, PhD (Western)  
Gray, A. B., BSc (Bishops), MSc, PhD (McGill)  
Hoyle, J., BA (Univ York), BA (Open Univ., U.K.), BEd (Dalhousie), MSc (Leeds), PhD (Dalhousie)  
Lada, R., R., BSc, MSc (Hort) (TNAU), PhD (Adelaide)  
MacLaren, L. A., BSc (Agr.) (Guelph), MSc (Alberta), PhD (California)  
Nams, V. O., BSc (Toronto), MSc (Alberta), PhD (Victoria)  
Olson, A. R., BA (Augustana), MSc (Wisconsin), PhD (Alberta)  
Patterson, D. L., BSc (Alberta), MSc, PhD (Guelph)  
Percival, D. C., BSc (Agr.), MSc, PhD (Guelph)  
Rouvinen-Watt, K. I., BSc, MSc, PhD (Kuopio)  
Sibley, K. J., BSc (Agr. Eng.), MSc (McGill), PhD (Wageningen)  
Tennessen, T., BA, BSc, MSc, PhD (Alberta)  
Wang-Pruski, G., BSc (Tian Jin), PhD (Alberta)  
Yildiz, I., B (Agr.), MSc (Agr.) (Ankara), MSc, MsME, PhD (Ohio State)

### Associate Professors

Brewster, G. R., BA, MSc, PhD (Western Ontario)  
Cutler, C., BSc (MUN), MPM (Simon Fraser), PhD (Guelph)  
Firth, N. L., BSc (Edinburgh), MS (Purdue), PhD (Cornell)  
France, R., BSc, MSc (Manitoba), PhD (Toronto)  
Georgallas, A., BSc (Queen Elizabeth College), PhD (London)  
Goodwin, C. D., BSc (MSVU), MSc (Guelph)  
Goodyear, S. N., BSc (Agr.) (McGill), MSc, PhD (Guelph)  
Havard, P. L., BSc (Agr.Eng.), MSc, PhD (McGill)  
Lynch, D. H., BSc (Agr.), MSc (Agr.) (McGill), PhD (Guelph)  
Pitts, N. L., BSc (Agr.), MSc (McGill), PhD (Guelph), BEd, MAd.Ed (St. FX)  
Prithiviraj, B., BSc (Agr.) (Annamalai), MSc, PhD (BHU)  
Pruski, K. W., BSc (Warsaw), MSc (Warsaw, Alberta), PhD (Wageningen)  
Russell, S. G., BSc (Agr.) (Guelph), MBA (Saint Mary's), PhD (Bradford)  
Rupasinghe, V., BSc (Peradeniya), MSc (Iowa), PhD (Guelph)  
Sanderson, L. L., BSc (Agr.), MSc (Guelph)  
Stackhouse, J. B., BSc (Agr.Ec.), MSc (Guelph)  
Stiles, D., AB (Marshall), MA, PhD (Maine)  
Yiridoe, E. K., BSc (Univ of Science & Technology, Ghana), MSc, PhD (Guelph)  
Zaman, Q. U., BSc (Agr. Eng.), MSc (Agr. Eng.) (A. Faisalabad) PhD (Newcastle-upon-Tyne)

### Assistant Professors

Barrett, D. M. W., BSc (MUN), PhD (Saskatchewan)  
Cameron, G. A., BA Hon (St. FX), MA (York), PhD (SOAS)  
Corcadden, K., BEng (Bolton), MSc, PhD (Manchester)  
Dukeshire, S. R., BComm, BA Hon (Saint Mary's), MAsC, PhD (Waterloo)  
Dunlop, D. M., BSc (Agr.) (NSAC), MSc (Alberta)  
Hammermeister, A. M., BSc (Agr.) (Saskatchewan), MSc, PhD (Alberta)  
Hart, C. M., BA (Dalhousie), MBA (Saint Mary's)  
He, Q., BSc, MSc (East China Un of Science & Technology), PhD (Western)  
Kevany, K. M., BA (Carleton), MEd, EdD (Toronto)  
Lu, J., BA (China Renmin U), MA (Beijing Normal U), PhD (McGill)  
MacKenzie, T. S., Dip LH (NSAC), BSc, MES (Dalhousie)  
Martynenko, A. I., BSc (Kiev), MSc (Moscow), PhD (Guelph)  
McLean, N. L., BSc (Agr.), MSc (McGill), PhD (Dalhousie)  
Myles, S. A., BA (St. Thomas), MSc (Oxford), PhD (Max Planck)  
Nguyen Quang, T., BSc (Nat. Polytechnic Inst. of Grenoble), MSc (Joseph Fourier), PhD (Montreal, Mediterranean)  
Niu, H., BEng (Xi'an Architecture & Tech), MEng, PhD (Memorial)  
Parsons, L. D., BSc (Agr.) (NSAC), DVM (UPEI)  
Price, G. W., BSc (British Columbia), MSc, PhD (Guelph)

Smith, J. M., BPEd (Dalhousie)  
 Stewart-Clark, S., BSc, MSc, PhD (UPEI)  
 Udenigwe, C. C., BSc Hons (Nigeria), MSc, PhD (Manitoba)

## Adjunct, Research, Honorary Research Professors and Honorary Research Associates

Al-Mughrabi, K. I., BSc, MSc (Jordan), PhD (Dalhousie) - Adjunct  
 Annan, N. T., BSc (Ghana), MSc (Dalhousie), PhD (Ghana, Copenhagen) - Adjunct  
 Belanger, G., BScA (Laval), MSc (Guelph), PhD (Paris-Sud) - Adjunct  
 Benchaar, C., DEA (Toulouse), MSc (Algeria), PhD (Toulouse) - Adjunct  
 Bernier, R. L., BSc, MSc, PhD (Montreal) - Adjunct  
 Boiteau, G., BSc, MSc (Laval), PhD (North Carolina) - Adjunct  
 Boyle, D., BSc (Queen's), MSc (Dalhousie), PhD (Laval) - Adjunct  
 Castell, J. D., BSc, MSc (Dalhousie), PhD (Oregon) - Adjunct  
 Chanasky, D. S., BSc (Agr.) (Alberta), MSc (Agr. Eng.) (Saskatchewan), PhD (Alberta) - Adjunct  
 Chiappe, M., Ing Agr (Uruguay), MA, PhD (Minnesota) - Adjunct  
 Christie, B. R., BSA (Guelph), MSA (Toronto), PhD (Iowa) - Adjunct  
 Coleman, W. K., BA, PhD (Western Ontario) - Honorary Research Associate  
 Critchley, A. T., BSc (Hons), PhD (Portsmouth Polytechnic) - Adjunct  
 Daftarian, P., MSc (Tehran & Ottawa), PhD (Ottawa) - Adjunct  
 Daniels, R. W., BSc (Agr.) (McGill), MS (Michigan State), PhD (Penn State) - Adjunct  
 De Jong, H., BA (Bethel College), MSc (Kansas), PhD (Wisconsin) - Adjunct  
 DeKoeper, D. L., BSc (Agr.) (Guelph), MS, PhD (Minnesota) - Adjunct  
 Drizo, A., BSc (Belgrade), MSc, PhD (Edinburgh) - Adjunct  
 Duynisveld, J. L., BSc (Agr.), MSc (NSAC) - Adjunct  
 El-Mowafi, A., BVM, MSc, PhD (Zagazig) - Adjunct  
 Embree, C., BSc (Guelph), MSc (British Columbia) - Adjunct  
 Falk, K. C., BSc, MSc (Agr.) (Guelph), PhD (Saskatchewan) - Adjunct  
 Garbary, D. J., PhD (Liverpool) - Adjunct  
 Gaul, S. O., BSc (MSVU), MSc (Dalhousie), PhD (Guelph) - Adjunct  
 Hardman, J. M., BSc (Dalhousie), MSc (London, UK), PhD (Simon Fraser) - Adjunct  
 Hillier, N. K., BSc, PhD (MUN) - Adjunct  
 Ju, H. Y., BSc (Agronomy) (Seoul), MSc, PhD (McGill) - Adjunct  
 Kemp, R., BSc, PhD (Guelph) - Adjunct  
 Lall, S., BSc (Allahabad), MSc, PhD (Guelph) - Adjunct  
 MacLeod, J., BSc (Agr.) (Macdonald), MSc (McGill), PhD (Cornell) - Adjunct  
 MacRae, K. B., BEd (British Columbia), MSc, PhD (Oregon) - Adjunct  
 Mikitzel, L. J., BSc (Agr.), MSc (Guelph), PhD (Alberta) - Adjunct  
 Miller, M., BSc (Agr.), MSc (NSAC), PhD (Guelph) - Adjunct  
 Murphy, A., BSc (MUN), MSc (Guelph) - Honorary Research Associate  
 Murray, G. B., BSc (Agr.) (NSAC), MSc (McGill), MBA (Executive) (Saint Mary's), PhD (Dalhousie) - Adjunct  
 Norrie, J. P., BSc (Mount Allison), MSc (Dalhousie), PhD (Laval) - Adjunct  
 Papadopoulos, Y., BSc (Agr.), MSc, PhD (Guelph), MBA (Saint Mary's) - Adjunct  
 Peters, R. D., BSc (Guelph), BEd (Western), MSc, PhD (Guelph) - Adjunct  
 Pink, D., BSc (St. FX), PhD (British Columbia) - Adjunct  
 Platt, H. W., BSc (Manitoba), PhD (Saskatchewan) - Adjunct  
 Rise, M. L., BSc (Whitworth), MSc (Boston), PhD (Victoria) - Adjunct  
 Robinson, A. R., BSc (Agr.), MSc, PhD (McGill) - Adjunct  
 Robinson, M. C., BSc (Acadia), MSc, PhD (Simon Fraser) - Adjunct  
 Rodd, V., BSc (UPEI), MSc (Manitoba) - Affiliated Researcher  
 Ross, N. W., BSc, PhD (McGill) - Adjunct  
 Schumann, A. W., BSc, MSc (Natal), PhD (Georgia) - Adjunct  
 Shahidi, F., PhD (McGill) - Adjunct  
 Silversides, F. G., BSA (Saskatchewan), MS (Massachusetts), PhD (Saskatchewan) - Adjunct  
 Small, J. A., BSc (Agr.) (Guelph), MSc (Manitoba), PhD (British Columbia) - Adjunct  
 Stratton, G. W., BSc (Agr.), MSc, PhD (Guelph) - Adjunct  
 Sturz, A. V., BSc (Newcastle-upon-Tyne), PhD (Manchester) - Adjunct  
 Tai, G. C. C., BSc, MSc (Taiwan), PhD (Saskatchewan) - Adjunct  
 Thomas, W. G., BSc (British Columbia), MSc (Dalhousie) - Adjunct  
 Wang, Y., BSc, MSc (Gansu), PhD (Alberta) - Adjunct  
 Warman, P. R., BSc (Agr.) (Rutgers), MSc, PhD (Guelph) - Adjunct  
 Wright, J. M., BSc (Mount Allison), PhD (Memorial) - Honorary Research Associate

## Teaching Staff and Sessional Instructors

Arnfast, E., BSc (Agr.) (NSAC), CGA  
 Beyeler, G. A., BSc (Agr.), MSc (NSAC)  
 Brodie, M.  
 Chapman, R.  
 Ferguson, O. W., BA, BEd (Acadia), MA (St. Mary's), PhD (Southern Mississippi)  
 Fernández, A. S., DVM (UNCPCBA, Argentina), PhD (RVAU, Denmark)  
 Fraser, G. R., BSc (Agr.), MSc (NSAC)  
 Kernohan, A., SB (MIT), MSc (U of T), MA (Dalhousie), PhD (U of T)  
 Kilyanek, S.  
 Jack, L., BSc (Agr.) (NSAC), AGDDE (T) (Athabasca)  
 Jans, D. C., BSc (Agr.) (UBC), PhD (Alberta)  
 Kilyanek, S. L., BSc (Michigan State)  
 Landry, T., BSc, BA, MA, BSW, MSW (Dalhousie)  
 MacCormick, P., BA, MEd, MBA (Dalhousie), CMA  
 MacLeod, M., BA (Dalhousie), MA (Toronto), PhD (Ottawa)  
 MacLeod, T. M., AHT Dip (NSAC)  
 Masters, T. L. M., BSc (Agr.) (NSAC), DVM (UPEI)  
 Medina, M., BSc (Costa Rica), MSc (Dalhousie)  
 Morrigan, J., MSc (Dalhousie)  
 Morton, J., BSc (Agr.), MSc (Guelph)  
 Moskovits, R.  
 Moxom, D., BSc (Agr.) (NSAC)  
 Murray, K., AHT Dip (NSAC)  
 MacIntosh, L., Animal Care Tech Dip (St. Lawrence College)  
 MacKay, M., AHT Dip (NSAC)  
 Nelson, P. A., BSc (McMaster), MSc (Guelph), PhD (Clemson)  
 Nicholson, F., BSc (Agr.) (Guelph)  
 Pelkey-Field, D., BSc (Agr.) (NSAC)  
 Rathgeber, B., BSc (Agr.) (Saskatchewan), MSc (Arkansas), Ph.D. Saskatchewan  
 Ramsay, W. B., DVM (Guelph)  
 Sani-Berry, M. C., BA (MSVU), PS Dip (NSAC)  
 Semple, T., DVM (Guelph)  
 Spears, C., AS Dip, AHT Dip (NSAC)

## III. Degree Requirements

### A. Bachelor of Agriculture - International Food Business \*

*\* a dual degree awarded with a Bachelor of Administration (Honours) from CAH Vilemtum University in The Netherlands*

Dalhousie University and CAH Vilemtum University in the Netherlands have partnered to offer a new, four-year, dual-degree program. Graduates will be awarded a Bachelor of Agriculture in International Food Business from Dalhousie University and a Bachelor of Administration in International Food Business (Honours) from CAH Vilemtum.

This exciting new dual degree program offers a year of international study and two work terms: one in North America and one in Europe. In year one, North American students will study at Dalhousie University and European students will study at CAH. Year two is offered in The Netherlands when both groups of students will study together. This continues in year three when both groups of students study on Dalhousie's Agricultural Campus in Truro, NS. Students complete year four at their home university.

This four-year degree emphasizes its international focus by beginning with a one-week orientation in Iceland, where European and North American students get to know one another while exploring the Icelandic food industry. This unique program will appeal to students who enjoy studying independently, have an interest in business and are keen to explore the world.

### Program Design and Delivery

The Bachelor of Agriculture in International Food Business is a modularized, competency-based program of study. The academic courses are integrated into a series of 10 modules throughout the first three years of the program. The module titles are listed below

Year 1 Theme: International Business Essentials	
Semester 1	Semester 2
Module 1. Acquiring Knowledge of International Food Systems	Module 3. Analyzing Food Value Chains
Module 2. Analyzing Business Processes	Module 4. Developing External Communication Strategies

Year 2 Theme: Innovation and Marketing	
Semester 1	Semester 2
Module 5. Innovating and Entrepreneurship in Food Business	Module 7. Performing Market Research
Module 6. Marketing Management	European Placement

Year 3 Theme: Leadership, Finances and Business Planning	
Semester 1	Semester 2
Module 8. Performing as a Leader and Manager	Module 10. Developing Business Plans
Module 9. Analyzing and Realizing Financial and Managerial Information and Forecasts	North American Placement

Students who complete all modules plus year 4 will receive credit in the following

courses to meet the core requirements of the program:  
 ECOA 1002: Introduction to Economic Reasoning  
 EGLA 1003: Business Writing  
 FOOD 1000: Food Safety and Quality Assurance  
 INFB 1000: International Food Policy and Environment  
 INFB 1001: International Food Business Project I  
 INFB 1002: International Food Business Project II  
 INFB 1003: Introductory Second Language  
 MGTA 1001: Introduction to International Business  
 MGTA 1002: Food Supply Chain Management  
 MGTA 1003: International Business Communications  
 MGTA 2002: Marketing  
 MGTA 2003: Financial Management  
 MGTA 2004: Financial Accounting I  
 MGTA 2006: Advertising and Promotion  
 MGTA 2010: Innovation Management  
 MGTA 2011: International Marketing Research  
 MGTA 2012: Fundamentals of Management  
 MGTA 2013: Business Planning  
 MGTA 3000: Management Accounting  
 MGTA 3003: European Placement I  
 MGTA 3004: European Placement II  
 MGTA 3005: New Product Development  
 MGTA 3006: Retail Management  
 MGTA 3007: Quality Management  
 MGTA 3008: Intermediate Marketing Research  
 MGTA 4001: Advanced Entrepreneurship  
 MGTA 4002: North American Placement I  
 MGTA 4003: North American Placement II  
 MTHA 1002: Business Math

RESM 4004: Research Methods for Economics and Business  
 RESM 4005: Project-Seminar for Economics and Business

nine electives (including two, four course specializations)

#### **Year 1 Semester I**

ECOA 1002: Introduction to Economic Reasoning  
 EGLA 1003: Business Writing  
 INFB 1000: International Food Policy and Environment  
 INFB 1001: International Food Business Project I  
 MGTA 1001: Introduction to International Business

#### **Semester II**

INFB 1002: International Food Business Project II  
 FOOD 1000: Food Safety and Quality Assurance  
 MGTA 1002: Food Supply Chain Management  
 MGTA 1003: International Business Communications  
 MGTA 2006: Advertising and Promotion

#### **Year 2 Semester III**

MGTA 2002: Marketing  
 MGTA 2010: Innovation Management  
 MGTA 3005: New Product Development  
 MGTA 3006: Retail Management  
 MTHA 1002: Business Math

#### **Semester IV**

INFB 1003: Introductory Second Language  
 MGTA 2011: International Marketing Research  
 MGTA 3003: European Placement I  
 MGTA 3004: European Placement II  
 MGTA 3008: Intermediate Marketing Research

#### **Year 3 Semester V**

MGTA 2003: Financial Management  
 MGTA 2004: Financial Accounting  
 MGTA 2012: Fundamentals of Management  
 MGTA 2013: Business Planning  
 MGTA 3000: Management Accounting

#### **Semester VI**

MGTA 3007: Quality Management  
 MGTA 4001: Advanced Entrepreneurship  
 MGTA 4002: North American Placement I  
 MGTA 4003: North American Placement II  
 Elective

#### **Year 4 Semester VII**

RESM 4004: Research Methods for Economics and Business  
 Elective (First Specialization)  
 Elective (First Specialization)  
 Elective (Second Specialization)  
 Elective (Second Specialization)

#### **Semester VIII**

RESM 4005: Project-Seminar for Economics and Business  
 Elective (First Specialization)  
 Elective (First Specialization)  
 Elective (Second Specialization)  
 Elective (Second Specialization)

In year four, students must take two, four course specializations. The following is a list of Specializations students can choose from; guided by the International Food Business Coordinator:

- Agronomy Studies
- Animal Studies Development Studies
- Environmental Studies
- Economic Studies
- Horticultural Studies
- Management Studies
- Organic Agricultural Studies
- Quantitative Methods Studies
- other

## B. Bachelor of Science (Agriculture)

Dalhousie offers a four-year program leading to a degree in Agricultural Science. Students in the Agricultural Sciences who successfully complete the prescribed courses with a cumulative GPA at or above the minimum required (2.0), and who are in good standing, will be granted the degree of Bachelor of Science in Agriculture, BSc (Agr). Graduates of this program meet the formal educational requirements for Professional Agrologists in the provincial Institutes of Agrologists of the Atlantic Provinces.

Normally, students select a major during their first year and continue in that field of study until they graduate.

- 120 Credit Hours
- 36 credit hours of required courses as outlined below
- six credit hours of approved Humanities/Social Sciences electives from the list below, of which three credit hours must be at the 3000 level or above.
- 18 credit hours at the 3000 level or above
- 36 credit hours of approved agricultural courses from the list below
- Specific Major Requirements as listed below

### Major Subjects

Agricultural Business, Agricultural Economics, Animal Science, Aquaculture, Environmental Sciences, Integrated Environmental Management, Plant Science. See specific degree requirements listed below.

### Double Major

Students wishing to complete a double major must satisfy all of the degree requirements for the BSc (Agr) and the program specific requirements of each major with the exception of the research methods courses. One set of research methods courses should be completed and the research project should cover both majors. Students must complete a minimum of 24 credit hours in the second major that are not included in the first major. A degree with a second major may take longer to complete than a single degree major due to scheduling challenges.

### Required Classes for All Majors

#### 1000 Level

AGRI 1000: Agricultural Ecosystems  
 BIOA 1002: Biology I  
 BIOA 1003: Biology II  
 CHMA 1000: General Chemistry I  
 CHMA 1001: General Chemistry II  
 ECOA 1000: Principles of Microeconomics  
 MTHA 1000: Introductory Calculus I  
 MTHA 1001: Introductory Calculus II

One of:

EGLA 1000: Composition  
 EGLA 1001: The Novel or  
 EGLA 1002: Nature in English & American Literature

#### 2000 Level

STAA 2000: Introduction to Statistics

#### 4000 Level

RESM 4XXX: Project Seminar I  
 RESM 4XXX: Project Seminar II

### Approved Agricultural Courses

- AGRI 1000, 1001, 2000, 3001, 4000
- AGRN 2000, 2001, 2002, 2008, 4000
- ANSC 2001, 2002, 2004, 2005, 2007, 3000, 3001, 3002, 3003, 3004, 3005, 4000, 4003, 4004, 4005, 4006, 4007
- APSC 2000, 2004, 2012, 2013, 3001, 3013, 4001, 4006
- BIOA 2005, 3000, 3002, 3004, 3005, 3008, 4000
- CHMA 2003, 2004, 3002, 3007, 3008
- ECOA 1000, 2002, 2003, 2004, 3002, 3003, 3004, 4001, 4002, 4004
- ENGN 3021
- ENVA 2000, 2001, 2002, 3002, 3004, 4000, 4002, 4003, 4005, 4006, 4008
- FOOD 3000, 3001, 4000
- GENE 4000
- HORT 2000, 2001, 2004, 2006, 2007, 2009, 2010, 4001, 4002
- IAGR 2003, 3000, 3001, 4000
- MGTA 2003, 4001
- MCRA 3000, 4000

- NUTR 3000, 3001, 3002
- PLSC 1000, 2000, 2001, 3000, 4000, 4002, 4003, 4004
- RESM 4001, 4002, 4003, 4004, 4005, 4006, 4007, 4008, 4009, 4010, 4011
- SOIL 2000, 3000, 3001, 4001
- SPEC 2000, 2001, 4001, 4002, 4003, 4004, 4005, 4006, 4007, 4008, 4010, 4011, 4012, 4014

### Approved Humanities/Social Sciences Electives

- ARTS 2000
- CMMT 3000
- EGLA 1000, 1001, 1002, 1005, 3000
- EXTE 3001
- FRNA 1000, 1001
- GEOA 1000, 3000
- HISA 1000, 1001, 3000
- HORT 3008
- IAGR 2002, 2003
- PHLA 3000
- POLS 1000, 1001
- PSYC 1000, 1001
- RURS 3000
- SOCI 1000, 1001, 3000
- SPNA 1000, 1001
- SPEC 4009

## 1. BSc (Agr) - Agricultural Business

### Required Courses & Suggested Schedule

#### Year II: Semester III

ECOA 2000: Intermediate Microeconomics  
 ECOA 3000: Mathematical Economics  
 MGTA 2002: Marketing  
 MGTA 2004: Financial Accounting  
 three credit hours of electives

#### Year II: Semester IV

ECOA 1001: Principles of Macroeconomics  
 MGTA 3001: Intermediate Marketing or  
 MGTA 3002: Consumer Behaviour  
 STAA 2000: Introduction to Statistics  
 six credit hours of electives

#### Year III: Semester V

ECOA 3006: Statistics for Economics & Business  
 MGTA 2003: Financial Management  
 MGTA 3000: Management Accounting  
 six credit hours of electives

#### Year III: Semester VI

ECOA 3002: Agricultural & Food Policy  
 ECOA 3003: Mathematical Programming  
 MGTA 4001 Advanced Entrepreneurship  
 six credit hours of electives

#### Year IV: Semester VII

MGTA 4000 Strategic Management  
 RESM 4004: Research Methods for Economics & Business  
 nine credit hours of electives

#### Year IV: Semester VIII

RESM 4005: Project-Seminar for Economics & Business  
 12 credit hours of electives

Electives must include:

- six credit hours of Humanities/Social Science courses which cannot be from the ECOA destination and three credit hours must be at the 3000 level or above.
- 12 credit hours of approved Agricultural Courses.

## 2. BSc (Agr) - Agricultural Economics

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

ECO A 2000: Intermediate Microeconomics  
 ECO A 2003: Agricultural Future and Options  
 ECO A 3000: Mathematical Economics  
 MGTA 2002: Marketing  
 MGTA 2004: Financial Accounting

#### *Year II: Semester IV*

ECO A 1001: Principles of Macroeconomics  
 ECON 2004: Issues in Environmental Economics  
 STAA 2000: Introduction to Statistics  
 six credit hours of electives

#### *Year III: Semester V*

ECO A 2001: Intermediate Macroeconomics  
 ECO A 3006: Statistics for Economics and Business  
 ECO A 4004: Trade  
 MGTA 2003: Financial Management  
 three credit hours of electives

#### *Year III: Semester VI*

ECO A 3002: Agricultural & Food Policy  
 ECO A 3003: Mathematical Programming  
 ECO A 3004: Agricultural Markets & Prices  
 six credit hours of electives

#### *Year IV: Semester VII*

RESM 4004: Research Methods for Economics & Business  
 12 credit hours of electives

#### *Year IV: Semester VIII*

RESM 4005: Project-Seminar for Economics & Business  
 12 credit hours of electives

Electives must include:

- six credit hours of Humanities/Social Science courses which cannot be from the ECO A destination and three credit hours must be at the 3000 level or above.
- three credit hours of approved Agricultural Courses.

## 3. BSc (Agr) - Animal Science

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

ANSC 2005: Animal Agriculture  
 CHMA 2000: Organic Chemistry I  
 GENE 2000: Genetics  
 PHYS\*  
 STAT 2000\*: Introduction to Statistics  
 three credit hours of electives

#### *Year II: Semester IV*

BIO A 2006: Mammalian Physiology  
 CHMA: 3001: Biochemistry  
 PHYS\*  
 STAT 2000\*: Introduction to Statistics  
 six credit hours of electives

#### *Year III: Semester V*

BIO A 3008: Growth, Reproduction & Lactation  
 NUTR 3000: Animal Nutrition  
 nine credit hours of electives

#### *Year III: Semester VI*

ANSC 3000: Animal Breeding  
 NUTR 3001: Applied Animal Nutrition  
 nine credit hours of electives

#### *Year IV: Semester VII*

RESM 4002: Animal Science Project-Seminar I  
 12 credit hours of electives

#### *Year IV: Semester VIII*

RESM 4003: Animal Science Project-Seminar II  
 12 credit hours of electives

\* Physics - Students must complete the combination of PHYS 1000 or PHYS 1002 and STAA 2000 in year II. If PHYS 1000/1002 is done in semester I, then STAA 2000 will be done in semester II. If STAA is done in semester I, then PHYS 1000 or 1002 will be done in semester II.

Electives must include:

- six credit hours of Humanities/Social Science courses of which three credit hours must be at the 3000 level or above.
- nine credit hours of approved Agricultural Courses.
- 12 credit hours of approved Animal Science electives from the following list:
  - ANSC 2001, 2002, 2003, 2004, 2005, 2006, 2007, 3000, 3001, 3002, 3003, 3004, 3005, 3006, 4000, 4003, 4004, 4005, 4006, 4007, 4008, 4009
  - AQUA 2000, 3000, 4000, 4001
  - BIO A 2006, 3004, 3005, 3006, 3008, 4000, 4001, 4003
  - ENGN 3007
  - GENE 3001, 4000
  - NUTR 3000, 3001, 3002, 4000
  - SPEC 4000

## 4. BSc (Agr) - Aquaculture

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

AQUA 2000: Introduction to Aquaculture  
 CHMA 2000: Organic Chemistry I  
 GENE 2000: Genetics  
 PHYS\*: Physics  
 STAA: Introduction to Statistics  
 three credit hours of electives

#### *Year II: Semester IV*

CHMA 3001: Biochemistry  
 APSC 2004: Aquacultural Environment  
 MCRA 2000: Microbiology  
 PHYS\*  
 STAT 2000\*: Introduction to Statistics  
 three credit hours of electives

#### *Year III: Semester V*

BIO A 3005: Physiology of Aquatic Animals  
 BIO A 3006: Aquatic Ecology  
 NUTR 3000: Animal Nutrition  
 six credit hours of electives

#### *Year III: Semester VI*

ANSC 3000: Animal Breeding  
 AQUA 3000: Fish Health  
 APSC 3013: Aquacultural Systems Technology  
 NUTR 3002: Fish Nutrition \*\*  
 three credit hours of electives

#### *Year IV: Semester VII*

AQUA 4000: Finfish Production\*\*\*  
 RESM 4010: Aquaculture Project-Seminar I  
 nine credit hours of electives

#### *Year IV: Semester VIII*

AQUA 4001: Shellfish Production\*\*\*  
 RESM 4011: Aquaculture Project-Seminar II  
 nine credit hours of electives

\* Physics - Students must complete the combination of PHYS 1000 or PHYS 1002 and STAA 2000 in year II. If PHYS 1000/1002 is done in semester I, then STAA 2000 will be done in semester II. If STAA is done in semester I, then PHYS 1000 or 1002 will be done in semester II.

\*\* Students must complete either NUTR 3000 or NUTR 3002.

\*\*\* Students must complete either AQUA 4000 or AQUA 4001.



Electives must include:

- six credit hours of Humanities/Social Science courses of which three credit hours must be at the 3000 level or above.
- three credit hours of approved Agriculture courses.

## 5. BSc (Agr) - Environmental Sciences

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

CHMA 2000: Organic Chemistry I  
ENVA 2000: Environmental Studies I  
SOIL 2000: Introduction to Soil Science  
STAA 2000: Introduction to Statistics  
three credit hours of electives

#### *Year II: Semester IV*

CHMA 3001: Biochemistry or  
CHMA 3009: Environmental Chemistry  
ENVA 2001: Environmental Studies II  
MCRA 2000: Microbiology  
STAA 3000: Introduction to Planned Studies: Surveys & Experiments  
three credit hours of electives

#### *Year III: Semester V*

BIOA 3001: Ecology  
CHMA 3010: Bio-Analytical Chemistry or  
ENVA 4005: Geographic Information Systems (GIS)  
ENVA 3001: Environmental Sampling & Analysis  
PHYS 1000: Physics for the Life Sciences\* or  
PHYS 1002: Physics I\* or  
three credit hours of electives

#### *Year III: Semester VI*

ENVA 3002: Waste Management & Site Remediation  
PHYS 1000: Physics for the Life Sciences I\* or  
PHYS 1002: Physics I\* or  
three credit hours of electives

#### *Year IV: Semester VII*

ENVA 3004: Principles of Pest Management  
ENVA 4006: Air, Climate and Climate Change  
HORT 3000: Environmental Processes & Natural Landscape Functions  
RESM 4006: Environmental Sciences Project Seminar I  
three credit hours of electives

#### *Year IV: Semester VIII*

ENVA 3000: Environmental Impact Assessment  
RESM 4007: Environmental Sciences Project-Seminar II  
nine credit hours of electives

\* Physics - Students must complete either PHYS 1000 or PHYS 1002 but not both for credit.

Within the Environmental Sciences major, students may select any one of the following areas of specialization:

- Environmental Biology
- Environmental Chemistry
- Environmental Soil Science
- Pest Management
- Waste Management

Interested students are to consult with the academic advisor.

Electives must include:

- six credit hours of Humanities/Social Science courses of which three credit hours must be at the 3000 level or above.
- Students who complete CHEM 3010 must include six credit hours of approved Agriculture electives. Students who complete ENVA 4005 must include three credit hours of approved Agriculture electives.

## 6. BSc (Agr) - Integrated Environmental Management

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

APSC 2002: Bioresource Systems Analysis  
APSC 2011: Technology for Precision Agriculture  
APSC 2012: Introduction to Bioresource Science  
PHYS 1000: Physics for Life Sciences I\* or  
STAA 2000: Introduction to Statistics\*  
three credit hours of electives

#### *Year II: Semester IV*

APSC 1003: Practices & Mechanics of Materials  
ENGN 2014: Bioresource Processing  
APSC 3001: Electrotechnology  
PHYS 1000: Physics for Life Sciences I\* or  
STAA 2000: Introduction to Statistics\*  
three credit hours of electives

#### *Year III: Semester V*

APSC 2013: Machinery & Building Technology  
APSC 3020: Energy Production & Utilization  
ENGN 3021: Ecohydrology  
six credit hours of electives

#### *Year III: Semester VI*

ENGN 3016: Engineering Economy  
ENVA 3002: Waste Management & Site Remediation  
MGMT 1000: Small Business Entrepreneurship  
RESM 4000: Bio-Environmental Systems Management Project Seminar I  
three credit hours of electives

#### *Year IV: Semester VII*

APSC 4006: Wastewater Management  
RESM 4001: Bio-Environmental System Management Project Seminar II  
nine credit hours of electives

#### *Year IV: Semester VIII*

APSC 4004: Energy Conversion & Assessment  
APSC 4005: Waterscape Ecology & Management  
nine credit hours of electives

\* Physics - Students must complete the combination of PHYS 1000 and STAA 2000 in year II. If PHYS 1000 is done in semester III, then STAA 2000 will be done in semester IV. If STAA is done in semester III, then PHYS 1000 will be done in semester IV.

Electives must include:

- six credit hours of Humanities/Social Science courses of which three credit hours must be at the 3000 level or above.
- three credit hours of approved Agriculture electives

## 7. BSc (Agr) - Plant Science

### Required Courses & Suggested Schedule

#### *Year II: Semester III*

BIOA 2000: Cell Biology or  
BIOA 2001: Cell Biology Laboratory  
BIOA 2008: Plant Diversity  
CHMA 2000: Organic Chemistry I  
GENE 2000: Genetics  
SOIL 2000: Introduction to Soil Science

#### *Year II: Semester IV*

BIOA 2002: Plant Physiology  
BIOA 2004: Structural Botany  
CHMA 3001: Biochemistry  
MCRA 2000: Microbiology  
three credit hours of electives

**Year III: Semester V**

BIOA 3000: General Entomology  
 BIOA 3002: Weed Science  
 STAA 2000: Introduction to Statistics or  
 three credit hours of electives  
 six credit hours of electives

**Year III: Semester VI**

BIOA 2005: Principles of Plant Pathology  
 RESM 4008: Plant Science Project Seminar I or  
 SOIL 3000: Soil Fertility & Nutrient Management or  
 three credit hours of electives  
 STAA 2000: Introduction to Statistics or  
 three credit hours of electives  
 three credit hours of electives

**Year IV: Semester VII**

PLSC 4002: Plant Ecophysiology  
 RESM 4009: Plant Science Project Seminar II  
 nine credit hours of electives

**Year IV: Semester VIII**

SOIL 3000: Soil Fertility & Nutrient Management or  
 three credit hours of electives  
 12 credit hours of electives

Electives must include:

- six credit hours of Humanities/Social Science courses of which three credit hours must be at the 3000 level or above.
- six credit hours Plant Science Production courses from the following list:  
 AGRN 2000, 2001, 2002, 2008, HORT 2000, 2001, 2004, 2006, 2007, 2009, 2010, 4002, PLSC 1000, 2000, 3000.

**C. Diploma in Engineering**

The first two years of the Bachelor of Engineering program may be completed in the Faculty of Agriculture. After the first two year students will receive the Diploma in Engineering and may progress into the upper years of Engineering in the Faculty of Engineering.

NOTE: The program structure of the Diploma of Engineering is currently under review and may change during the 2013/2014 academic year.

**Required Courses & Suggested Schedule****Year I Semester I**

CHMA 1000: General Chemistry I  
 ENGN 1001: Engineering Design I  
 ENGN 1002: Engineering I  
 MTHA 1000: Introduction to Calculus I  
 PHYS 1002: Physics I

**Year I Semester II**

CHMA 10001: General Chemistry II  
 CSCI 2000: Computer Science  
 ENGN 3006: Engineering II  
 MTHA 1001: Introduction to Calculus II  
 MTHA 3000: Applied Linear Algebra  
 PHYS 1003: Physics II

**Year II Semester III**

ENGN 3000: Electric Circuits  
 ENGN 3002: Thermo-fluids I  
 ENVA 2000: Environmental Studies I  
 MTHA 2000: Multivariable Calculus  
 six credit hours Discipline - Specific (see list below)

**Year II Semester IV**

ENGN 3017: Engineering Design II  
 MTHA 2001: Differential Equations  
 STAA 2001: Probability & Statistics for Engineering  
 nine credit hours Discipline - Specific (see list below)

**Required Discipline-specific courses:****Semester III:**

Chemical	CHMA 2000 & ENGN 3021
Civil	ENGN 2005 & Writing Elective
Electrical	ENGN 3004 & Writing Elective
Environmental	CHMA 2000 & ENGN 3021
Industrial	ENGN 3021 & Writing Elective
Mechanical	CHMA 2000 & Writing Elective
Materials	CHMA 2000 & ENGN 3021
Mineral Resources	ENGN 3021 & Writing Elective

**Semester IV**

Chemical	ENGN 2014 & Writing Elective
Civil	GEOA 2000 & ENGN 3011
Electrical	ENGN 3008 & ENGN 3016
Environmental	ENGN 2014 & Writing Elective
Industrial	ENGN 2014 & ENGN 3016
Mechanical	ENGN 3011 & ENGN 3016
Materials	ENGN 2014 & Writing Elective
Mineral Resources	ENGN 3016 & GEOA 2000

Writing Elective: Any of the following courses satisfy the writing requirement:  
 EGLA 1000, 1001, 1002, SOCI 1000 and GEOA 1000.

**D. Pre-Veterinary Medicine Studies**

The Faculty of Agriculture offers the courses needed to apply to the Atlantic Veterinary College (University of Prince Edward Island). Students intending to apply to Veterinary Medicine at UPEI or another University may register in the Bachelor of Science (Agriculture) with an undeclared major in Pre-Veterinary Studies. Students will be exposed to animals such as sheep, cattle, and poultry. Students can take part in the active Pre-Vet Club and volunteer to help with lambing, milking, or egg collection on the Agricultural Campus. Students should consult section 14 of the Academic Regulations and with the Atlantic Veterinary College for specific admission requirements. The following is the recommended courses and schedule. For a detailed list of acceptable classes please visit [www.dal.ca/agriculture](http://www.dal.ca/agriculture). After year two students may opt to complete the Bachelor of Science (Agriculture).

**Year I Semester I**

AGRI 1000: Agricultural Ecosystems  
 BIOA 1002: Biology I  
 CHMA 1000: General Chemistry I  
 EGLA 1000: Composition  
 MTHA 1000: Introduction to Calculus I

**Year I Semester II**

BIOA 1003: Biology II  
 CHMA 1001: General Chemistry II  
 ECOA 1000: Principles of Microeconomics  
 EGLA 1001: The Novel  
 MTHA 1001: Introduction to Calculus II

**Year II Semester III**

ANSC 2005: Animal Agriculture  
 CHMA 2000: Organic Chemistry  
 GENE 2000: Genetics  
 PHYS \*\*: Physics or  
 STAA 2000: Introduction to Statistics

three credit hours of Humanities & Social Sciences electives chosen from:

- ARTS 2000
- CMMT 3000
- EGLA 1000, 1001, 1002, 1005, 3000
- EXTE 3000
- FRNA 1000, 1001
- GEOA 1000, 3000
- GEOL 2000
- HISA 1000, 1001, 3000
- IAGR 2002, 2003
- PHLA 3000

- POLS 1000, 1001
- PSYC 1000, 1001
- RURS 3000
- SOCI 1000, 1001, 3000
- SPNA 1000, 1001
- SPEC 4009

#### **Year II Semester IV**

BIOA 2006: Mammalian Physiology

CHMA 3001: Biochemistry

MCRA 2000: Microbiology

PHYS\*\*: Physics or

STAA 2000: Introduction to Statistics

three credit hours of Humanities & Social Sciences electives chosen from:

- ARTS 2000
- CMMT 3000
- EGLA 1000, 1001, 1002, 1005, 3000
- EXTE 3000
- FRNA 1000, 1001
- GEOA 1000, 3000
- GEOL 2000
- HISA 1000, 1001, 3000
- IAGR 2002, 2003
- PHLA 3000
- POLS 1000, 1001
- PSYC 1000, 1001
- RURS 3000
- SOCI 1000, 1001, 3000
- SPNA 1000, 1001
- SPEC 4009

\*\* PHYS 1000 Physics for Life Sciences I or PHYS 1002

### **E. Minors**

The purpose of a minor is to attain a significant body of knowledge within a specific discipline that is outside of the student's major or substantially exceeds what a candidate would obtain through studies in their major. Students may take a minor in one of the areas listed below as part of the BSc (Agr) degree program. Students who wish to take a minor must meet the requirements for a major in their chosen discipline.

#### **1. Minor in Agricultural Business**

18 credit hours to include:

- MGTA 2002: Marketing
- MGTA 2003: Financial Management

12 credit hours of additional courses approved by the Business & Social Sciences Department Head

Students may count a maximum of nine credit hours of MGTA or ECOA courses from their major towards their minor (ECOA 1000 excluded). Interested students need the approval of the department head and should consult the department.

#### **2. Minor in Agricultural Chemistry**

15 credit hours of chemistry courses including:

- CHMA 2000: Organic Chemistry I
- CHMA 3003: Advanced Integrated Chemistry Laboratory I

Nine credit hours of courses approved by the Department of Environmental Sciences.

Students may not select courses which are required for their major.

#### **3. Minor in Agricultural Economics**

18 credit hours including:

- ECOA 1001: Principles of Macroeconomics

15 credit hours of additional courses approved by the Business & Social Sciences Department Head

Students may count a maximum of nine credit hours of MGTA or ECOA courses from their major towards their minor (ECOA 1000 excluded). Interested students need the approval of the department head and should consult the department for additional information.

#### **4. Minor in Animal Science**

18 credit hours of courses approved by the Plant & Animal Science Department. The content of the minor will be decided on a student-by-student basis. Students cannot select courses which are required for their major. Students should consult the department for additional information.

#### **5. Minor in Animal Welfare**

18 credit hours including:

- ANSC 3002: Domestic Animal Behaviour
- ANSC 3005: Animal Welfare

12 credit hours of the following courses taken in consultation with the Animal Science advisor:

- ANSC 3001: Animal Health
- ANSC 4009: Directed Study in Animal Sciences (can be used for the minor if the topic is within the area of animal welfare science)
- BIOA 3004: Environmental Physiology
- BIOA 4004: Animal Adaptation & Stress
- PHLA 3000: Environmental & Agricultural Ethics
- RESM 4XXX: Project Seminar I&II (can together count as one course towards the minor if the research project is conducted in the field of animal welfare science)

Students may select up to nine credit hours to count towards the minor as well as the major.

#### **6. Minor in Aquaculture**

18 credit hours chosen from the following, in consultation with the Aquaculture advisor:

- AQUA 2000: Introduction to Aquaculture
- AQUA 3000: Fish Health
- AQUA 4000: Finfish Production
- AQUA 4001: Shellfish Production
- BIOA 3005: Physiology of Aquatic Animals
- BIOA 3006: Aquatic Ecology
- APSC 2004: Aquacultural Environment
- APSC 3013: Aquacultural Systems Technology
- NUTR 3002: Fish Nutrition

Students may select up to nine credit hours to count toward the minor as well as the major.

#### **7. Minor in Environmental Sciences**

15 credit hours including:

- ENVA 2000: Environmental Studies I
- ENVA 2001: Environmental Studies II

Nine credit hours of courses approved by the Department of Environmental Sciences.

Students may not select courses which are required for their major.

Minor in Food Science & Technology

15 credit hours including:

- CHMA 2003: Food Chemistry I
- MCRA 2000: Microbiology\*
- MCRA 3000: Food Microbiology

Six credit hours chosen from the following:

- ANSC 3003: Eggs & Dairy Products
- ANSC 3004: Meat Science
- CHMA 3007: Food Chemistry II\*\* or
- CHMA 3008: Intermediate Food Chemistry\*\*
- ENGN 2014: Bioresource Processing
- FOOD 3000: Food Quality Assurance
- FOOD 3001: Functional Foods & Nutraceuticals
- FOOD 4000: Directed Studies in Food & Bioproduct Science

\* Students may not select courses which are required for their major. However, if MCRA 2000 is required in a student's major, an additional elective must be selected from the above list.

\*\* Either CHMA 3007 or CHMA 3008, but not both, can count towards the minor.

## 8. Minor in Genetics & Molecular Biology

18 credit hours including:

- BIOA 2000: Cell Biology or
- BIOA 2001: Cell Biology Laboratory
- GENE 2000: Genetics
- GENE 3000: Introduction to Molecular Genetics

Nine credit hours selected from the following:

- ANSC 3000: Animal Breeding
- GENE 3001: Population & Quantitative Genetics
- GENE 4000: Molecular Applications to Animal Production
- GENE 4003: Biotechnology
- PLSC 4000: Plant Breeding
- RESM 4XXX: Project Seminar I&II can together count as one course toward the minor if the research project is conducted within the field of genetics and molecular biology.

Students are encouraged to select courses that can count toward this minor as well as toward their major.

## 9. Minor in Mathematics

15 credit hours including:

- MTHA 4000: Agricultural Modeling

12 credit hours courses approved by the Head of the Engineering Department selected from the following:

- MTHA 2000: Multivariable Calculus
- MTHA 2001: Differential Equations
- MTHA 3000: Applied Linear Algebra
- STAA 3000: Introduction to Planned Studies: Surveys & Experiments
- STAA 4000: Intermediate Statistical Methods
- CSCA 2000: Computer Science
- CSCA 3000: Data Structures & Numerical Methods
- ECOA 3000: Mathematical Economics
- ECOA 3003: Mathematical Programming
- ECOA 3006: Statistics for Economics & Business
- PHYS 1001: Physics for the Life Sciences II
- PHYS 1003: Physics II

## 10. Minor in Pest Management

15 credit hours including:

- ENVA 3004: Principles of Pest Management
- MCRA 2000: Microbiology \*

Nine credit hours from the following:

- BIOA 2005: Principles of Plant Pathology
- BIOA 3000: General Entomology
- BIOA 3002: Weed Science
- BIOA 4003: Plant-Microbe Interactions
- ENVA 4002: Economic Entomology
- ENVA 4003: Advanced Weed Science

\* If MCRA 2000 is required in a student's major an additional elective must be selected from the list above.

Students may not select courses which are required for their major.

Students in the Plant Science major are required to take 12 credit hours of the courses listed above for their major, they will only be required to complete the additional 12 credit hours to be granted the Minor in Pest Management.

Students should see the academic advisor in the Environmental Science Department for selection of appropriate courses.

## 11. Minor in Plant Science

15 credit hours of approved Plant Science courses (see Plant Sciences section, page 102)

Students cannot select courses which are required for their major. Students should see the academic advisor in the Plant & Animal Science Department for more information.

### *Approved Plant Science Courses:*

AGRN 2000, 2001, 2008, 4000  
HORT 2000, 2001, 2003, 2004, 2005, 2006, 2007, 2009, 2010, 3000, 3001, 3008, 4000, 4001, 4002

IAGR 3000

PLSC 1000, 2000, 3000, 4000, 4002, 4004

SPEC 4010, 4011

## F. Bachelor of Technology - Environmental Landscape Horticulture

### Required Courses & Suggested Schedule

The Bachelor of Technology Environmental Landscape Horticulture is designed to prepare students for a career in the landscape horticulture profession. It will prepare students to work successfully in the diverse landscape industry or to create their own business within the industry. Years one and two of the program are satisfied by the successful completion of the Diploma of Technology - Managed Landscapes or a two year landscape-related program approved by the Department of Environmental Sciences.

#### *Year III: Semester V*

BIOA 2008: Plant Diversity  
CHMA 1000: General Chemistry I  
APSC 3019: Communications Technology  
ENVA 2000: Environmental Studies I  
HORT 3000: Environmental Processes & Natural Landscape Functions

#### *Year III: Semester VI*

ENVA 2001: Environmental Studies II  
MGTA 1000: Small Business Entrepreneurship  
HORT 2009: Landscape Plant Nursery Management  
PLSC 3000: Theory & Practice of Plant Propagation  
SOIL 2000: Introduction to Soil Science\* or  
Three credit hours of electives

#### *Year IV: Semester VII*

ENVA 3004: Principles of Pest Management  
ENVA 4005: Geographic Information Systems (GIS)  
HORT 3001: Landscape Project Management  
HORT 4000: Urban Tree Management  
RESM 4006: Environmental Sciences Project Seminar I

#### *Year IV: Semester VIII*

APSC 3015: Irrigation & Drainage or  
three credit hours of electives  
HORT 2005: Design & Construction of Turf Facilities  
HORT 3008: Horticultural Therapy  
RESM 4007: Environmental Sciences Project Seminar II  
three credit hours of electives

\* Students who have not met the Soil Science requirements of the Diploma of Technology - Managed Landscapes will be required to take SOIL 2000.

## G. Certificate Programs

### Certificate of Specialization in Organic Agriculture

The Certificate of Specialization in Organic Agriculture initiative provides students with an opportunity to specialize in the expanding area of organic agriculture. The Certificate of Specialization in Organic Agriculture enables students to approach agriculture from their area of interest, to know they can be recognized for this accomplishment, and to continue to take other courses in agriculture toward a degree. Any student who has successfully completed four of the eligible organic agriculture credit courses and has an overall GPA of at least 2.0 in these courses can apply to receive a Certificate of Specialization in Organic Agriculture. Two of the courses may be substituted with approved organic agriculture courses offered by external institutions (see below). A Letter of Permission is required for these alternative courses.

#### *Eligible Courses*

AGRI 2000: Transition to Organic Agriculture  
AGRN 2000: Organic Field Crop Management  
ANSC 2004: Organic Livestock Production  
ENVA 2002: Composting and Compost Use  
HORT 2001: Principles of Organic Horticulture

*Note: Students will not be required to take the courses in any particular order. AGRI 2000, ENVA 2002, and HORT 2001 are currently offered in the Fall semester. AGRN 2000 and ANSC 2004 are currently offered in the Winter semester.*

All courses in the Certificate of Specialization in Organic Agriculture program are offered only through web-based distance education. Other institutions offering web-based courses that are approved for the certificate program:

- McGill University (Organic Soil Fertilization)
- Université Laval [French translation of courses AGRI 2000, AGRN 2004, ANSC 2004, and ENVA 2002]\*
- University of British Columbia (Key Indicators of Agroecosystem Sustainability)
- University of Guelph (Organic Marketing)
- University of Manitoba (Organic Crop Production on the Prairies)
- University of Saskatchewan (Weed Control in Organic Agriculture)

\* A student cannot receive credit for the same course in both French and English.

## Certificate in Technology Education

The Certificate in Technology Education Program is intended to upgrade and diversify the technology background of Technology Education teachers presently working in Nova Scotia schools. It is approved in Nova Scotia by the Minister of Education for teaching license upgrading. This program is an innovative collaboration between the Faculty of Agriculture and Nova Scotia's Technology Education Teachers Association, the Nova Scotia Department of Education, and Acadia University. The program provides a variety of hands-on experiences and teaching methodologies that strengthen traditional skills and introduce new technologies to better meet the demand for qualified technology educators for the public school system.

Instruction is conducted outside regular school hours, in evening or summer sessions.

Students must complete 30 credit hours of approved courses with a cumulative GPA of 2.0. Twenty four credit hours must be from the Faculty of Agriculture course list; the remaining six credit hours are teaching methodology courses offered by Acadia University. The program must be completed in a maximum of six years. Courses can be taken in any sequence. The offering of this program is subject to and sufficient enrolment.

## Required Courses (eight required)

ENGN 1001: Engineering Design I  
 APSC 1003: Practices and Mechanics of Materials  
 APSC 1004: Wood Construction Technology  
 APSC 1005: Metal Construction Technology  
 APSC 2000: Environmental Impacts and Resource Management  
 APSC 2007: Fluid Power Technology  
 APSC 2008: Digital Electronics and Computer Interfacing  
 APSC 3001: Engineering Measurements and Controls  
 APSC 3018: Technology Modules  
 APSC 3019: Communications Technology

## Acadia Courses

EDUC 5053: Problems in Education: Technological Education and Sustainability  
 EDUC 5873: Technology & Curriculum: Technology Studies

*Note: It is the responsibility of individual teachers to ensure that they comply with the requirements of the NS Department of Education for continuing education and upgrades. For more information, see [certification.ednet.ns.ca/approval\\_upgrading.shtml](http://certification.ednet.ns.ca/approval_upgrading.shtml).*

## H. Diploma in Technology - Business Management

The Diploma in Technology - Business Management is a program designed to provide the fundamentals of business management and at the same time allow students to concentrate in one of the following areas: Agriculture, Dairy Farming, Equine Studies, Greenhouse and Nursery, or Pet Studies. This two-year diploma provides students with the management, communication, and leadership skills necessary to manage a business such as a farm, a stable, or a pet related or greenhouse and nursery retail operation. Careers in marketing, sales, or service are other options.

This diploma is a unique mix of technical-credit courses and courses designated as workplace readiness courses (non-credit). The workplace readiness courses

develop the practical skills and knowledge required to work in business and in the area of concentration. The workplace readiness courses common to all the options include: career preparation, public speaking, first aid, Occupational Health and Safety (OHS), Workplace Hazardous Materials Information System (WHMIS), business ethics, and professionalism. Specialty workplace readiness courses are specific to the area chosen, e.g., Hazard Analysis and Critical Control Point (HACCP) and dairy medicines for the dairy farming option. Some of these courses will be scheduled throughout the semester, and others will be offered at the beginning of the semester. Students may be required to bring protective clothing and footwear, depending on the option chosen.

Some of the options - Pet Specialty, Agriculture, and Greenhouse and Nursery - have an internship requirement for the spring and summer semesters. Students will be expected to obtain employment in their area of specialty and complete a designated list of competencies. The employer will be expected to complete an assessment of the student's performance. See the course descriptions for more details.

## Pathway to Bachelor of Science (Agriculture) Major In Agricultural Business Degree

Students who graduate from the Diploma in Technology Business Management program have the option of continuing their studies in the Bachelor of Science (Agriculture) program. Students who graduate from the Diploma in Technology Business Management program are awarded a minimum of 30 credit hours toward the BSc (Agriculture.) degree, provided all other program requirements are met. In addition, in consultation with the Academic Advisor, DBM students may identify additional elective courses that are available to transfer for credit towards the BSc (Agriculture) program. Diploma in Technology Business Management students interested in exploring or developing a pathway to the BSc (Agriculture) are strongly encouraged to meet with their academic advisor early in their program.

## Diploma in Technology - Business Management Concentrations

### 1. Agriculture

Students planning to operate/manage a farm or who wish to work in the agricultural industry in sales or service should choose this specialization. Along with the primary emphasis on business, students pick and choose among a number of livestock, field crop, or horticulture electives to develop a program best suited to their long-term career interests.

## Required Courses

### Year I Semester I

ACAD 0020: Skills for Academic Success\*  
 ANSC 0112: Animal Biology and Management or  
 PLSC 0100: Utilization of Plant Resources  
 ECOA 0100: Introductory Microeconomics  
 EGLA 0101: Writing For Business  
 MTHA 0100: Business Math  
 MGTA 0100: Accounting  
 SOIL 0100: Principles of Soil Science

### Year I Semester II

CMMT 0020: Career and Employment Skills\*  
 MGTA 0101: Applied Accounting & Taxation  
 MGTA 0104: Small Business Entrepreneurship  
 SOIL 0200: Soil Management  
 Elective\*\*  
 Elective\*\*  
 Elective\*\*

### Year I Semester III (Spring/Summer)

INTA 0100: Internship

### Year II Semester IV

APSC 0200: Environmental Management  
 MGTA 0020: Business Leadership, Ethics, and Professionalism\*  
 MGTA 0204: Financial Management  
 MGTA 0206: Marketing  
 Elective\*\*  
 Elective\*\*  
 Elective\*\*

**Year II Semester V**

CMMT 0021: Introduction to Public Speaking\*  
 ECOA 0202: Production Economics  
 FOOD 0020: Topics in Agriculture and Food Enterprise Management\*  
 MGTA 0103: Business Law  
 MGTA 0201: Business Project  
 MGTA 0205: Human Resource Management  
 Elective\*\*  
 Elective\*\*

**Required Workplace Readiness certificates:**

WHMIS, First Aid, OHS, Farm Safety, On-farm HACCP or QA, Livestock Medicines course (for students interested in livestock production)

\* Workplace Readiness course

\*\* Students can select elective courses from a number of areas (both degree and diploma, provided prerequisites are met) including agronomy, horticulture, and animal science. Distance Education courses on specific topic areas such as beef and sheep are also available. ENGN2011 Technology in Precision Agriculture is highly recommended for students interested in crop production. Students will need to consult with the Agriculture Program Advisor to assist in the selection of courses best suited to their future career plans.

**2. Dairy Farming**

This specialization is designed for students interested in a career in the dairy industry, whether it is operating their own dairy farm, working as a herdsman, or employed in sales or service for the dairy industry.

**Required Courses****Year I Semester I**

ACAD 0020: Skills for Academic Success\*  
 ANSC 0020: Dairy Industry I\*  
 ANSC 0112: Animal Biology and Management  
 ECOA 0100: Introductory Microeconomics  
 EGLA 0101: Writing For Business  
 MTHA 0100: Business Math  
 MGTA 0100: Accounting  
 SOIL 0100: Principles of Soil Science

**Year I Semester II**

AGRN 0202: Forage-Based Cropping Systems  
 ANSC 0021: Dairy Industry II\*  
 ANSC 0113: Principles of Animal Welfare & Husbandry  
 ANSC 0114: Animal Feed and Nutrition Management  
 ANSC 0205: Optimizing Bovine Reproductive and Genetic Performance  
 CMMT 0020: Career and Employment Skills\*  
 MGTA 0101: Applied Accounting & Taxation  
 SOIL 0200: Soil Management

**Year II Semester III**

AGRN 0201: Cereal-Based Cropping Systems  
 ANSC 0206: Managing Dairy Milking Systems and Housing Facilities  
 ENGN 0200: Environmental Management  
 APSC 0201: Machinery and Building Technology  
 MGTA 0020: Business Leadership, Ethics, and Professionalism\*  
 MGTA 0204: Financial Management  
 MGTA 0206: Marketing

**Year II Semester IV**

ANSC 0204: Dairy Herd Health and Nutrition Management  
 ANSC 0207: Records Management and Decision-making for Dairy Herds  
 CMMT 0021: Introduction to Public Speaking\*  
 ECOA 0202: Production Economics  
 MGTA 0103: Business Law  
 MGTA 0201: Business Project  
 MGTA 0205: Human Resource Management

**Required Workplace Readiness certificates and experience:**

WHMIS, First Aid, OHS, Farm Safety, On-farm HACCP, Dairy Medicines course, Dairy Skills experience\*\*

\* Workplace Readiness course

\*\* Students will be expected to complete two weeks of work experience at the Agricultural Campus Dairy Farm as part of the requirements for the program. This work experience normally is completed in the first year.

**3. Equine Studies**

This concentration is designed specifically for those students interested in someday owning or managing an equine-related business. It provides students who have a passionate interest in horses the opportunity to study something they love and at the same time receive a solid business education that is directly transferable to any type of business operation.

**Required Courses****Year I Semester I**

ACAD 0020: Skills for Academic Success\*  
 ANSC 0022: Equine Industry\*  
 ANSC 0112: Animal Biology and Management  
 ECOA 0100: Introductory Microeconomics  
 EGLA 0101: Writing For Business  
 MTHA 0100: Business Math  
 MGTA 0100: Accounting  
 SOIL 0100: Principles of Soil Science

**Year I Semester II**

AGRN 0202: Forage-Based Cropping Systems  
 ANSC 0113: Principles of Animal Welfare and Husbandry  
 ANSC 0114: Animal Feed and Nutrition Management  
 CMMT 0020: Career and Employment Skills\*  
 MGTA 0101: Applied Accounting & Taxation  
 MGTA 0104: Small Business Entrepreneurship  
 SOIL 0200: Soil Management

**Year II Semester III**

ANSC 0213: Equine Growth & Nutrition  
 ANSC 0214: Equine Health, Genetics and Reproduction  
 APSC 0200: Environmental Management  
 MGTA 0020: Business Leadership, Ethics, and Professionalism\*  
 MGTA 0203: Customer Relations Management  
 MGTA 0204: Financial Management  
 MGTA 0206: Marketing

**Year II Semester IV**

ANSC 0215: Equine Facilities Management  
 ANSC 0216: Equine Health & Fitness  
 ANSC 0219: Equine Behaviour & Learning  
 CMMT 0021: Introduction to Public Speaking\*  
 MGTA 0103: Business Law  
 MGTA 0201: Business Project  
 MGTA 0205: Human Resource Management

**Required Workplace Readiness certificates:**

WHMIS, First Aid, OHS, Work Safety, Equine Medicines course

\* Workplace Readiness course

**4. Greenhouse and Nursery**

This concentration is designed for people who are passionate about plants and would like a business career in a “green” and “growing” industry. Along with a solid business education, this program provides a detailed understanding of the production and marketing of ornamental plants including greenhouse- and field-grown nursery stock, and of greenhouse vegetable crops such as tomatoes and cucumbers. Career possibilities include: owner of a greenhouse operation focused on bedding plants, manager of a garden centre, and production manager of field nursery stock.

**Required Courses****Year I Semester I**

ACAD 0020: Skills for Academic Success\*  
 ECOA 0100: Introductory Microeconomics  
 EGLA 0101: Writing For Business  
 MTHA 0100: Business Math  
 MGTA 0100: Accounting  
 PLSC 0100: Utilization of Plant Resources  
 SOIL 0100: Principles of Soil Science

**Year I Semester II**

CMMT 0020: Career and Employment Skills\*  
 MGTA 0101: Applied Accounting & Taxation  
 MGTA 0103: Business Law  
 MGTA 0104: Small Business Entrepreneurship  
 SOIL 0200: Soil Management  
 Elective\*\*  
 Elective II

**Year I Semester III (Spring/Summer)**

INTE 0100: Internship

**Year II Semester IV**

HORT 0201: Greenhouse & Floriculture Crop Management  
 MGTA 0020: Business Leadership, Ethics & Professionalism\*  
 MGTA 0202: Managing Retail Operations & Physical Resources  
 MGTA 0203: Customer Relations Management  
 MGTA 0204: Financial Management  
 MGTA 0206: Marketing  
 PLSC 0200: Plant Propagation

**Year II Semester V**

BIOA 0102: Plant Physiology and Stress Management  
 CMMT 0021: Introduction to Public Speaking\*  
 HORT 0200: Landscape Plant Nursery Management  
 MGTA 0201: Business Project  
 MGTA 0205: Human Resource Management  
 MGTA 0208: Retail Sales Management  
 PLSC 2000: Specialty Crops

**Required Workplace Readiness certificates:**

WHMIS, First Aid, OHS, Workplace Safety, HACCP or QA

\* Workplace Readiness course

\*\* Students can select elective courses from a number of areas including agronomy, horticulture, and animal sciences. Students will need to consult with the Greenhouse and Nursery Advisor to assist in the selection of courses best suited to their future career paths.

**5. Pet Specialty**

This concentration is best suited for students interested in working in the pet industry as either owners or managers of pet-related businesses. Sales and service are other areas of employment, e.g., managing the pet section of a department store or selling pet-care products to other businesses. Along with the business courses, students will study the care and management of small animals, reptiles, and fish.

**Required Courses****Year I Semester I**

ACAD 0020: Skills for Academic Success\*  
 ANSC 0116: Companion Animal Enterprise  
 ECOA 0100: Introductory Microeconomics  
 EGLA 0101: Writing for Business  
 MTHA 0100: Business Math  
 MGTA 0100: Accounting  
 MGTA 0206: Marketing

**Year I Semester II**

ANSC 0117: Companion Animal Growth, Development, and Nutrition  
 ANSC 0208: Biology and Care of Aquarium Fish and Reptiles\*\* or  
 ANSC 0209: Biology and Care of Pet Birds and Small Mammals\*\*  
 ANSC 0217: Companion Animal Behaviour  
 CMMT 0020: Career and Employment Skills\*  
 MGTA 0101: Applied Accounting & Taxation  
 MGTA 0104: Small Business Entrepreneurship  
 MGTA 0207: Advertising and Promotion

**Year I Semester III (Spring/Summer)**

INTE 0100: Internship

**Year II Semester IV**

ANSC 0210: Introduction to Companion Animal Health  
 ANSC 0212: Companion Animal Genetics and Reproduction  
 MGTA 0020: Business Leadership, Ethics, and Professionalism\*

MGTA 0202: Managing Retail Operations and Physical Resources  
 MGTA 0203: Customer Relations Management  
 MGTA 0204: Financial Management

**Year II Semester V**

ANSC 0208: Biology and Care of Aquarium Fish and Reptiles\*\* or  
 ANSC 0209: Biology and Care of Pet Birds and Small Mammals\*\*  
 ANSC 0211: Companion Animal Facilities Management  
 CMMT 0021: Introduction to Public Speaking\*  
 MGTA 0103: Business Law  
 MGTA 0201: Business Project  
 MGTA 0205: Human Resource Management  
 MGTA 0208: Retail Sales Management

**Required Workplace Readiness certificates and experience:**

WHMIS, First Aid, OHS, Workplace Safety, Small Animal Work Experience\*\*\*

\* Workplace Readiness course

\*\* Courses are offered in alternate years.

\*\*\* Students will be expected to complete 40 hours of small animal work experience as part of the requirements for the program. This may be completed at the Boulden Animal Centre, an animal shelter, or any acceptable animal facility.

**I. Diploma in Technology Managed Landscapes**

The Diploma in Technology Managed Landscapes is a two-year program which helps prepare students for careers with landscaping firms, planning agencies, recreational parks, or institutions, or in self-employed roles as landscape horticultural technologists.

The Diploma in Technology Managed Landscapes is a fully approved Certified Horticultural Technician integrated educational program, recognized by the International Certification Council (ICC) and the Certification Committee of the Canadian Nursery Landscape Association (CNLA). Interested students can apply for a Passport to Certification that enables modular training and testing toward international recognition as a Certified Horticultural Technician. The curriculum fully encompasses the requirements for certification in various industry sectors. Students who successfully complete the Diploma in Technology Managed Landscapes with a cumulative average of at least 2.0 are eligible for admission to the two-year Bachelor of Technology Environmental Landscape Horticulture program, as years one and two of the BTech Environmental Landscape Horticulture program are satisfied by the successful completion of the Diploma.

**Required Courses****Year I Semester I**

EGLA 0101: Writing for Business  
 HORT 0100: Landscape Plants I  
 HORT 0102: Turfgrass Production and Management  
 HORT 0103: Landscape Horticulture I  
 SOIL 0100: Principles of Soil Science

**Year I Semester II**

BIOA 0102: Plant Physiology and Stress Management  
 APSC 0101: Horticultural Technology  
 HORT 0101: Landscape Plants II  
 HORT 0208: Landscape Maintenance  
 HORT 0210: Landscape Installation

**Year II Semester III**

BIOA 0200: Entomology  
 APSC 0100: Surveying  
 HORT 0204: Landscape Plants III  
 HORT 0207: Arboriculture  
 HORT 0209: Landscape Horticulture II

**Year II Semester IV**

BIOA 0101: Plant Pathology  
 BIOA 0103: Weed Science  
 HORT 0204: Landscape Plants III  
 HORT 0205: Residential Landscape Design and Construction  
 SOIL 0200: Soil Management  
 Elective

**Required Workplace Readiness certificates:**

WHMIS, First Aid, OHS

**Recommended Workplace Readiness courses:**

CMMT0020 Career and Employment Skills  
CMMT0021 Introduction to Public Speaking

**J. Diploma in Technology Plant Science**

The two-year Diploma in Technology Plant Science program prepares graduates for exciting careers in the dynamic plant-based industries of the future. Emerging information and technology related to bio-energy, nutrition, health, environmental protection, and plant genetics will make a plant science education a valuable asset. This program provides an innovative approach to the production and use of plant resources, with emphasis on responsible environmental and social stewardship, commercialization of ideas and strong practical skills in horticultural or agronomic plant production techniques, entrepreneurship, problem-solving, communication, and decision-making, all built on a solid foundation in the bio-sciences.

Studies begin with a first year of required courses that allow students to build their knowledge in the bio-sciences, plant production, and business, and to develop their interests. The program then provides the opportunity in the second year to select from a wide variety of courses to give each student the flexibility to match courses to their interests and career goals. With the help of a knowledgeable program advisor, students can choose from courses in edible horticulture, ornamental horticulture, agronomy, plant science, business, or engineering.

**Pathway to Bachelor of Science (Agriculture) Major in Plant Science Degree**

Students who graduate from the Diploma in Technology Plant Science program have the ability to make significant progress towards the completion of the BSc (Agriculture) major in Plant Science degree program. Students who graduate from the technology program are awarded a minimum of 30 credit hours toward the BSc (Agriculture) degree, provided all other program requirements are met. In addition, in consultation with the Plant Science Technology Academic Advisor, students can identify additional elective courses that will transfer for credit toward the BSc (Agriculture) major in Plant Science degree program. Plant Science students interested in exploring a pathway from the Diploma to the BSc (Agriculture) are strongly encouraged to meet with their academic advisor early in their program.

**Required Courses****Year I Semester I**

BIOA 0200: Entomology  
EGLA 0101: Writing for Business  
MGTA 0100: Accounting  
PLSC 0100: Utilization of Plant Resources  
PLSC 0200: Plant Propagation  
SOIL 0100: Principles of Soil Science

**Year I Semester II**

BIOA 0102: Plant Physiology and Stress Management  
BIOA 0103: Weed Science  
BIOA 0101: Plant Pathology  
CSCA 0200: Computer Methods  
MGTA 0104: Small Business Entrepreneurship  
MGTA 0205: Human Resource Management

**Semester III and Semester IV**

Twenty four credit hours (six courses in each semester) chosen in consultation with a program advisor. One course (PLSC 0202), if chosen, is taken during the Spring/Summer between Semesters II and III.

**Recommended Electives**

The following courses are suggested as electives in the study areas related to the Diploma in Technology Plant Science. Courses not on the list may also be eligible as electives; students may choose either technical-level courses or degree courses at the 1000 and 2000 level. Consultation with the program advisor is recommended. Many of these courses have prerequisites; it is the student's responsibility to ensure that these requirements are met.

**Fall**

AGRN 0201: Cereal-Based Cropping Systems  
ANSC 0112: Animal Biology and Management  
APSC 0200: Environmental Management  
APSC 2011: Technology for Precision Agriculture  
HORT 0100: Landscape Plants I  
HORT 0201: Greenhouse and Floriculture Crop Management  
HORT 0211: Vegetable Production  
HORT 0202: Small Fruit Crops  
HORT 0204: Landscape Plants III  
HORT 0102: Turfgrass Production and Management  
HORT 0103: Landscape Horticulture I  
HORT 0207: Arboriculture  
HORT 2001 Principles of Organic Horticulture (Distance)  
MGTA 0204: Financial Management  
PLSC 1000: Farm Woodlot Management

**Winter**

AGRN 0200: Potato Production  
AGRN 0202: Forage-Based Cropping Systems  
ANSC 0113: Principles of Animal Welfare and Husbandry  
ANSC 0114: Animal Feed and Nutrition Management  
APSC 0101: Horticultural Technology  
HORT 0101: Landscape Plants II  
HORT 0200: Landscape Plant Nursery Management  
HORT 0203: Tree Fruit Crops  
HORT 0204: Landscape Plants III  
MGTA 0103: Business Law  
MGTA 0207: Advertising and Promotion  
MGTA 0208: Retail Sales Management  
PLSC 2000: Specialty Crops  
SOIL 0200: Soil Management

**Spring/Summer (between Years 1 and 2)**

PLSC 0202: Plant Science Techniques

**K. Diploma in Technology Veterinary Technology**

The Veterinary Technology (VT) Program prepares graduates with the skills and knowledge required to enter veterinary practice as technical assistants to veterinarians. Veterinary technicians have also made successful careers in a variety of other fields, including the management of animal shelters; research with animals in universities and for private companies; sales for veterinary supply companies; and employment with zoos and in wildlife rehabilitation.

The Veterinary Technology Program is a two-year program with four standard semesters and an intercession after the first year. In addition to on-campus learning there are off-campus externships at the Atlantic Veterinary College and in general veterinary practices. To reflect the major employment opportunities in Atlantic Canada, the program is oriented mainly towards companion animals. The modest large-animal content is appropriate for graduates entering mixed practice and for those who wish to further develop their livestock or equine competence. Under the supervision of veterinarians and veterinary technicians in the VT program's Boulden Animal Clinic, students learn the skills and tasks required of them in companion animal practice.

Students in the Veterinary Technology Program must successfully complete 16 credit hours of required courses each academic year (Fall/Winter) to be eligible to continue in the program the following year. Students who do not meet this requirement, or who withdraw for any reason, will need to reapply if they want to return to the program. They will be considered along with the new pool of applicants and will not have preferential admittance. They must fulfill all orientation and application procedures, and adhere to the February 28 application deadline. Students who wish to return in the winter semester may only do so if there is space in the program, and they are required to reapply by December 1. The Veterinary Technology Program is accredited by the Canadian Veterinary Medical Association. The animal facilities are approved for teaching by the Canadian Council on Animal Care. The Animal Clinic is accredited by the Nova Scotia Veterinary Medical Association.



## Required Courses

### *Year I Semester I*

EGLA 0101: Writing for Business  
 VTEC 0111: Animal Medicine and Nursing I  
 VTEC 0112: Clinical Exercises I  
 VTEC 0113: Veterinary Clinical Pathology I  
 VTEC 0114: Fundamentals in Veterinary Technology I  
 VTEC 0115: Anatomy-Physiology-Pathophysiology I

### *Year I Semester II*

ANSC 0217: Companion Animal Behaviour  
 VTEC 0121: Animal Medicine and Nursing II  
 VTEC 0122: Clinical Exercises II  
 VTEC 0123: Veterinary Clinical Pathology II  
 VTEC 0124: Fundamentals in Veterinary Technology II  
 VTEC 0125: Anatomy-Physiology-Pathophysiology II

### *Year II Semester III*

VTEC 0131: Internship in Veterinary Technology  
 VTEC 0132: Externship at the Atlantic Veterinary College  
 VTEC 0133: Externship in General Veterinary Practice

### *Year II Semester IV*

VTEC 0211: Animal Medicine and Nursing III  
 VTEC 0212: Clinical Exercises III  
 VTEC 0213: Veterinary Clinical Pathology III  
 VTEC 0214: Fundamentals in Veterinary Technology III  
 VTEC 0215: Livestock and Equine Principles  
 Elective\*

### *Year II Semester V*

VTEC 0221: Animal Medicine and Nursing IV  
 VTEC 0222: Clinical Exercises IV  
 VTEC 0223: Veterinary Clinical Pathology IV  
 VTEC 0224: Fundamentals in Veterinary Technology IV  
 VTEC 0225: Lab Animal & Alternative Pet Medicine  
 Elective\*

\* Electives must be approved by the Program Coordinator.

## IV. Continuing and Distance Education

A variety of courses and programs, including credit and non-credit certificates, online programs, professional development and skills training are offered through Continuing and Distance Education. Our education is outcome-based, and with formats and scheduling that work for the students. Continuing and Distance Education offers on-site training, including the block release sections of the Farm Technician Apprenticeship Program held on Prince Edward Island.

For information on courses and programs visit [dal.ca/agriculture](http://dal.ca/agriculture) or call (902) 893-6666.

## V. Canadian Association of Diploma in Agriculture Programs

The Canadian Association of Diploma in Agriculture Programs (CADAP) is an association of post-secondary educational institutions offering diploma programs in agriculture. The purpose of the association is to promote excellence in agricultural education. The association provides opportunities for technical students in several of the programs to enroll in another college for one semester of their second academic year. By encouraging participation in the programs of another CADAP institution, another region of Canada, or another country, CADAP provides opportunities for students:

- to broaden their studies
- to become more familiar with another region of Canada, or another country
- to live a different cultural experience, and
- to gain practical experience in another region of Canada or in another country.

CADAP offers annual bursaries for two students to participate in an exchange between member institutions. Duration of the exchanges will be either one or two semesters or practical experience work sessions of at least 12 weeks. For more information please see their website ([www.cadap-apdac.ca](http://www.cadap-apdac.ca)).

Any student wishing to do a technical exchange program at another institution must have that program approved by the Registrar. The request should be

submitted to the Registrar by the student's program advisor or the Department Head. Upon approval of the program, the student will be issued a Letter of Permission detailing which courses will be replaced in the student's program and which courses must be completed at the host institution. The program must be laid out before the student leaves for the exchange institution

## VI. Professional Organizations for Agrologists

Agrology is "the profession of applying science and scientific principles to the business and art of agriculture". University graduates who are skilled in the science and business of agriculture are encouraged to join their provincial Institute of Agrologists. Provincial Institutes offer the opportunity to get to know and exchange ideas with other professional agrologists in the province and in other parts of Canada through membership in the Agricultural Institute of Canada. Membership in an Institute of Agrologists provides an element of fellowship in the profession, as well as opportunities to attend scientific conferences and educational tours and to receive newsletters and technical publications. Membership in an Institute is required by provincial statute to practice agrology in most provinces.

## Academic

### I. Technology Level Class Descriptions

#### **ACAD 0020.00: Skills for Academic Success.**

The objective of this course is to facilitate the successful transition from high school or the workplace to university life. This course will expose students to the functions of various student services on campus, encourage the development of good study skills, and explore the life management skills necessary to achieve success at university.

NOTE: Fall semester – This is a Workplace Readiness course required for the Diploma in Business Management.

INSTRUCTOR(S): Coordinator: M. Sani-Berry

FORMAT: Lecture 1 hour per week.

#### **ACAD 0021.00: University Study Skills.**

This course provides students with the skills they need to be successful university students, including note taking, textbook reading, exam taking, and time management skills. The course will introduce students to the resources available on campus and will help them understand their learning styles and strengths.

Students in this course will learn how to balance their commitments and use their study time efficiently. It provides an essential bridge for students coming to university directly from high school, as well as an important refresher for students who have had a break in their studies.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Coordinator: H. Avery

FORMAT: Lecture (six two-hour sessions).

## Agriculture

### I. Undergraduate Degree Level Class Descriptions

#### **AGRI 1000.03: Agricultural Ecosystems (A).**

This course is an introduction to agriculture and food systems. The principles of agricultural production as studied in the disciplines of animal science, plant science, agricultural engineering, and soil science will be integrated to give a comprehensive view of agricultural ecosystems. Course work will include lectures, laboratories, problem-solving exercises, and small-group work. There will be a farm tour for all AGRI 1000 students on September 19, 2012, from 1 pm until 7 pm. The course will expose students to issues and raise questions to be considered during the remainder of their undergraduate careers. The goals of this course are to provide students with knowledge of the application of science to agriculture, and to assist students to understand the integrated nature of agriculture and food systems in both regional and global contexts. Associated course goals are to develop communication and independent learning skills and the ability to function effectively in team situations, and to stimulate students to think critically, logically, and quantitatively while respecting the values and ideas of others.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Caldwell

FORMAT: Lecture 3 hours, lab and/or tutorial 2 hours per week.

#### **AGRI 2000.03: Transition to Organic Agriculture (A)**

This course is recommended for students looking for a general introduction to organic agriculture. The course consists of five stand-alone modules: Why organic?, Organic Certification, Planning the Farm System, Transition to Organic Crop Production, and Transition to Organic Livestock Production. Throughout the course students will be encouraged to participate in discussion groups and use the organic information resources currently available over the Internet.

NOTE: Fall semester

INSTRUCTOR(S): D. Jans

FORMAT: DE– only offered as a web-based distance education course.

#### **AGRI 3001.03: Issues in Agricultural Health and Safety (A, H)**

This course is a series of ten online modules on Agricultural Health & Safety designed for agricultural students, farm managers and owner-operators, and anyone else who wishes to obtain a better understanding of the health and safety issues present on Canadian farms. The course describes the health and safety situation and the major health and safety risks in the agriculture industry, and highlights the importance of improving the current situation.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Prof. Sanderson

FORMAT: DE– only offered as a web-based distance education course.

PREREQUISITE: Third-year standing

#### **AGRI 4000.03: Contemporary Issues in Agriculture (A)**

This course allows senior students in all disciplines to discuss current topics of interest to agricultural professionals. These topics could include soil degradation, integrated pest management, antibiotics in feed, the occupation of farming, animal welfare, etc. Students will be given weekly required readings.

NOTE: Fall semester – This course has limited enrollment.

INSTRUCTOR(S): Prof. Tennessen

FORMAT: 3-hour seminar weekly.

PREREQUISITE: Third- or fourth-year standing

# Agronomy

## I. Undergraduate Degree Level Class Descriptions

### AGRN 2000.03: Organic Field Crop Management (A) DE.

This course will introduce students to organic principles and practices applied to the production and management of field crops. The criteria for optimum yield and quality of field crops are presented within the context of organic farming principles, sustainable soil and nutrient management, and the requirements for organic certification. Five stand-alone modules provide a framework for study: \*Soil and Field Management Practices: methods used in organic farming to build and maintain soil fertility, preserve soil structure, conserve and recycle nutrients, reduce weed pressure, and reduce outbreaks of pest and disease; \*Nutrient Management Planning: how to optimize the efficiency of nutrient cycling, improve resource utilization, and minimize nutrient loss on the farm; \*Forages: organic methods of production for pasture, hay, silage, cover crops, or green manure; \*Row Crops: organic methods of production of cereal row crops (corn, sorghum), root crops (carrots, potatoes), seed legumes (soybean, peas, beans), and others (e.g., hemp); and \*Small Grains and Oilseeds: organic methods of production of winter-seeded grains (winter wheat, winter rye), spring-seeded grains (spring wheat, oats, and barley), oilseeds (canola, flax), and others.

NOTE: Winter semester

INSTRUCTOR(S): D. Jans

FORMAT: DE—only offered as a web-based distance education course.

### AGRN 2001.03: Cereal-Based Cropping Systems (A).

This course takes a systems approach to the study of crop and soil management in rotations involving the growing of the principal cereals, oilseeds, pulses, and other grains, and their relationship to other crops in a rotation. Through a whole-farm approach over time, it studies environmentally and economically sustainable methods for grain cash crops and grain-based animal feed production. It stresses soil and water conservation and an understanding of the principles and processes of the nutrient cycles, which are critical to improving the food production environment. Students will gain knowledge of grains as they relate to people and the environment, from soil to shelf, both in a Maritime temperate climate and in an international context.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: AGRN 0201

### AGRN 2002.03: Forage-Based Cropping Systems (A).

Forage crop production, management, and use will be discussed in the context of agricultural ecosystems. Emphasis will be placed on beneficial management practices to reduce negative impacts on the environment, while maintaining profitability and sustainability of rural communities. Topics covered will include pasture, hay, and silage, as well as the role of perennial and annual forages in crop rotations.

NOTE: Winter semester

INSTRUCTOR(S): Prof. McLean

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: AGRN 0202

### AGRN 2008.03: Potato Production (A).

History, biosystematics, and eco-physiology of the crop are emphasized. Production practices for seed, table, and processing stock and marketing in the Atlantic Provinces are examined. Soil fertility, crop health management strategies, and nutritional qualities and storage are covered in detail. Some commercial operations are visited.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Asiedu

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: Preparatory: AGRI 1000

CROSS-LISTING: AGRN 0200

## II. Technology Level Class Descriptions

### AGRN 0200.02: Potato Production.

History, biosystematics, and eco-physiology of the crop are emphasized. Production practices for seed, table, and processing stock and marketing in the Atlantic Provinces are examined. Soil fertility, crop health management strategies, and nutritional qualities and storage are covered in detail. Some commercial operations are visited.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Asiedu

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: AGRN 2008

### AGRN 0201.02: Cereal-Based Cropping Systems.

This course takes a systems approach to the study of crop and soil management in rotations involving the growing of the principal cereals, oilseeds, pulses and other grains, and their relationship to other crops in a rotation. Through a whole-farm approach over time, it studies environmentally and economically sustainable methods for grain cash crops and grain-based animal feed production. It stresses soil and water conservation and an understanding of the principles and processes of the nutrient cycles, which are critical to improving the food production environment. Students will gain knowledge of grains as they relate to people and the environment, from soil to shelf, both in a Maritime temperate climate and in an international context.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: AGRN 2001

### AGRN 0202.02: Forage-Based Cropping Systems.

The second course in cropping systems focuses on the forage crops. Students will acquire the basic knowledge and skills for the management of forage crops within cropping systems in a socially and environmentally responsible manner. Soil and water conservation will be emphasized in the context of production agriculture. Production and management for sustainable yields of forage crops under conditions specific to Atlantic Canada will be emphasized. Students will develop investigative and critical thinking skills to evaluate forage publications and enable themselves to address production challenges as they arise.

NOTE: Winter semester

INSTRUCTOR(S): Prof. McLean

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: AGRN 2002

# Animal Science

## I. Undergraduate Degree Level Class Descriptions

### ANSC 2002.03: The Horse: Its Biology and Use (A).

This course is an introduction to the behaviour, anatomy, nutrition, and history of horses. What behavioural principles underlie horse training? How is their performance influenced by their conformation? What is unique about their digestive system? How did horses evolve? The course will include discussion of sources and treatment of illness and disabilities, and the biology and control of common parasites; demonstrations of English and Western riding (students will not be taught to ride); visits to the Truro Raceway; study of the importance of shoeing to the working horse; and exposure to the use of horses as draft animals.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture/lab 3 hours per week with online component.

PREREQUISITE: second-year standing or equivalent, in any program

### ANSC 2003.03: Companion Animal Behaviour.

In this course, students will study the fundamentals of animal learning and how those principles affect success in training and behaviour modification. Attention will be given to understanding and solving behaviour problems (e.g., separation anxiety, dominance aggression, fighting, inappropriate urination, and behavioural stereotypes). The focus is on companion animals – dogs and cats, and to some extent horses. The normal development of behaviour in those species will be covered.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Tennesen

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: ANSC 0217

### ANSC 2004.03: Organic Livestock Production (A) DE.

This course provides information on organic livestock production in general, as well as more detailed analyses of organic beef and sheep, dairy, and swine and poultry production. An in-depth study of organic approaches to livestock health is included. The course is divided into five stand-alone modules: Introduction to Organic Livestock Production, Organic Beef and Sheep Production, Organic Dairy Production, Organic Swine and Poultry Production, and Health Management in an Organic Livestock System. A variety of information delivery methods will be used, including text on the Internet, a printed resource guide, and a CD-ROM with video clips and slide shows. Students will be encouraged to participate in discussion groups and use the organic information resources currently available over the Internet. Evaluation will be based on participation, written assignments, module quizzes, and a final exam.

NOTE: Winter semester

INSTRUCTOR(S): S. Fernandez

FORMAT: DE - only offered as a web-based distance education course.

### ANSC 2005.03: Animal Agriculture (A).

Through a mixture of classroom lectures and exercises at NSAC, this course will enable students to recognize common breeds of farm animals, to describe livestock production cycles and methods, and to understand the place of farm animals in the world food system. The course will provide introduction to subject matter covered in more senior animal science courses, such as nutrition, reproduction, behavior and welfare, animal anatomy, and environmental physiology. The interaction of livestock production with our environment will be examined.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Tennesen

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: AGRI 1000

### ANSC 2006.03: Equine Health, Genetics and Reproduction.

Students examine in detail the processes of reproduction and lactation in horses, as well as the requirements for care and management of the mare during breeding, parturition, and lactation. Students also study the growth and development of the foal and the requirements for the care of the foal. The common breeds of horses and the genetics of coat colour, conformation, and performance potential will be discussed. The course will enable students to evaluate the genetic merit of sires and dams, and to plan matings and genetics strategies to meet the genetic goals of their particular operation. Students will obtain a basic knowledge of health care and disease prevention, and be able to address issues relating to biosecurity.

NOTE: Fall semester

INSTRUCTOR(S): T.-L. Masters and D. Pelkey-Field

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 2002

CROSS-LISTING: ANSC 0214

### ANSC 2007.03: Beef Production and Management (A).

This course will focus on the management of commercial beef farms, ranging from cow/calf to stocker/feeder operations. Components of breeding, nutrition, and behaviour will be discussed. A systems approach to the management of the farm will be undertaken. The role of the manager in optimizing production is an important component. A historical perspective on the Atlantic beef industry along with coverage of emerging trends will be part of the course. Key beef industry issues such as the impact of BSE, animal welfare, and beef marketing will be discussed.

NOTE: Fall semester

INSTRUCTOR(S): F. Nicholson

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 2000 or ANSC 2005

CROSS-LISTING: ANSC 0218

### ANSC 3000.03: Animal Breeding (A).

The course covers variation in animal performance and the techniques whereby genetic superiority can be recognized and improved. Goals and programs of improvement are discussed with reference to commercial farm species. The emphasis is on programs in current use but applications of new technologies are included. Labs deal primarily with data collection, analysis, and computer applications.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: GENE 2000, STAA 2000

### ANSC 3001.03: Animal Health (A).

This course seeks to impart an understanding of animal health and its importance in livestock production enterprises. Students are taught to recognize signs of health and ill health and to understand the principles and practices of disease prevention and treatment. Conditions of disease and ill health common in Atlantic Canada are studied. The need for veterinary collaboration is emphasized, and the circumstances in which this should be sought are discussed.

NOTE: Winter semester

INSTRUCTOR(S): T. Semple

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: MICA 2000

### ANSC 3002.03: Domestic Animal Behaviour (A).

This course studies the behaviour of farm animals and presents information that is relevant to the care and management of animals. Topics covered include domestication, animal communication, social behaviour, reproductive and maternal behaviour, development of behaviour, genetics of behaviour, and the influence of management systems and practices on behavioural characteristics. Considerable attention is also given to welfare issues in animal agriculture.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: BIOA 2006 or BIOA 3005

### ANSC 3003.03: Eggs and Dairy Products (A).

This course deals with the nature and composition of eggs and milk and their products such as cheese and yogurt; hygiene; processing; and storage.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Firth

FORMAT: Lecture 2 hours, lab 2 hours per week.

**ANSC 3004.03: Meat Science (A).**

This course covers growth of meat animals and the nature of muscle, bone, and fat; conversion of muscle to meat; quality and grading of fresh meat; hygiene and storage; meat processing, meat products, and by-products.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Firth

FORMAT: Lecture 2 hours, lab 2 hours per week.

**ANSC 3005.03: Animal Welfare (A).**

This course deals with the well-being of animals, with emphasis on farm animals. Issues include what we mean by animal welfare, what the animal welfare issues are in modern agriculture and in modern society, and how we use ethology and physiology to assess animal welfare. The course outlines the international efforts to improve on farm animal welfare. There is a term project in which students attempt to assess animal welfare in a particular farm (or other) environment, and all students will participate in class debates on current issues in animal welfare.

NOTE: Winter semester

INSTRUCTOR(S): J. Morrison

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: At least third-year standing

**ANSC 3006.03: Companion Animal Biology.**

This course focuses on digestive and reproductive physiology, nutritional, genetic, and breeding programs, and the importance of these for management of companion animals. The emphasis is on domestic dogs and cats, with other companion animals included as the topic permits. Laboratory sessions include evaluation of diets and dietary supplements, reproductive and digestive anatomy, simulation of breeding programs, and guest lecturers or field trips to companion animal facilities.

NOTE: Winter semester

INSTRUCTOR(S): Profs. Rouvinen-Watt and Patterson

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: BIOA 3008, GENE 2000

**ANSC 4003.03: Avian Production Systems (A).**

This course will focus on management of commercial poultry, from hatching to the production of value-added products. The course material will require the application of the sciences of nutrition, genetics, physiology, and behavior to understand the key aspects of growth, reproduction, and health of commercial poultry species.

NOTE: Winter semester

INSTRUCTOR(S): Profs. Rathgeber and Jendral

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ANSC 2005, NUTR 3000

**ANSC 4004.03: Ecology of Milk Production in Ruminants (A).**

Milk is a highly prized food, the efficient forage-based production of which has been a major economic phenomenon in agriculture for millennia. Four main species – cattle, buffalo, goats and sheep – have been selected to produce milk for humans. All are from the Bovidae Family (Suborder Ruminantia) of cudchewers. Chosen initially because they didn't compete for the scarce food supplies of our ancestors, ruminants, especially cows, have been selected intensively for milk-yielding characteristics and conformation. The objectives of this course are to examine the production of milk, from provision of feed for the animals to processing the milk into products, and the important contribution made by the dairy industry in providing sustainable food security for society. This course will challenge perceptions of students who will become future dairy farmers or consumers and thus will influence future policy.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Fredeen

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: ANSC 2005

**ANSC 4005.03: Swine Science and Pork Production (A).**

Globally, pork production is a significant source of animal protein. Swine science provides the tools to accomplish pork production. This course will cover aspects of pork production including nutrition, management, breeding, housing, health and post-farmgate opportunities. The science of swine will be discussed, including biology and the role of swine as models for human studies.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Anderson

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ANSC 2005, ANSC 3000, BIOA 2006, NUTR 3001

**ANSC 4006.03: The Science of Modern Sheep Farming (A).**

Sheep were among the first animals to be domesticated and since then, sheep have been bred for different roles: wool, meat, milk. In the Maritimes, the importance of sheep in the rural economy is on the increase. This course will guide students through the science of sheep production. Nutrition, pasture management, breeding, lambing and flock health will be covered. The traditional roles of sheep for meat and wool production will be emphasized, but also newer uses in Canada such as dairy sheep production will be explored.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Barrett

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: BIOA 3008, NUTR 3000

**ANSC 4007.03: Pastures in Sustainable Livestock Systems (A).**

An advanced course that provides students with an overview of current sustainable pasture management practices in northern latitudes, with a focus on grassland ecology, the environmental impacts of livestock production, and applied pasture management. In addition to attending lectures and presenting material in class, students will participate in lab sessions on practical grazing management techniques as well as participate in investigative tours of local pasture producers.

NOTE: Fall semester

INSTRUCTOR(S): Profs. Papadopoulos, Fredeen and J. Duynisveld

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: AGRI 1000, AGRN 2002

**ANSC 4008.03: Carnivore Biology.**

This is an advanced-level course in mammalian biology focusing on species in the Order Carnivora. The specialized features of the biology of mammalian carnivores will be reviewed, emphasizing seasonal breeding and reproduction, nutrition and physiology, and health and disease. Species discussed will include livestock, companion and zoo animals, and wildlife. The practical aspects of the course will use the mink as a model animal.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Rouvinen-Watt

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: BIOA 3005, NUTR 3000

**ANSC 4009.03: Directed Studies in the Animal Sciences.**

This course permits senior students, under the direction of faculty members, to pursue their interest in areas not covered, or not covered in depth, by other courses.

NOTE: Fall, Winter or Summer semester

PREREQUISITE: Permission of the Department/Program Advisor; students must obtain consent of an instructor who is willing to be a supervisor

EXCLUSION: Note: ANSC 4009 cannot duplicate subject matter covered through regular course offerings.

**II. Technology Level Class Descriptions****ANSC 0020.02: Dairy Industry I.**

Students participate in an examination of the structure of the dairy industry and of the supply management system in which dairy farms operate. They will also be required to identify current issues facing the industry and to examine their potential impact on sustainability and opportunities in the Atlantic Canadian industry.

NOTE: Fall semester – This is a Workplace Readiness course required for the Dairy Farming option in the Diploma in Business Management.

INSTRUCTOR: Department of Plant and Animal Sciences Faculty; Coordinator: D. MacCallum

FORMAT: Lecture 1 hour per week.

**ANSC 0021.02: Dairy Industry II.**

A continuation of the topics in ANSC 0020. Students extend their examination of the issues facing the dairy industry in a series of lectures presented by speakers from a variety of fields.

NOTE: Winter semester – This is a Workplace Readiness course required for the Dairy Farming option in the Diploma in Business Management.

INSTRUCTOR: Department of Plant and Animal Sciences Faculty; Coordinator:  
D. MacCallum

FORMAT: Lecture 1 hour per week.

### **ANSC 0022.00: Equine Industry.**

This course enables students to examine the structure of the equine industry and to discuss the issues, challenges, and opportunities facing the industry. Speakers from the equine industry are invited to discuss relevant topics, and students participate in the discussion and write summaries of the discussion.

NOTE: Fall semester – This is a Workplace Readiness course required for the

Equine Specialty option in the Diploma in Business Management.

INSTRUCTOR: D. Pelkey-Field

FORMAT: Lecture 1 hour per week.

### **ANSC 0112.02: Animal Biology and Management.**

Students examine production cycles, reproduction, and genetics in farm animals, with a focus on care and management during breeding, parturition, growth, and lactation. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

NOTE: Fall semester

INSTRUCTOR: G. Fraser

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **ANSC 0113.02: Principles of Animal Welfare & Husbandry.**

Students examine the biological basis for animal behaviour, animal welfare, environmental physiology, and animal health. They also examine the role and importance of legislation and voluntary codes of practice in animal welfare and animal health. The course will enable the student to analyze and select handling practices, housing options, biosecurity, and disease prevention options that meet the needs of the animal and the enterprise. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

NOTE: Winter semester

INSTRUCTOR: G. Fraser

FORMAT: Lecture 2 hours, lab 2 hours per week.

### **ANSC 0114.02: Animal Feed and Nutrition Management.**

Students examine in detail the biology of digestion and nutrient metabolism and the assessment of feedstuff quality in forage-based feeding systems. The course will enable the students to analyze strategies for meeting nutrient requirements and avoiding nutritional problems, and to assess feed efficiency and feed costs for the enterprise. Lectures cover the principles that are common to all species, and the labs and tutorial sessions focus on more specialized topics that are relevant to the management of bovine, equine, and other ruminant species.

NOTE: Winter semester

INSTRUCTOR: G. Fraser

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **ANSC 0116.02: Companion Animal Enterprise.**

This course will enable the student to oversee the routine care of animals in a companion animal facility and to develop some of the basic workplace communication skills necessary in such an enterprise. Students examine the structure of the companion animal industry and discuss the issues, challenges, and opportunities facing the industry. The basic care component covers mainly dogs and cats, with some coverage of other species, and a portion of this will be conducted outside class time. The industry overview component covers all species represented by the industry, as well as the different segments of the industry.

NOTE: Fall semester

INSTRUCTOR: C. Spears

FORMAT: Lab 3 hours per week.

### **ANSC 0117.02: Companion Animal Growth, Development, and Nutrition.**

Students examine the biology of growth and development in companion animals and analyze the requirements for care and management throughout the life cycle. They also examine the biology of nutrition and the nutritional requirements throughout the life cycle, and relate this to information on specific products, supplements, and feeding regimes. The course will enable the student to work with a nutritionist or veterinarian in establishing and implementing feeding and nutritional programs, and to interpret the legal and other limitations to providing

foods and nutrition products and services for companion animals. The course covers mainly dogs and cats, with some coverage of other species.

NOTE: Winter semester

INSTRUCTOR: T.L. Masters

FORMAT: Lab 3 hours per week.

PREREQUISITE: ANSC 0116

### **ANSC 0204.02: Dairy Herd Health and Nutrition Management.**

Students participate in an in-depth examination of the health and nutrition requirements of the individual dairy cow, and of the requirements for maintaining high standards of health and optimal nutrition in the dairy herd. The course will enable the students to use herd records and on-site evaluations to troubleshoot health and nutrition problems and to identify solutions to those problems. The course will also enable the student to use a variety of technical and human resources in meeting future challenges in health and nutrition.

NOTE: Winter semester

INSTRUCTOR: F. Schenkels

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0112, ANSC 0113, ANSC 0114

### **ANSC 0205.02: Optimizing Bovine Reproductive and Genetic Performance.**

Half of the course is devoted to an in-depth examination of bovine reproduction and of the requirements for maintaining high success rates in heat detection and AI procedures. Students will use herd records and on-site evaluations to troubleshoot breeding problems and to identify solutions to those problems, and use a variety of technical and human resources in meeting future challenges in breeding management. In the other half of the course, students participate in an in-depth examination of dairy genetics and of the tools and systems used for evaluating performance and genetic merit in the dairy industry. Students will use herd records and on-site evaluations to identify breeding goals for the herd and to select sires and dams that will help the herd achieve these goals. The course will enable students to use a variety of technical and human resources in meeting future challenges in dairy genetics. Applications to the beef industry will be discussed as well.

NOTE: Winter semester

INSTRUCTOR: D. MacCallum

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0112

### **ANSC 0206.02: Managing Dairy Milking Systems and Housing Facilities.**

Students examine in detail the management of the milking system and evaluate current and future options in milking systems technology. They also examine current and future options for housing and equipment, and analyze the ability of those options to meet the financial, environmental, and animal welfare goals of the operation. Tours and field trips give the students an opportunity to view a variety of housing and milking systems. Some of the tours or field trips may be conducted outside scheduled class time.

NOTE: Fall semester

INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0113

### **ANSC 0207.02: Records Management and Decision-making for Dairy Herds.**

Students examine record-keeping options for dairy herds and use herd records to analyze key aspects of herd and farm performance. They also use case studies and records summaries to benchmark performance and to analyze the herd's ability to meet its targets. Establishing and maintaining the records required to meet certification (e.g., HACCP) requirements are also integral components of the course.

NOTE: Winter semester

INSTRUCTOR: TBA

FORMAT: Lab 3 hours per week.

CO-REQUISITE: ANSC 0204, ANSC 0205

### **ANSC 0208.02: Biology and Care of Aquarium Fish and Reptiles.**

Students examine the biology of growth and development in aquarium fish and reptilian species, and analyze the requirements for care and management throughout the life cycle, including the requirements for nutrition and health care. A considerable portion of the course is devoted to the selection and set-up of

aquarium and terrarium systems and to troubleshooting problems. The course will enable the student to ensure high standards of health and nutrition for fish in aquarium systems and for reptiles.

NOTE: Winter semester

INSTRUCTOR: C. Spears

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: ANSC 0116

### **ANSC 0209.02: Biology and Care of Pet Birds and Small Mammals.**

Students examine the biology of growth and development in avian and small animal species and analyze the requirements for care and management throughout the life cycle, including the requirements for nutrition and health care. The selection and set-up of housing systems are important components of the course. The course will enable the student to ensure high standards of health, nutrition, and care for birds and small animals.

NOTE: Winter semester

INSTRUCTOR: C. Spears

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2012/2013.

PREREQUISITE: ANSC 0116

### **ANSC 0210.02: Introduction to Companion Animal Health.**

Students examine the causes and predisposing factors of diseases common to companion animals, and of the principles of disease management and prevention as they apply to companion animal facilities. The course will enable students to establish and implement biosecurity and health management protocols, and to interpret the legal and other limitations to providing health care products and services in consultation with the facility veterinarian. The course covers mainly dogs and cats, with some coverage of other species.

NOTE: Fall semester

INSTRUCTOR: B. Ramsay

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0117

### **ANSC 0211.02: Companion Animal Facilities Management.**

Students examine the biological and behavioral considerations important in designing companion animal housing and facilities, and explore the options available for ensuring high standards of animal welfare in the facility. The course will enable the student to design and implement protocols for managing the facility and for ensuring compliance with regulatory requirements or industry standards. Students participate in tours and field trips to view a variety of housing and facilities options. Some of the tours or field trips may be conducted outside scheduled class time. The course covers mainly canine and feline facilities, with some coverage of facilities for other species.

NOTE: Winter semester

INSTRUCTOR: H. Logan

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **ANSC 0212.02: Companion Animal Genetics and Reproduction.**

Students examine the processes of reproduction and lactation in companion animals, and analyze the requirements for care and management during mating, parturition, and lactation. They also study the common breeds and the genetics of colour and conformation, and examine the requirements for choosing breeders and planning matings that meet the objectives of the breeding program. The course covers mainly dogs and cats, with some coverage of other species.

NOTE: Fall semester

INSTRUCTOR: T.-L. Masters

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0116

### **ANSC 0213.02: Equine Growth and Nutrition.**

Students will study the physiological growth and development at every life stage from conception to old age in the horse. The nutrition component focuses on the digestive system of the horse and the requirements for specific nutrients at different stages of growth and development. Analysis of different types of feeds and the formulation of diets based on life stage and level of activity will be conducted. The course will enable the student to troubleshoot nutrition problems in a variety of equine enterprise types.

NOTE: Fall semester

INSTRUCTOR: T.-L. Masters

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0113, ANSC 0114

### **ANSC 0214.02: Equine Health, Genetics, and Reproduction.**

Students examine in detail the processes of reproduction and lactation in horses, as well as the requirements for care and management of the mare during breeding, parturition, and lactation. Students also study the growth and development of the foal and the requirements for the care of the foal. The common breeds of horses and the genetics of coat colour, conformation, and performance potential will be discussed. The course will enable students to evaluate the genetic merit of sires and dams, and to plan matings and genetics strategies to meet the genetic goals of their particular operation. Students will obtain a basic knowledge of health care and disease prevention, and be able to address issues related to biosecurity.

NOTE: Fall semester

INSTRUCTOR: T.-L. Masters and D. Pelkey-Field

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0113

CROSS-LISTING: ANSC 2006

### **ANSC 0215.02: Equine Facilities Management.**

Students examine the behavioural and environmental considerations important in designing an equine facility, and explore the options available for ensuring high standards of animal welfare in the facility. The course will enable students to design and implement protocols for managing the facility and for ensuring compliance with regulatory requirements or industry standards. Students participate in tours to view a variety of facility options. Some of these tours may be conducted outside scheduled class time.

NOTE: Winter semester

INSTRUCTOR: R. Moskovits

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0213, ANSC 0214

### **ANSC 0216.02: Equine Health and Fitness.**

Students examine the anatomy and physiology of the horse with special attention to the respiratory, skeletal, muscular, and cardiovascular systems. The course will enable students to analyze how the horse's health and soundness is affected by its environment, level of fitness, and condition.

NOTE: Winter semester

INSTRUCTOR: R. Moskovits

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0213

### **ANSC 0217.02: Companion Animal Behaviour.**

In this course, students will study the fundamentals of animal learning and how those principles affect success in training and behaviour modification. Attention will be given to understanding and solving behaviour problems (e.g., separation anxiety, dominance aggression, fighting, inappropriate urination, and behavioural stereotypies). The focus is on companion animals – dogs and cats, and to some extent horses. The normal development of behaviour in those species will be covered.

NOTE: Winter semester

INSTRUCTOR: Prof. Tennesen

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: ANSC 2003

### **ANSC 0218.02: Beef Production and Management.**

This course will focus on the management of commercial beef farms ranging from cow/calf to stocker/feeder operations. Components of breeding, nutrition, and behaviour will be discussed. A systems approach to the management of the farm will be undertaken. The role of the manager in optimizing production is an important component. A historical perspective on the Atlantic beef industry along with coverage of emerging trends will be part of the course. Key beef industry issues such as the impact of BSE, animal welfare, and beef marketing will be discussed.

NOTE: Fall semester

INSTRUCTOR: F. Nicholson

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ANSC 0114

CROSS-LISTING: ANSC 2007

## **ANSC 0219.02: Equine Behaviour and Learning.**

This course explores the evolution of the horse and the history of equine domestication. Equine behaviour in both the feral and domesticated horse will be examined, and students will learn how understanding equine body language has practical applications within current training and husbandry practices. Type and causation of various abnormal equine behaviours and methods of behavioural rehabilitation will be covered. Students will examine equine perception and principles of learning, and how application of these principles can improve training and behaviour. Students will also study the human horse relationship.

NOTE: Winter semester

INSTRUCTOR: D. Pelkey-Field

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ANSC 0113

# **Applied Science**

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## **I. Undergraduate Degree Level Class Descriptions**

### **APSC 1000.03: Computer Aided Graphics and Projection.**

Freehand sketching, instrument drawing, and Computer Aided Drafting (CAD) techniques are used to develop proficiency in understanding and communicating in the graphical language. Experience is gained in reading and drawing orthographic, isometric, and oblique projections of objects as well as sectional and auxiliary views. Both Architectural and SI units of linear measure will be used in producing scaled drawings.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

### **APSC 1003.03: Practices and Mechanics of Materials.**

This course deals with the practices of selecting and working with materials, including considerations for green practices. Selection of materials is based on many properties depending on the application; usually strength, workability, durability, and costs are key concerns. Green practices during the construction of machines, structures and buildings will include traditional properties and their environmental and resource efficiency including their deconstruction. Using green materials and products promotes conservation of dwindling non renewable resources and helps to reduce the environmental impacts associated with the extraction, transport, processing, fabrication, installation, reuse, recycling, and disposal of these source materials.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### **APSC 1004.03: Wood Construction Technology I.**

This is an introductory course in the selection, operation, and maintenance of woodworking hand and power tools. The principles of selection, operation, and maintenance of workshop tools in the modern woodworking shop are studied. Students will be required to present seminars on various fabrication techniques and construction tools. Occupational Health and Safety issues pertaining to wood shop work procedures will be covered.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

### **APSC 1005.03: Metal Construction Technology I.**

This is an introductory course to familiarize students with common metal construction technologies, machines, and tools used in a metal fabrication shop. The principles of welding and welding applications will be emphasized. Students will be required to present demonstrations on the use of various metal hand and power tools, as well as present a seminar on some form of metal fabrication technology. Occupational Health and Safety issues pertaining to metal shop work procedures will be covered.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

### **APSC 2000.03: Environmental Impacts and Resource Management (A).**

This course is an introduction to environmental engineering and technology, emphasizing a quantitative engineering approach. The course addresses the issues associated with the safe and ecologically appropriate handling, processing, storage, and utilization of organic wastes arising from human activities, including agricultural and bio-resource production systems. Topics covered will include: growth models for populations of living organisms, as well as models for depletion and replenishment of natural resources; the concept of mass and energy balances applied to quantify changes in environmental systems; physical,



chemical, and biological unit operations for treatment and reduction of solid, liquid, and gaseous wastes; and reduction of pollution impacts on air and water resources.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002, CHMA 1001

### APSC 2002.03: Bioresource Systems Analysis.

The objective of this course is to introduce the concept of systems theory and analysis. The emphasis will be on the use of bioresource science principles applied to environmental and technological systems. Students will be exposed to case studies and special lectures focusing on bioresource science and systems analysis as an integrated problem-solving tool. Real-world systems will be examined through field tours and guest speakers. New faculty will give case studies in their areas of specialization.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Price and other NSAC Engineering Faculty

FORMAT: Lecture 3 hours, lab 3 hours per week.

### APSC 2004.03: Aquacultural Environment (A).

Principles necessary for understanding and providing optimal aquatic environments for aquaculture production are reviewed. Topics in water habitat management will be emphasized, including: water properties of both fresh- and salt-water systems; water quality and reconditioning techniques; maintenance of dissolved oxygen and removal of metabolic wastes in aquaculture rearing systems; and evaluation of water resource requirements for aquaculture.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Yildiz

FORMAT: Lecture 3 hours, lab 3 hours per week.

### APSC 2007.03: Fluid Power Technology.

This course covers the subjects essential to understanding the design, analysis, operation, and maintenance of fluid power systems: hydraulic, pneumatic, and water. Emphasis is placed on the practical applications of fluid power and the functioning of system components such as reservoirs, pumps, compressors, motors, valves, filters, lines and hoses, and mechanical and electrical controls in typical fluid power circuits. The principles of fluid flow, pressure and force, energy conservation, and power in the context of using fluid energy to do useful mechanical work are covered. Theory is presented to emphasize how and why fluid power systems operate. General maintenance, safety, and environmental issues associated with fluid power systems are also discussed.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### APSC 2008.03: Digital Electronics and Computer Interfacing.

This course covers the theory and applications of digital electronics technology and the control of digital devices by computers and programmable logic controllers (PLCs). Digital technology has become the dominant method of communication, control, sensing, computation, and amusement in modern society. This course will provide the foundation to better understand current and future digital systems. Digital logic circuits, data forms, and applications are studied. Computers in the laboratory are used to interface with and control a variety of digital devices such as computer numerical controlled (CNC) machines, robotics, cameras, scanners, lab equipment, etc. Students are introduced to Visual Basic programming for interfacing with computer ports and analog input devices. Hands on projects are completed to control real-world applications such as traffic lights, process control and experimentation equipment.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### APSC 2009.03: Metal Construction Technology II.

This is an advanced course in metal construction technologies using power machines (including CNC) and tools used in a metal fabrication shop. Advanced principles of welding and welding applications will be emphasized. Students will be required to present demonstrations on the use of various power machines, and to design and construct a major metal project using the skills learned in both Metal Construction Technology courses.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

PREREQUISITE: ENGN 1005

### APSC 2010.03: Wood Construction Technology II.

An advanced course in the operation and maintenance of woodworking hand and power tools, and shop machinery. Students will learn about specialized machinery and advanced joinery technologies. The operation, maintenance, and repair of workshop tools in the modern woodworking shop are studied, with emphasis on re-alignment and setting up for accessories and jigs. Written work safety procedures will be reviewed. Individual projects are undertaken by students with the skills acquired in both Wood Construction Technology courses, utilizing the shop equipment.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

PREREQUISITE: ENGN 1004

### APSC 2011.03: Technology for Precision Agriculture.

This course will provide students with a fundamental understanding of the concepts and principles related to precision agriculture. This includes the technology and use of electronics in collecting and analyzing data with emphasis on spatial variability: electronic sensors, monitoring instrumentation, computer equipment, and machine controllers. Nutrient management systems, application of GPS-based surveys, precision farming software (e.g., SSToolBox), geographic information system (GIS) software utilization, and GPS hardware are examined.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### APSC 2012.03: Introduction to Bioresource Science (A).

This course is an introduction to environmental science and engineering technology with a specific focus on agriculture, and consists of the ENVA 2000 lectures plus additional weekly tutorials and labs by the Engineering department. This combination provides an efficient means to provide the environmental science and the applied management of resources. The course is designed to provide an introduction to horizon topics in this rapidly developing field that are the subjects of specialized, upper-level courses available in the program, and it provides a solid foundation for some environmental science courses. Topics to be covered include: overviews of green-collar jobs and the new bioresource economy, and of sustainable agroecosystem management; introductions to the management of sustainable water and energy resources, including alternative waste water, biosolids, and biofuels; introductions to materials life-sourcing; geographic information systems and precision agriculture.

NOTE: Fall semester

INSTRUCTOR(S): Prof. France

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002, CHMA 1001

EXCLUSION: Students can receive credit for either ENGN2012 or ENVA2000, but not both.

### APSC 2013.03: Machinery and Building Technology (A).

Two keys to the success of utilizing biomaterials are selection of appropriate machines and designing effective facilities to manage the production/processing system. In the first half of the course, students are introduced to the types of equipment, their productivity, and methods of selection for efficient operation. This will include machinery for soil preparation, planting, crop care, and harvesting. The machines and their unit operation are analyzed with respect to functions, work rates, material flow and power usage. The importance of monitoring machine performance relating to work quality and environmental effects of machine operation will be studied. The labs will emphasize safety, basic maintenance, adjustment, calibration and performance testing. The second half of the course provides an introduction to the planning process of structures and various topics related to the use of building materials, particularly "green" materials. Functional layouts and ventilation principles of storage and production buildings are considered. Field trips supplement the lecture material. A term paper is required.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Zaman

FORMAT: Lecture 3 hours, lab 3 hours per week.

CROSS-LISTING: ENGN 0201

### APSC 3001.03: Electrotechnology (A).

Electricity is integral to our society, and this course reviews application of AC and DC electricity. Safety and measurements are practised during hands-on lab sessions. Common sensors, measurements and control systems are discussed and applied to improve energy management.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Havard  
FORMAT: Lecture 3 hours, lab 3 hours per week.  
PREREQUISITE: PHYS 1000 or PHYS 1002

### **APSC 3013.03: Aquacultural Systems Technology (A).**

Support facilities, equipment, and systems for aquatic production will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and growth of aquaculture species; principles of design and selection of equipment for recirculation systems for aquaculture; and the principles of water flow and handling in open and closed conduits.

NOTE: Winter semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 3 hours, lab 3 hours per week.

### **APSC 3015.03: Irrigation and Drainage.**

This course examines basic soil/water/plant/atmosphere relationships. It introduces students to soil and water conservation and management principles. The course covers irrigation and drainage of golf courses, athletic areas, parks, and residential landscapes.

NOTE: Winter semester  
INSTRUCTOR(S): Coordinator: Prof. Havard  
FORMAT: Lecture 2 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

EXCLUSION: Students who have credit for ENGN 3010 may not take ENGN 3015 for credit.

### **APSC 3018.03: Technology Modules.**

This course deals with the operating concepts of CNC machines, plastics forming and construction technology, and transportation technology in a modular format. Approximately 4 weeks will be allocated to the study of each module area. The students will be able to perform operations in each technology area upon completion of the appropriate module. Practical hands-on laboratory and shop experiences are emphasized, as are associated aspects of Occupational Health and Safety. Students will also make presentations to the class regarding specific features and operations of the technologies studied.

NOTE: Winter semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 5 hours per week.

### **APSC 3019.03: Communications Technology.**

This course addresses issues, systems, and methodology in computer-related communications technology. Among the topics studied are desktop publishing, digital photography and image editing, video production, web page design, and presentation software usage. Supplementary classes in graphic design and screen printing will be available as time allows. Emphasis is placed on practical production techniques and individual design situations.

NOTE: Fall semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 3 hours, lab 2 hours per week.

### **APSC 3020.03: Energy Production and Utilization.**

This lecture-based course provides an overview of the whole energy system, focusing on selected attributes of energy. The assessment, management and remediation of energy production is a global issue, which will ultimately impact all walks of life, business, industry and future infrastructure. It includes an introduction to the energy supply chain, transmission and distribution systems, energy use, energy policy and the environment and methods of generation. It also includes an overview of renewable energy assessment techniques and feasibility tools.

NOTE: Fall semester  
INSTRUCTOR(S): Prof. Corscadden  
FORMAT: Lecture 3 hours, lab 3 hours per week.  
PREREQUISITE: MTHA 1001, preparatory: PHYS 1000 or PHYS 1002

### **APSC 4001.03: Water Quality Issues (A).**

NOTE: Winter semester  
INSTRUCTOR(S): Coordinator: TBA  
FORMAT: Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.  
PREREQUISITE: Current environmental water quality issues such as contamination of surface and ground water are discussed. Emphasis is placed on providing solutions to the water quality problems. Agricultural water quality models will also be examined.

### **APSC 4003.03: Senior Design Project I.**

Senior engineering students gain first-hand experience in applying design principles and practices by undertaking a real-world design project. Students are expected to display a high level of initiative and ingenuity in carrying out the project through its various design stages. As well, students will gain proficiency with an engineering project's written and oral communication requirements by keeping a project log book, preparing written project proposals and reports, and orally presenting their design project in a seminar format.

NOTE: Fall semester  
INSTRUCTOR(S): Engineering Faculty, Coordinator: TBA  
FORMAT: Lecture 1 hour, lab 5 hours per week.

### **APSC 4004.03: Energy Conversion and Assessment.**

This lecture-based course focuses on selected attributes of existing and renewable energy options, including the reserves and consumption of oil, coal and gas; fossil energy technologies for power generation; fundamental principles, applications and status of solar energy, biomass energy, wind energy and hydro-power; and outlook and evaluation of renewable energy.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Corscadden  
FORMAT: Lecture 3 hours, lab 3 hours per week.

### **APSC 4005.03: Waterscape Ecology and Management (A).**

This lecture-based, non-quantitative course focuses on selected basic attributes of land-water interactions and aquatic degradation as they relate to issues of waterside and watershed development in rural and (sub)urban environments. The course provides an introduction to a variety of aquatic principles and how they in turn are influenced by human activity, followed by an introduction to and review of the many management options available to land-use planners to mitigate development pressures. Broad latitude will be permitted in the subject areas of the assignments in order to appeal to individuals' interests and career aspirations in environmental engineering, environmental science, horticulture, international development, and environmental governance and sociology.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. France  
FORMAT: Lecture 3 hours, lab 3 hours per week.

### **APSC 4006.03: Wastewater Management (A).**

This course gives an overview of sources of water pollution, particularly in the rural situation, and standard methods of treatment. Alternative approaches such as wetlands and filters will be discussed. Laboratory sessions will include field trips, methods of sampling, and some testing of water.

NOTE: Fall semester - Environmental Sciences  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 3 hours, lab 3 hours per week.  
PREREQUISITE: At least third-year standing

## **II. Technology Level Class Descriptions**

### **APSC 0100.02: Surveying.**

An introduction to surveying principles and recording techniques. Students are given lectures and assignments to assist in understanding the principles employed in surveying, and they practise these during the labs by conducting various surveying exercises. Practice is gained in the proper use of surveying instruments (tape, level, and transit) through exercises involving measurements of horizontal and vertical distances and angles. These include chaining, stadia, benchmark, profile and contour leveling, triangulation and traverse exercises, and construction surveying, with emphasis on their application to farm construction projects.

NOTE: Fall semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 2 hours, lab 3 hours per week.

### **APSC 0101.02: Horticultural Engineering.**

Small gasoline engine structure and operating theory are studied, with emphasis on engine maintenance and troubleshooting. This course includes basic hydraulic theory, emphasizing the operation of common systems in use today. A wide range of horticultural machinery is studied, as well as the principles of mixing, placing, and curing concrete, fence making, and chainsaw operation.

NOTE: Winter semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 2 hours, lab 3 hours per week.

**APSC 0200.02: Environmental Management.**

Students examine the major environmental issues and risks in agricultural production. The emphasis is on how agricultural activities impact the environment and how environmental issues, regulations, and programs impact the way agricultural activities are carried out. The course will enable the student to identify the legal and other requirements for reducing the environmental risks associated with production activities, and to work with an engineer or environmental specialist in determining ways to minimize environmental risk.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: SOIL 0100

**APSC 0201.02: Machinery and Building Technology.**

Two keys to the success of utilizing biomaterials are selection of appropriate machines and designing effective facilities to manage the production/processing system. In the first half of the course, students are introduced to the types of equipment, their productivity, and methods of selection for efficient operation. This will include machinery for soil preparation, planting, crop care, and harvesting. The machines and their unit operation are analyzed with respect to functions, work rates, material flow and power usage. The importance of monitoring machine performance relating to work quality and environmental effects of machine operation will be studied. The labs will emphasize safety, basic maintenance, adjustment, calibration and performance testing. The second half of the course provides an introduction to the planning process of structures and various topics related to the use of building materials, particularly green materials. Functional layouts, ventilation principles of storage, and production buildings are considered. Field trips supplement the lecture material. A term paper is required.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Zaman

FORMAT: Lecture 3 hours, lab 3 hours per week.

CROSS-LISTING: ENGN 2013

# Aquaculture

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## I. Undergraduate Degree Level Class Descriptions

**AQUA 2000.03: Introduction to Aquaculture (A).**

The history and the current status of world aquaculture production are discussed, with emphasis on species with potential in Atlantic Canada. Advances in freshwater or marine finfish and shellfish culture are included. Aquatic plant production is discussed. Business aspects of aquaculture are introduced. The course includes field trips to aquaculture and related facilities.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

**AQUA 3000.03: Fish Health (A).**

This course outlines concepts of disease with special reference to fish. Diseases of various etiological types are considered, with emphasis on those in the aquaculture environment. The relationships of management and economics to disease in cultured fish are detailed, and public health concerns are addressed. Diagnostic, prophylactic, and treatment methods are outlined and practised.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Duston

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: Preparatory: BIOA 3005

**AQUA 4000.03: Finfish Production.**

Aspects of breeding and genetics, fish management, financial management, economics, marketing, housing systems, and water management are presented in an integrated approach to provide a sound understanding of this aspect of aquaculture. Management of finfish throughout the life cycle is presented. The course includes a weekend field trip to commercial farms; attendance is obligatory.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Duston

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: NUTR 3000 or NUTR 3002, AQUA 3000, BIOA 3005

**AQUA 4001.03: Shellfish Production.**

Factors affecting profitable production of shellfish are discussed in the context of developing a sound industry with potential to address future opportunities. A survey of culture techniques used in shellfish production is undertaken.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: NUTR 3000 or NUTR 3001, AQUA 3000, BIOA 3005

# Art

## I. Undergraduate Degree Level Class Descriptions

### ARTS 2000.03: Nature's Image: A Survey of Landscape Art (H).

This course will provide an introduction to the history of art forms depicting landscape, with the major focus being on landscape painting. The course will consist of art history lectures and a studio component in which drawing techniques, collage, and colour theory will be explored. Students will develop skills in composition and will gain an increased appreciation for landscape art traditions.

NOTE: Fall semester

INSTRUCTOR(S): C. Brown

FORMAT: Lecture/studio 3 hours per week.

# Biology

Below are classes offered in Biology by the Faculty of Agriculture. Please see the Biology Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### BIOA 1002.03: Biology I.

This is the first of a two-semester course sequence exploring various general principles common to the biological sciences. The biological significance of cell structure and function, metabolism, the cell cycle, sexual reproduction, Mendelian genetics and basic gene structure are among the topics to be considered in the lecture sessions. The labs reinforce and enhance the learning of selected topics discussed in the lectures.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Olson

FORMAT: Lecture 3 hours, lab 3 hours per week.

### BIOA 1003.03: Biology II.

This is the second of a two-semester course sequence exploring various general principles common to the biological sciences. In addition to evolutionary processes and patterns, the fundamental systematics and diversity of prokaryotes, protists, plants, fungi and animals are emphasized in the lecture sessions. The laboratory continues to reinforce and enhance the learning of selected topics discussed in the lectures.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Olson

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002

### BIOA 2000.03: Cell Biology.

An introduction to cell biology. Topics include cell metabolism, the structure and function of organelles of the eucaryotic cell, cell growth, cell movement, and the prokaryotic cell. Specialized cell functions will also be discussed.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Wang-Pruski

FORMAT: Lecture 3 hours per week.

### BIOA 2001.03: Cell Biology Laboratory.

This course combines the lectures of BIOA 2000 with a laboratory section. Students will participate fully in BIOA 2000 and, as well, complete laboratory sessions to complement lecture material. Students may receive credit for either BIOA 2000 or BIOA 2001, but not both.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Wang-Pruski

FORMAT: Lecture 3 hours, lab 3 hours per week.

### BIOA 2002.03: Plant Physiology.

A study of the different functions of the plant, including growth, photosynthesis, mineral nutrition, water relations and translocation of solutes, and plant orientation, development, and reproduction.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Percival

FORMAT: Lecture 3 hours, lab 3 hours per week.

### BIOA 2004.03: Structural Botany.

The basic morphology and anatomy of the seed plants are presented from a developmental perspective. The structural aspects of the various modes of plant reproduction are also included. Emphasis is placed on obtaining an understanding of plant structure that will complement crop physiology, weed biology, and plant pathology.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Olson

FORMAT: Lecture 3 hours, lab 3 hours per week.

**BIOA 2005.03: Principles of Plant Pathology (A).**

This course deals with the principles of plant pathology and the control of diseases caused by bacteria, fungi, mycoplasma-like organisms, viruses, and nematodes.

Labs deal with basic techniques used in plant pathology, such as fungal, bacterial, and nematode isolation, identification, and inoculation.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Prithiviraj

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1003, MCRA 2000

**BIOA 2006.03: Mammalian Physiology.**

An introduction to the body systems and how they function. The student should develop a basic understanding of physiological processes and how they are regulated and integrated by the nervous and endocrine systems. Topics covered include: homeostasis; the nervous, muscular, endocrine, cardiovascular, respiratory, renal, and digestive systems; and an introduction to environmental physiology.

NOTE: Winter semester

INSTRUCTOR(S): T. Semple

FORMAT: Lecture 3 hours, lab 3 hours per week.

CO-REQUISITE: CHMA3001

**BIOA 2007.03: Mycology.**

An introduction to the fungi, including members of the Kingdoms Eumycota and Chromista, and the protozoan pseudofungi. The labs in this course will focus on classification of the fungi, but lecture topics will also include fungal physiology, genetics, ecology, industrial mycology, food spoilage, and medical mycology. Students will be required to submit a microfungus collection and a mushroom collection.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

**BIOA 2008.03: Plant Diversity.**

This course emphasizes the biology, evolution, and diversification of the major phyla of the Kingdom Plantae. The lectures illustrate the fundamental reproductive unity underlying the diversity of all land plants, using examples from both fossil and living species. In addition to exploring the major plant groups and their subdivisions in the laboratory, students learn to use the appropriate resources to identify specific plants.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Olson

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: Preparatory: BIOA 1003

**BIOA 3000.03: General Entomology (A).**

An introduction to the science of entomology from an agricultural perspective. Insect anatomy, physiology, and taxonomy are considered; also included are discussions on insect behaviour, reproduction, life cycles, and population ecology. Basics of monitoring techniques and population dynamics are illustrated. Students will be required to prepare and submit an insect collection.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Cutler

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: Preparatory: BIOA 1003

**BIOA 3001.03: Ecology.**

An introduction to the principles and general concepts of ecosystem structure and function is presented. The dynamics of populations and community interactions are considered in relation to various biotic and abiotic environmental influences. The laboratory reinforces topics covered in the lectures and readings by emphasizing the importance of field observation and interpretation.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Nams

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002, BIOA 1003

**BIOA 3002.03: Weed Science (A).**

This course deals with the principles of weed science. Included are discussions on weed recognition, and chemical and non-chemical approaches to controlling weeds in various agricultural crops and in lawns and non-crop areas. The selection, safe use, handling, and storage of herbicides are stressed, along with the environmental impact of the different methods of weed control.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002, preparatory: BIOA 2002

**BIOA 3003.03: Comparative Vertebrate Anatomy.**

An introduction to comparative anatomy. Emphasis is placed on analyzing vertebrate structure. Comparisons of form and function within the Vertebrata are discussed with an evolutionary perspective. This is supplemented in the laboratory by detailed dissections of representative vertebrates.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: BIOA 1003

**BIOA 3004.03: Environmental Physiology (A).**

A study of animals in relation to their environment. The influence of environmental factors on body processes and their relationship to productive efficiency and animal well-being are examined. Major topics include temperature regulation and body homeostasis, biological rhythms, photoperiodism, and environmental and hormonal interrelationships.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Rouvinen-Watt

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: BIOA 2006 or BIOA 3005

**BIOA 3005.03: Physiology of Aquatic Animals (A).**

The form, function, physiological integration, and behaviour of major types of aquatic animals is considered. Emphasis is placed on Classes of organisms, using commercially important species as primary examples.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Duston

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1003

**BIOA 3006.03: Aquatic Ecology.**

The biology of aquatic species in marine and freshwater environments is discussed, with emphasis on biological systems involving farmed species, and organism interdependencies and interactions are examined. An introduction to the principles of ecology at the community and ecosystem level of integration is included.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1003

**BIOA 3008.03: Growth, Reproduction and Lactation (A).**

A continuation of BIOA 2006, emphasizing physiological systems relevant to animal production. Major topics include growth and development as it applies to meat and brood animal production, and the physiology and management of reproduction and lactation in domestic species.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Barrett

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: BIOA 2006

**BIOA 4000.03: Avian Biology (A).**

This course is a study of topics in biology of special relevance to the commercial use of avian species. Physiological, biochemical, and genetic control and manipulation of such processes as reproduction, growth and development, and immunity are examined.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Rathgeber

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: ANSC 2005, CHMA3001 (or CHMA 2005), GENE 2000

**BIOA 4002.03: Conservation Biology.**

This course has limited enrollment. This course will examine the ecological concepts underlying current issues in conservation biology. Topics covered include effects of agricultural habitat fragmentation on wildlife, conservation of biodiversity, stability and resilience of ecosystems, optimal design of nature reserves, and habitat heterogeneity. This is a discussion-style course concentrating

on current published scientific papers chosen by the students. Students will also learn to read and critically evaluate scientific papers, and to apply this ability to writing literature reviews.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Nams

FORMAT: Lecture 3 hours per week.

PREREQUISITE: 60 credit hours

### **BIOA 4003.03: Plant-Microbe Interactions.**

This course is an advanced study of the interactions between plants and microorganisms, with emphasis on plant pathogenic micro-organisms but including symbiotic and other microorganisms that can provide a benefit to the plant. Students will study the histology of the infection process in relation to plant disease and symbiosis, and the impact that infection has on the physiology of the host. Responses of the plant to infection will be studied, with emphasis on Systemic Acquired Resistance and Induced Systemic Resistance.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Prithiviraj

FORMAT: Lecture 3 hours, tutorial 2 hours per week.

PREREQUISITE: BIOA 2005, 45 credit hours.

### **BIOA 4004.03: Animal Adaptation and Stress.**

This is an advanced-level course in the comparative physiology of animal adaptation and stress. The concepts of allostasis, homeostasis and the physiological stress response will be reviewed, and the role of endocrine regulation in animal adaptation under changing external (environmental) and internal (life-history) demands will be discussed. Special emphasis will be placed on mammalian and avian adaptation in response to changes in the internal, physical, and social environments. Species discussed may include livestock, companion and zoo animals, and wildlife.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Rouvinen-Watt

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: At least third-year standing/preparatory: BIOA 3004

## **II. Technology Level Class Descriptions**

### **BIOA 0101.02: Plant Pathology.**

This course deals with the diagnosis of plant diseases caused by fungi, bacteria, phytoplasmas, viruses, and nematodes. Students will develop skills to differentiate plant diseases caused by microbial pathogens from those caused by abiotic factors. Principles of plant disease management will be covered. Labs deal with basic techniques used in plant pathology, such as fungal, bacterial, and nematode isolation, identification, and inoculation.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Prithiviraj

FORMAT: Lecture 3 hours, lab 3 hours per week.

### **BIOA 0102.02: Plant Physiology and Stress Management.**

This course is aimed at gaining an insight into various plant physiological, growth, and developmental processes and to develop a fundamental understanding and appreciation as to how various environmental factors influence growth, differentiation, and developmental processes in plants. The course also examines the impact of various abiotic stresses on plant growth and development, yield, and productivity, including acclimation and adaptation techniques. Plant diagnosis will be emphasized.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Percival

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **BIOA 0103.02: Weed Science.**

This course deals with the principles of weed science. Included are discussions on weed recognition, and chemical and non-chemical approaches to controlling weeds in various agricultural crops and in lawns and non-crop areas. Selection, safe use, handling, and storage of herbicides are stressed.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Boyd

FORMAT: Lecture 3 hours, lab 3 hours per week.

### **BIOA 0200.02: Entomology.**

An introduction to the study of the phylum Arthropoda, with particular reference to the class Hexapoda (Insecta), emphasizing insect pests of the northeast.

Anatomy, physiology, taxonomy, behaviour, and ecology of insects are considered

during lectures and laboratory work. Discussions on the relationship of insects to humans, basics of insect control methods, and pesticide safety are included. Students will be required to prepare and submit an insect collection.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 2 hours per week.

# Chemistry

Below are classes offered in Chemistry by the Faculty of Agriculture. Please see the Chemistry Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### CHMA 0050.00: Preparatory Chemistry.

This non-credit course is designed for students who satisfy all other requirements for admission but lack the Grade 12 Chemistry course. The course will cover the basic material necessary for entrance into CHMA 1000, including review of the periodic table, nomenclature, chemical reactions, aqueous solutions, chemical bonding, and other topics as determined by a review of the class. CHMA 0050 is not intended to duplicate or replace Grade 12 Chemistry.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): P. Nelson

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: Approval of the Registrar

### CHMA 1000.03: General Chemistry I.

This course is designed to help students understand chemical equations, reactions, and calculations. The chemistry of aqueous media is highlighted (properties of water, ionization of weak electrolytes, buffers). In addition to the traditional classroom interaction, students will be exposed to problem-based learning and co-operative learning. Students will learn the proper use of various analytical equipment and apparatus. The laboratory work will focus on the development of practical lab skills applicable to the agricultural and environmental industries.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Pitts

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: Successful completion of academic Grade 12 Chemistry or equivalent.

### CHMA 1001.03: General Chemistry II.

This second semester of General Chemistry will include a theoretical understanding of atomic and molecular structures. An understanding of physical equilibria will be extended to practical applications of chromatographic analyses.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pitts

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: CHMA 1000

### CHMA 2000.03: Organic Chemistry I.

This course provides an introduction to the structure and reactions of organic compounds. The course is approached from a mechanistic point of view and has particular emphasis on appropriate spectroscopy (IR and MS). The topics covered in this course include chemical bonding, isomerism, acid-base properties and the isolation and purification of organic compounds. The classes of organic compounds covered will include alkanes, alkenes, alkynes, simple aromatics, organohalides, alcohols, and related compounds. Laboratory work will include introductory techniques of organic chemistry and both HPLC and gas chromatography.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 2 hours, tutorial 1 hour, lab 3 hours per week.

PREREQUISITE: CHMA 1001

### CHMA 2001.03: Organic Chemistry II.

This course builds on work begun in CHMA 2000. Functional groups included here will be carbonyls (aldehydes, ketones, acids, and their derivatives), more complex aromatics, simple organometallics, and bifunctional organic compounds. The emphasis on mechanistic chemistry will continue, as will the study of appropriate spectroscopy (MNR and UV-Vis). In addition, an introduction to organic syntheses and biomolecules will be undertaken.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: CHMA 2000

### CHMA 2003.03: Food Chemistry I (A).

An introductory study of the chemistry of food and food components. The emphasis will be on water, fats, proteins, and carbohydrates (and related compounds) with an overview of vitamins, minerals, and additives. Methods of analysis will be discussed in detail and this will be augmented by hands-on laboratory experiences with these analytic procedures.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: CHMA 2000

EXCLUSION: This course may not be taken for credit by students who have credit for CHMA2004.

### CHMA 2004.03: Introductory Food Chemistry (A).

An introductory study of the chemistry of food and food components. The emphasis will be on water, fats, proteins, and carbohydrates (and related compounds) with an overview of vitamins, minerals, and additives. Methods used for analysis of food components will be discussed in detail.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours per week.

EXCLUSION: This course may not be taken for by students who have credit for CHMA2003.

### CHMA 3001.03: Biochemistry.

The major focus of this course will be on the biochemical pathways and activities that account for the assimilation, transformation, degradation, and synthesis of the major macromolecules in living cells. These molecules include proteins, lipids, carbohydrates, RNA and DNA. Catalytic and regulatory strategies used by living cells will also be discussed. The final topic will be to examine and understand how metabolism consists of highly interconnected biochemical pathways.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Rupasinghe

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: CHMA 2000

### CHMA 3003.03: Advanced Integrated Chemistry Laboratory.

The course will cover advanced laboratory topics in the fields of inorganic, general, and organic chemistry. Whenever possible these topics will be chosen from the fields of environmental science or agriculture. In particular, the use of spectroscopic techniques for the identification of chemical compounds will be applied, where appropriate.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lab 4 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: CHMA 2001

### CHMA 3006.03: Mammalian Biochemistry.

A study of the application of basic biochemical principles to the molecular functions of the diverse mammalian organ systems. The subject matter is divided into three parts: Body Fluids and Their Constituents, which includes such subjects as blood coagulation, the complement system, the immune system, and their control; Specialized Tissues, such as connective tissue, nervous tissue, and muscle tissue; and Biochemistry of the Endocrine System, with the focus on the principles of endocrine biochemistry and the mechanisms of hormone action. The topics covered include general principles and mechanisms of hormone action, prostaglandins, the thyroid gland, and the gonads, as well as the hypothalamus, hypophysis, and adrenals.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours per week.

PREREQUISITE: CHMA 2000

### CHMA 3007.03: Food Chemistry II (A).

This course, which builds on CHMA 2003 (or CHMA 2004), will provide an in-depth study of minor food components including vitamins, colorants (natural and artificial), nutraceuticals, and textural agents. Beneficial and/or deleterious

interactions between food components will be examined (Maillard, caramelization, rancidity, and enzymatic reactions). Recent advances in processing technology will be introduced.

NOTE: Winter semester— Note: This course may not be taken for credit by students who have credit for CHMA3008.

INSTRUCTOR(S): Prof. Pitts

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: CHMA 2003 or CHMA 2004

### **CHMA 3008.03: Intermediate Food Chemistry (A).**

This course, which builds on CHMA 2003 (or CHMA 2004), will provide an in-depth study of selected food components including vitamins, colorants (natural and artificial), nutraceuticals and textural agents. Beneficial and/or deleterious interactions between food components will be examined (Maillard, caramelization, rancidity, and enzymatic reactions). Recent advances in processing technology will be introduced as time permits.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pitts

FORMAT: Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: CHMA 2003 or CHMA 2004

EXCLUSION: This course may not be taken for credit by students who have credit for CHMA 3007.

### **CHMA 3009.03: Environmental Chemistry.**

In this course students will undertake an in-depth study of the chemical processes involved in the pollution of the environment. Chemical pollution of the atmosphere, hydrosphere, and lithosphere will each be studied in depth. In each case, chemical solutions to these problems will be considered. Chemical processes such as dissolution, coordination, ion exchange, hydrolysis, ionization, and freezing point depression will be covered.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: CHMA 2000

### **CHMA 3010.03: Bio-Analytical Chemistry.**

This course will equip the non-chemistry major with an understanding of HPLC (liquid chromatography), GC (gas chromatography), AAS (atomic absorption spectrophotometry), and UV-visible spectrophotometry. The course will use environmental, agricultural, and food samples in classroom examples and in student laboratories. Students will be exposed to proper sample preparation and analysis, data interpretation and proper laboratory techniques with each of these analytical instruments.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: CHMA 2000

EXCLUSION: This course may not be taken for credit by students who have credit for CHMA 2002.

### **CHMA 4001.03: Directed Studies in Chemistry.**

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of chemistry. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Coordinator: J. Hoyle

FORMAT: as arranged.

PREREQUISITES: CHMA 2000 and 60 credit hours

## **Communications**

### **I. Undergraduate Degree Level Class Descriptions**

#### **CMMT 3000.03: Communication Theory and Skills (H).**

This course is designed to provide students with the opportunity to enhance their communication skills and knowledge. Since a key requirement of today's job market is the ability to communicate effectively, students will be exposed to the theory and the practice of communication. An important component of the course will be the emphasis on the practical application of communication knowledge.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Sanderson

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: At least second-year standing

#### **CMMT 3001.03: Teaching English as a Second Language.**

NOTE: Fall, Winter or Spring semester.

INSTRUCTOR(S): Cambridge Certified Instructors, at International Language Institute

FORMAT: Fall, Winter or Spring semester.

PREREQUISITE: Students must obtain a Letter of Permission from the Registrar's Office to take this class as a credit. Students must then apply, register, and pay fees for this class at the International Language Institute (ILI). In cooperation with the University of Cambridge Local Examinations Syndicate (UCLES) and ILI, offers an intensive class leading to a Certificate in Teaching English to Speakers of Other Languages (CELTA). The syllabus covers six major areas: language awareness; the learner, the teacher, and the teaching/learning context; planning; classroom management and teaching skills; resources and materials; and professional development. Critical feedback is provided on teaching practice, written assignments, and evidence of professional development through the class.

### **II. Technology Level Class Descriptions**

#### **CMMT 0020.00: Career and Employment Skills.**

This course is designed to provide an introduction to job searching and hiring strategies. Through class discussion students will explore the world of work today, the hiring process, and the development of a personal career plan. Assignments will include resumé and cover letter writing, a networking exercise, and interview preparation. Restricted to students in the Diploma in Business Management program.

NOTE: Winter semester— This is a Workplace Readiness course required for all options in the Diploma in Business Management program.

INSTRUCTOR(S): R. Chapman

FORMAT: Lecture 3 hours per week for 4 weeks.

#### **CMMT 0021.00: Introduction to Public Speaking.**

The objective of this course is to enhance the student's ability to prepare and deliver different types of presentations: informative, persuasive, and impromptu. Topics covered will include assessing audience needs, developing a strong focus, outlining different styles of presentations, and writing effective introductions and conclusions. Students will learn how to evaluate a presentation and make recommendations on how to increase its effectiveness. Tips for presenting ideas visually will also be discussed.

NOTE: Winter semester— This is a Workplace Readiness course required for all options in the Diploma of Business Management program.

INSTRUCTOR(S): Prof. Sanderson

FORMAT: Lab 2 hours per week for 4 weeks.



**CMMT 0030.00: English for Academic Purposes.**

This course will focus on enhancing English language skills (reading, speaking, writing, listening), critical thinking, and presentation skills required to be successful in an English university setting. Students who successfully complete CMMT 0030 will be considered to have met their English language requirement and are eligible to continue full-time studies at NSAC.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: 15 hours per week for 180 hours.

PREREQUISITE: NSAC/FAFU 2+2 program student who meets all of the NSAC

B.Sc.(Agr.) admission requirements, has achieved a minimum score of 5.5 on the IELTS ( 530 TOEFL), and has been recommended by the FAFU Overseas Education College as a strong candidate

## Computer Science

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Below are classes offered in Computer Science by the Faculty of Agriculture. Please see the Computer Science Faculty Section for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### **CSCA 1000.03: Computer Methods.**

A course to develop problem-solving and decision-making abilities and computational skills using computer software. Problems of a scientific and managerial nature will be chosen from a variety of agricultural fields. The course will cover word processing, spreadsheets, databases, programming, statistics, communications, graphics, and process control. Industry-leading software will be used.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: CHMA 0200

#### **CSCA 2000.03: Computer Science.**

Introduction to problem-solving methods and algorithm development. Emphasis is on designing, coding, debugging, and documenting programs, using C.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

#### **CSCA 3000.03: Data Structures and Numerical Methods.**

This course introduces the student to systems analysis and software techniques. Topics covered include objects, stacks, queues, multiple linked lists, and searching and sorting algorithms and their implementation in the C programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: CHMA 2000

### II. Technology Level Class Descriptions

#### **CSCA 0200.02: Computer Methods.**

A course to develop problem-solving and decision-making abilities and computational skills using computer software. Problems of a scientific and managerial nature will be chosen from a variety of agricultural fields. The course will cover word processing, spreadsheets, databases, programming, statistics, communications, graphics, and process control. Industry-leading software will be used.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: CSCA 1000

# Economics

Below are classes offered in Economics by the Faculty of Agriculture. Please see the Economics Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### ECO A 1000.03: Principles of Microeconomics (A).

A course in comprehensive principles of microeconomic theory, covering the market system, producer and consumer theory, environmental and resource economics, and international trade policy. Emphasis in this course is on the application of economics to issues and problems facing many countries and their citizens today. The approach is practical and “real-world,” using microeconomic theory to develop an understanding of the issues and problems being discussed and the policy choices facing governments in dealing with these matters.

NOTE: Fall and Winter semesters

INSTRUCTOR: Prof. Dunlop

FORMAT: Lecture 3 hours per week.

### ECO A 1001.03: Principles of Macroeconomics.

This course introduces the student to basic macroeconomic concepts and to both short-term and long-term macroeconomic analysis. The basic macroeconomic concepts include economy-wide output, price level and inflation, asset prices and interest rates, international exchange rates among currencies, and the international balance of payments. The introduction to short-term macroeconomic analysis, or business-cycle analysis, is based on John Maynard Keynes’ work on the 1929–33 Great Depression. The introduction to long-term macroeconomic analysis is based on Robert Solow’s work on economic growth. Throughout the course macroeconomics is related to the historical experience of farmers and to contemporary macroeconomic forces affecting the agri-food sector.

NOTE: Winter semester

INSTRUCTOR: Prof. Grant

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: ECOA 1000

### ECO A 1002.03: Introduction to Economic Reasoning (INFB).

The macroeconomic aspect of this course is taught along with INFB International Food Policy and Environment as part of the International Food Business program in Module 1: Acquiring Knowledge of International Food Systems. Students will successfully complete a series of practical tasks/assignments while learning about the global food environment. Topics will include balance of trade, production possibilities, exchange rates, and monetary policy. The microeconomic aspect of the course will be taught along with MGTA1001 Introduction to International Business in Module 2: Analyzing Business Processes. Topics will include resource scarcity, supply and demand, and market structures and pricing.

NOTE: Fall Semester - Module #1 & #2 INFB

### ECO A 2000.03: Intermediate Microeconomics.

A course in microeconomics at the intermediate level. Topics include the theory of the firm, consumer theory, markets and market structure, and externalities and public goods. All major concepts are presented graphically and some are studied using basic mathematics as well.

NOTE: Fall semester

INSTRUCTOR: Prof. Yiridoe

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ECOA 1000

### ECO A 2001.03: Intermediate Macroeconomics.

This course extends the Principles of Macroeconomics course to the intermediate level. Short-term, or business-cycle, macroeconomics is progressed from the introductory Keynesian income determination model to the IS-LM model, and then to the Aggregate Demand/Aggregate Supply model. The long-term

macroeconomic content advances the introductory economic growth model in considering the relative importance of the factors determining the overall rate of economic growth. Throughout the course macroeconomic theory is related to macroeconomic policy goals, stabilizing the economy in the short term and promoting improvement in economic well-being in the long term.

NOTE: Fall semester

INSTRUCTOR: Prof. Grant

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 1001

### ECO A 2002.03: Production Economics (A).

An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor/factor, factor/product, and product/product relationships of the farm production system. Practical examples and lab exercises are used to illustrate and reinforce the concepts presented in the classroom.

NOTE: Winter semester

INSTRUCTOR: Prof. Yiridoe

FORMAT: Lecture 2 hours, lab 3 hours per week. Last offered in 2012/2013.

PREREQUISITE: ECOA 1000

### ECO A 2003.03: Agricultural Futures and Options (A).

The course begins with an introduction to agricultural futures markets. This leads into a study of fundamental and technical analyses of futures markets. This part of the course concludes with a consideration of price risk management using futures markets. Following is an introduction to options markets and price risk management using options. The course concludes with a topic of importance when exporting or importing agricultural commodities internationally: managing exchange-rate risk using futures and options.

NOTE: Fall semester

INSTRUCTOR: Prof. Grant

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 1000

### ECO A 2004.03: Issues in Environmental Economics (A).

This course is designed as an introduction to environmental and resource economics issues and policy. Students will learn how economic analysis is applied to questions concerning use, management and conservation of natural resources, as well as market failures. Frameworks for measuring environmental costs and benefits and for exploring the efficiency of pollution control policies will also be developed. The impact of environmental and resource issues on the agri-food industry at all levels in the marketing chain will be examined. Applications include air and water pollution and global environmental problems, including climate change.

NOTE: Winter semester

INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, seminar 1 hour per week.

PREREQUISITE: ECOA 1000

### ECO A 3000.03: Mathematical Economics.

Introduction to the frequently used mathematical methods of economic analysis. The course provides the student with the basics required in more advanced economics courses. Areas of concentration include elements of mathematical economic models, linear models and matrix algebra, applications of calculus to economic problems, and optimization theory.

NOTE: Fall semester

INSTRUCTOR: Prof. Stackhouse

FORMAT: Lecture 3 hours, lab 2 hours, tutorial 1 hour per week.

PREREQUISITE: MTHA 1000, ECOA 2000

### ECO A 3002.03: Agricultural and Food Policy (A).

This course introduces students to the structure of the agri-food industry and the process of policy and implementation. A critical assessment of the institutions (organizations, programs, and policies) in agriculture is the main focus of the course. Through guest speakers, students’ presentations, interactive class discussions, and lectures, students will learn how policies are developed and who is involved in the policy development process. An historical appreciation for agricultural policy in Canada will be pursued with a critical assessment of these policies. In reviewing policy problems affecting the agri-food industry, students will examine possible solutions to these issues. Topics covered include: reasons for government intervention; historical development of agri-food policy in Canada; the policy process; players in agriculture and food policy; structure of provincial, federal, and cost-shared programs; consumers and food policy;

resource and environmental policy; international agricultural and food policies; trade agreements; and agribusiness involvement in agriculture and food policy.

NOTE: Winter semester

INSTRUCTOR: Prof. Dunlop

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ECOA 1000 and at least second-year standing

### **ECOA 3003.03: Mathematical Programming (A).**

An introduction to the theory and application of mathematical programming in the agri-food industry. The role of matrix algebra in determining linear programming solution procedures is developed. The information requirements, organization, and skills of model building are also introduced. The course will make extensive use of computer algorithms that permit students to model real-world systems in the production, resource supply, service, and retail sectors of the agri-food industry.

NOTE: Winter semester

INSTRUCTOR: Prof. Stackhouse

FORMAT: Lecture 4 hours, lab 1 hour per week.

PREREQUISITE: ECOA 3000

### **ECOA 3004.03: Agricultural Markets and Prices (A).**

An introduction to agricultural market and price analysis as a field of study within agricultural economics. An applied microeconomics approach is taken to studying agricultural supply and demand, price discovery, and market structure for crop and livestock products. In addition to cash (spot) markets, agricultural futures and options markets are studied, including managing agricultural commodity price risk by hedging.

NOTE: Winter semester

INSTRUCTOR: Prof. Grant

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 2000

### **ECOA 3006.03: Statistics for Economics and Business.**

This course is designed to train students in the application of statistical methods to business and economics problems. Emphasis will be given to the application of quantitative and qualitative methods to real-world problems in order to provide students with context in applications. Particular attention will be paid to both the art as well as the science of data analysis. Students will conduct analysis of data, using methods discussed in class, as a term project.

NOTE: Fall semester

INSTRUCTOR: Prof. Clark

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: STAA 2000

### **ECOA 3007.03: Environmental and Resource Economics.**

This course is designed to give students a basic introduction to the area of Resource Economics and an understanding of how economists view environmental problems. Topics of study will include public versus private goods, externalities, market failure, and the role of property rights in the economic system. The Coase theorem will also be presented. Policy analysis contrasting market-based solutions for environmental problems with conventional solutions will be discussed. Specific topics will then be covered, including environmental policy surrounding water pollution, air pollution, and climate change. Issues related to nonrenewable and renewable economies and sustainable development will be discussed.

NOTE: Fall semester

INSTRUCTOR: Prof. Clark

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 2000

EXCLUSION: This course may not be taken for credit by students who have credit for ECOA 3001 or ECOA 4003.

### **ECOA 4000.03: Advanced Microeconomics.**

This course is intended to give students an advanced treatment of Microeconomics. It is strongly recommended for those students wishing to undertake graduate work in economics, agricultural economics, or resource and environmental economics. Topics will include production economics, profit functions, cost functions, supply functions, and factor demand. An advanced treatment of demand theory will also be presented, including Hicksian and Marshallian demands, derived via Slutsky's equation. Both primal and dual approaches will be discussed.

NOTE: Winter semester

INSTRUCTOR: Prof. Clark

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ECOA 2000, ECOA 3000

### **ECOA 4004.03: Trade (A).**

This course will provide students with an understanding of the factors that influence the exchange of products, with particular emphasis on trade interventions and institutions. Students will be introduced to trade theory, which they will use to evaluate trade policy issues. Students will learn how various government policy instruments and institutions affect international and interregional trade. Also, the complex set of rules and regulations governing international trade, such as the WTO, will be analyzed. The consequences of, and linkages among, international trade, the environment, and economic development will also be pursued.

NOTE: Fall semester

INSTRUCTOR: Prof. Dunlop

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 2000 and third-year standing

### **ECOA 4005.03: Advanced Macroeconomics.**

This course provides a concise, mathematical coverage of classic issues in macroeconomic theory. The course starts with the classical model of a closed economy. A reconsideration of the labour market leads to the Keynesian model. An alternative treatment of the capital market underlies Tobin's dynamic aggregative model. The role of inflation expectations is explored under the contrasting cases of economic agents having adaptive expectations and perfect foresight. By integrating macroeconomic thinking and mathematical reasoning in the context of non-stochastic models, the course is also preparatory to graduate studies in economics.

NOTE: Winter semester

INSTRUCTOR: Prof. Grant

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ECOA 1001, ECOA 3000

## **II. Technical Level Class Descriptions**

### **ECOA 0100.02: Introductory Microeconomics**

An introduction to the theory of the firm. The course examines the theory of demand and supply, distribution of income, forms of business organizations in Canada, and the levels of competition in the agricultural industry. Application of the various theories to explain the agricultural industry is stressed.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Stackhouse

FORMAT: Lecture 3 hours per week.

### **ECOA 0202.02: Production Economics**

An introduction to the study of economic principles used to analyze production and resource use in agriculture. Areas of emphasis include economic examination of the factor/factor, factor/product, and product/product relationships of the farm production system. Practical examples and lab exercises are used to illustrate and reinforce the concepts presented in the classroom.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Yiridoe

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: ECOA 0100

# Engineering

Below are classes offered in Engineering by the Faculty of Agriculture. Please see the Faculty of Engineering Section for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### ENGN 1001.03: Engineering Design I.

Students are introduced to the concept of Engineering Design and the design process. Procedures and conventions for the preparation of engineering drawings and technical reports are presented. Students develop skills in manual drawing and computer aided drafting.

NOTE: Fall semester  
INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### ENGN 1002.03: Engineering I.

Students are introduced to the history of engineering up to the modern-day professional societies. The fundamental theory for engineers begins with statics, which teaches the concepts of particle and rigid body equilibrium. Students will apply vector algebra to work with position and force vectors, moments of forces, couple moments, and equilibrium of 2- and 3- dimensional bodies. Structural applications, such as 2-dimensional trusses, frames and simple machines, shear forces and bending moments in beams are presented. Coulomb friction, centroids and centres of mass, as well as area moments and products of inertia, are also included.

NOTE: Fall semester  
INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### ENGN 2005.03: Dynamics.

The dynamics course represents the second class in the study of engineering mechanics. Topics include kinematics, kinetics, work and energy, and linear and angular impulse momenta of a single particle and of rigid bodies in planar motion. There will be some computer applications wherever appropriate.

NOTE: Fall semester  
INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: MTHA 1001, PHYS 1000 or PHYS 1002

### ENGN 2014.03: Bioresource Processing.

This course deals with the technologies of converting biomass into upgraded fuels as well as direct combustion. Students are introduced to biomass conversion; physical conversion of biomass (drying, dewatering, densification); thermo-chemical conversion of biomass (torrefaction, pyrolysis, gasification, combustion); heat and power applications; biogas production (digester design and kinetic considerations); ethanol and bio-diesel conversion technologies; and environmental impacts.

NOTE: Winter semester  
INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### ENGN 3000.03: Electric Circuits.

This course covers the fundamentals of electric circuit analysis using Kirchhoff's current and voltage laws, Thevenin's, Norton's, superposition, and source transformation for DC and AC circuits. Circuit components include resistors, capacitors, inductors, voltage, and current sources. PSPICE simulation software, multimeters, and oscilloscope are used in lab exercises to familiarize students with circuits analysis.

NOTE: Fall semester  
INSTRUCTOR: Prof. Martynenko

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: PHYS 1003

### ENGN 3002.03: Thermo-fluids I.

Thermodynamics is a study of energy and energy transfers in the form of work and heat, and the effect these transfers have on the properties of selected substances. First and second law analyses are covered, including entropy, availability, and efficiencies.

NOTE: Fall semester

INSTRUCTOR: Prof. Havard

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: PHYS 1000 or PHYS 1002

### ENGN 3004.03: Digital Circuits.

This course includes an introduction to Boolean algebra, encoders, decoders, shift registers, and asynchronous and synchronous counters, together with timing considerations. Design of asynchronous circuits, synchronous sequential circuits, and finite state machines is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer-aided design and analysis software is used throughout the course.

NOTE: Fall semester

INSTRUCTOR: Prof. Martynenko

FORMAT: Lecture 3 hours, lab 3 hours per week.

### ENGN 3006.03: Engineering II.

This class teaches the concept of stress, strain and deformation of a solid body subjected to static forces. Topics considered include: stresses and strains under axial, bending, torsional and combined loadings; transformation relations for stresses and strains; Mohr's circle for stress and strain; strain gauges; mechanical properties of materials; and failure theories.

NOTE: Winter semester

INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENGN 1002, MTHA 1001, and PHYS 1000 or PHYS 1002

### ENGN 3008.03: Electrical Circuits II.

This course covers advanced circuit analysis techniques, starting with sinusoidal excitation. The concepts of phasors and complex impedance are fully developed. Mutual inductance and magnetically coupled coils are used to introduce transformer behaviour and performance. Real and reactive power flow is covered before the introduction of balanced three-phase circuits for power distribution. Symmetrical components are introduced as a means of dealing with unbalanced networks. The concepts of grounding and harmonics are also introduced.

NOTE: Winter semester

INSTRUCTOR: Prof. Havard

FORMAT: Lecture 3 hours, lab 3 hours per week.

### ENGN 3011.03: Thermo-fluids II.

This course builds on the introduction to fluid mechanics in ENGN 3002 to present engineering concepts of fluid mechanics and energy. The course completes fluid statics from ENGN 3002; covers dimensional analysis; emphasizes the notion of control volume needed to properly solve thermal fluid problems using the conservation laws presented as integral relations; treats flow in ducts, putting emphasis on head losses (friction and minor); and presents a practical theory of turbomachinery. The different concepts studied during the course are brought together at the end in a series of design examples and design problems.

NOTE: Winter semester

INSTRUCTOR: TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENGN 2005 or permission of the instructor

### ENGN 3016.03: Engineering Economy.

This course deals with the economics of decision-making. After introducing fundamental concepts and cash-flow diagrams, interest factors are dealt with in some detail. A variety of discounted cash-flow techniques are covered, including rate-of-return calculations. Inflation, accounting, tax, and risk are also among the topics considered.

NOTE: Winter semester

INSTRUCTOR: TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

### ENGN 3017.03: Engineering Design II.

This class provides a project-based exercise in the engineering design process. Students work on defined projects which apply knowledge and skills from their first three semesters. The projects encompass design method, conceptual design, design selection, detailed analysis, CAD and simulation tools, engineering drawings, safety, and preparation of profession technical reports. Discipline-

specific projects are assigned. All projects involve evaluation/testing of student designs, depending on the discipline section, either through construction and testing of a physical prototype or development and testing of an engineering simulation model.

NOTE: Winter semester

INSTRUCTOR: Prof. Corscadden

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENGN 1001, ENGN 3006

### **ENGN 3021.03: Ecohydrology (A).**

This course deals with the emerging green science and technology management tool of ecohydrology and the design of best management practices (BMPs) for water resource protection and use. Topics to be covered include: non-point source pollution, drainage and irrigation; soil erosion and deforestation; and the BMPs of buffer strips, nutrient entrapment, and runoff and wastewater management. Many topics for discussion deal with agricultural development in Canada and developing nations.

NOTE: Fall semester

INSTRUCTOR: Prof. France

FORMAT: Lecture 3 hours, lab 3 hours per week.

## **English**

Below are classes offered in English by the Faculty of Agriculture. Please see the English Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

### **I. Undergraduate Degree Level Class Descriptions**

#### **EGLA 1001.03: The Novel (H).**

In this course, four to six novels will be read, discussed, and analyzed. In the process, students will acquire a vocabulary for talking about literature, and will put to use critical reading and writing skills. They will also learn how the novel can be a window into the historical age in which it is written, illuminating issues such as colonialism, gender relations, culture, race, ethnicity, or the differences between rural and urban life. Novels selected will vary from year to year, but may include those written by Chinua Achebe, Emily Brontë, Kate Chopin, Joseph Conrad, Daniel Defoe, Charles Dickens, Antonine Maillet, Toni Morrison, Gabrielle Roy, Mary Shelley, Oscar Wilde, and others.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Stiles

FORMAT: Lecture 3 hours per week.

#### **EGLA 1002.03: Nature in Literature (H).**

This course explores the ways in which nature has been represented in literature. Selected works by a number of authors of fiction, non fiction and poetry will be examined, including Don MacKay, Dorothy Wordsworth, John Clare, William Blake, and William Wordsworth, Thoreau, Emerson, Hawthorne, Whitman, Melville, and Galway Kinnell, and Margaret Atwood.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Stiles

FORMAT: Lecture 3 hours per week.

#### **EGLA 1003.03: Business Writing (INFB)**

International business writing is an essential skill in today's business world. This course will provide opportunities to learn how and when to write effective proposals, letters, and memos. The work will be assigned as part of Modules 1 & 2 in the international Food Business program.

NOTE: Fall Semester - Module #1 & #2 INFB

INSTRUCTOR: INFB Faculty

#### **EGLA 1005.03: Academic Writing – International Students (H).**

The objective of this course is to develop the skills necessary to write papers and reports at a university level. The course is designed specifically for students whose first language is not English, and it will focus on the process of writing from the development of a thesis or objective to the editing of the final document. Some of the topics include: selecting different types and styles of papers and reports, researching and presenting appropriate academic documentation, organizing material, preparing the initial draft, and proofreading and editing. The course will also focus on enhancing the student's capacity to write in English.

NOTE: Fall semester – Students whose first language is English are not eligible to take this course.

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, tutorial 2 hours per week.

#### **EGLA 3000.03: Literature of Atlantic Canada (H).**

This course focuses on the prose and poetry of the Atlantic region of Canada, looking at the works in historic al, geographical, and social context, and discussing the concept of regionalism in literature. Classes will include lectures, films, videos, presentations, and discussions.

NOTE: Fall semester

INSTRUCTOR(S): L. Little

FORMAT: Lecture 3 hours per week.

PREREQUISITE: EGLA 1000 or EGLA 1001 or EGLA 1002 or any other first-year English course

## II. Technical Level Class Descriptions

### EGLA 0101.02: Writing for Business.

The objective of this course is to develop the reading and writing skills necessary to write at a technical level and to develop appropriate writing strategies for business documents. The course will focus on the process of writing from the development of a thesis, researching for information, and writing the initial draft through to proofreading and editing. Typical business documents to be discussed include: proposals, letters, e-mails/memos, and reports. Some of the topics include: tailoring writing to the audience, selecting templates for documents, researching and presenting documentation, using word processing packages to create professional documents, and proofreading and editing.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Sanderson

FORMAT: Lecture 3 hours per week.

## Environmental Sciences

Below are classes offered in Environmental Sciences by the Faculty of Agriculture. Please see the Environmental Sciences Section in the Faculty of Science for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### ENVA 2000.03: Environmental Studies I (A).

This is the first of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. The scientific principles of each issue will first be outlined and explained, and then the agricultural and socio-economic aspects of the issue will be examined. The topics to be emphasized in this course will include issues associated with population growth, the atmosphere, and the hydrosphere. Students will be expected to show their understanding of the interplay between agriculture and environmental issues by writing a major term paper.

NOTE: Fall semester

INSTRUCTOR(S): Coordinator: Prof. Brewster

FORMAT: Lecture 3 hours per week.

PREREQUISITE: 8 technical or degree course credits

EXCLUSION: Students can receive credit for either ENGN2012 or ENVA2000, but not both.

#### ENVA 2001.03: Environmental Studies II (A).

This is the second of a two-semester course sequence that deals with environmental issues from both an agricultural and a socio-economic basis. All aspects of the issues will be integrated to provide an overall view of each issue. The topics to be emphasized in this course will include issues associated with biodiversity, the lithosphere, waste management, and legal aspects of the environment. Students will be expected to show their understanding of the interplay between agriculture and environmental issues by writing a major term paper.

NOTE: Winter semester

INSTRUCTOR(S): Coordinator: Prof. Brewster

FORMAT: Lecture 3 hours per week.

PREREQUISITE: ENVA 2000

#### ENVA 2002.03: Composting and Compost Use (A) DE.

Composting and the utilization of organic matter produced on the farm provide the basis for soil fertility in organic systems; however, potential benefits derived from compost use are often limited by the supply and quality of composts produced on-farm. The objective of this web-based course is to teach composting primarily by providing students with the opportunity to make their own compost over a period of 13 to 15 weeks. Students learn through five stand-alone modules\*: Composting of Organic Materials (how the underlying principles of composting are applied when combining various feedstock materials for composting); Composting Process (how to evaluate and manage an actively working pile and troubleshoot to maintain optimum conditions for composting); On-Farm Composting (efficient and low cost composting methods for agricultural composting at various scales); Compost Quality (how to evaluate the quality of the finished compost, as well as the quality requirements of various standards, markets, and end uses for compost); and Compost Utilization and Marketing (considerations and requirements for the optimal use of compost in organic greenhouse crop production and organic farming systems, as well as factors which are important in the marketing of compost).

NOTE: Fall semester – \* Note that making compost and completing all five modules will be a requirement for students who are taking the course for credit. Students who are not taking the course for credit may also decide to make compost and complete all five modules; however, this is not a requirement for non-credit students. To provide maximum flexibility for non-credit students, the modules are offered as independent (stand-alone) units.

INSTRUCTOR(S): Prof. Price

FORMAT: DE– only offered as a web-based distance education course.

**ENVA 3000.03: Environmental Impact Assessment.**

An introduction to the study and assessment of environmental toxicity and ecotoxicology as they are used to predict the environmental impact of agricultural, industrial, and other xenobiotics and associated processes. The laboratory portion of the course will deal primarily with bioassay and assessment techniques.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENVA 2000, ENVA 2001

**ENVA 3001.03: Environmental Sampling and Analysis.**

This course will introduce students to the proper methods of sampling and experimental design for biological and chemical analyses, as well as for environmentally oriented surveys. Emphasis will be given to the actual collection of samples and their subsequent analysis.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Nams

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: STAA 3000

**ENVA 3002.03: Waste Management and Site Remediation (A).**

This course will examine the following topics: pollution from wastes, waste disposal and treatment, the use of wastes, wastes as resources, recycling, composting, waste reduction, incineration, biomass from wastes, biogas production, site remediation, and bioremediation. Agricultural wastes will be emphasized throughout the course.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Price

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENVA 2001 or ENGN 2012

**ENVA 3003.03: Environmental Studies Field Course.**

This 12-day course is designed to provide students with an opportunity to pursue a holistic approach to solve real environmental problems. It will be held at (an) environmentally significant site(s). Students will be expected to pre-plan and to perform on-site analyses to identify any environmental problems. An interim report of findings will be required during the course. After completion of the field work, students are expected to write a report of their findings with appropriate recommendations regarding solutions to identified problems. Students should contact the course instructor prior to October 15 in the preceding Fall semester for scheduling information about the course. Expenses associated with the course are the responsibility of the student. The course is offered subject to enrollment.

NOTE: Summer session

INSTRUCTOR(S): Coordinator: Prof. Hoyle

FORMAT: 12-day course.

PREREQUISITE: 90 credit hours, including ENVA 2000 and ENVA 2001

**ENVA 3004.03: Principles of Pest Management (A).**

An investigation of the philosophy of pest management. Topics will include the study of different approaches to pest management and an assessment of the use of single versus integrated pest control options. Costs of pest control from economic, social, and environmental perspectives will be discussed.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, seminar 3 hours per week.

PREREQUISITE: BIOA 1003

**ENVA 4000.03: Pesticides in Agriculture (A).**

A course dealing with various aspects of pesticides used in agriculture. The course will look at pesticides from their origin and development to their registration, sale, distribution, and use. Also included are discussions of safety and toxicology.

NOTE: Winter semester

INSTRUCTOR(S): Profs Cutler and Percival

FORMAT: Lecture 3 hours, discussion period 3 hours per week.

PREREQUISITE: Preparatories: BIOA 2005, BIOA 3000, BIOA 3002

**ENVA 4002.03: Economic Entomology (A).**

An introduction to the study of economic entomology from an agricultural perspective, covering principles of insect control (natural, mechanical, physical, cultural, biological, and legal), including chemical and biochemical control, and insecticide development, formulation, and application. This course stresses the theory of integrated pest management (IPM).

NOTE: Winter semester

INSTRUCTOR(S): Prof. Cutler

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 3000

**ENVA 4003.03: Advanced Weed Science (A).**

DEals with principles of weed science from an ecological perspective. Included are discussions on ecology and management of weeds in traditional agro-ecosystems as well as in low-input sustainable agricultural systems. The roles of biological, cultural, and chemical controls in these systems will be stressed.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 3002

**ENVA 4005.03: Geographic Information Systems (GIS) (A).**

The objective of this course is to provide both a theoretical and a practical understanding of GIS concepts and GIS application skills as it relates to ESRI ArcGIS© software. Practical training and application skills will be acquired doing laboratory sessions, whereas GIS foundations and concepts will be provided during lectures. The application of GIS technologies will focus on data sets derived from environmental science, soil science, or agriculture generally. A component of this class will be the application of GIS technologies to a student-defined problem or issue.

NOTE: Fall semester – This course has limited enrollment.

INSTRUCTOR(S): Prof. Brewster

FORMAT: Lecture 2 hours, lab 2 hours per week.

PREREQUISITE: At least third-year standing

**ENVA 4006.03: Air, Climate and Climate Change (A).**

This course examines the composition of our atmosphere, how it functions to create weather and climate, and its role in agricultural production. A fundamental understanding of chemistry and physics of atmospheric processes will provide the basis for an examination of micro-, regional- and global-scale meteorological processes. The expression of these meteorological processes will be examined over time and space as a means of examining climate and climate change. The role of weather and climate in agricultural production will be discussed. The global debate surrounding anthropogenic greenhouse gas emissions and climate change will be considered from scientific, social and political perspectives. Agricultural adaptation to climate change, both regionally and globally, will be considered. The laboratory portion of the class will examine the tools for measuring the composition of the atmosphere, the physical state of the atmosphere, the transfer of heat and mass to and within the atmosphere, and the use of weather and climate data in agricultural decision-making.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Burton

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: ENVA 2000

**ENVA 4007.03: Directed Studies in Environmental Science.**

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of environmental sciences. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Coordinator: TBA

FORMAT: as arranged.

PREREQUISITE: ENVA 2000, ENVA 2001, and 60 credit hours

**ENVA 4008.03: Directed Studies in Pest Management (A).**

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of pest management. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

NOTE: Fall or Winter semester - Extension Education

INSTRUCTOR(S): Coordinator: Prof. Cutler

FORMAT: as arranged.

PREREQUISITE: One of BIOA 2005, BIOA 3000, BIOA 3002 (as per topic chosen) and 60 credit hours

## Extension Education

### I. Undergraduate Degree Level Class Descriptions

#### **EXTE 3001.03: Leadership Development and the Social Action Process (H).**

Students will be looking at leadership development from a number of angles: current theories, leader identification, and leadership skills. The impact of leadership on the social action process will be analyzed in the context of rural communities. Analysis of the social action process will focus on participatory approaches to rural community development and extension. Students will have the opportunity to enhance personal leadership skills through discussion and practice.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Sanderson

FORMAT: Lecture 3 hours per week.

PREREQUISITE: At least third-year standing

## Food Science

### I. Undergraduate Degree Level Class Descriptions

#### **FOOD 1000X/Y.03: Food Safety and Quality Assurance (INFB).**

This course is part of Module 3 of the International Food Business program - Analyzing Food Chains. It provides students with an introduction to food safety and quality assurance issues and developments. Topics include quality assurance systems both public and private, legislation and traceability.

NOTE: Winter Semester - Module #3 INFB

INSTRUCTOR: INFB Faculty

#### **FOOD 3000.03: Food Quality Assurance (A).**

The various quality philosophies (QC, QA, TQM) will be studied with respect to their industrial application. The course will centre on the use of control charts to monitor processes and to evaluate the quality of both incoming raw materials and the finished product. Students will gain first-hand experience in the design and implementation of ISO 9000 and HACCP systems in the commercial food industry. The application of these principles to other manufacturing processes and/or data acquisition will be discussed. Consideration will also be given to recognizing the quality criteria required by some international customers.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pitts

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: MTHA 1000

#### **FOOD 3001.03: Functional Foods and Nutraceuticals (A).**

Interest in functional foods and nutraceuticals is growing rapidly and it has emerged as a new frontier of the agri-food and nutrition industry worldwide. This course provides a basic scientific knowledge of bioactive plant compounds (phytochemicals) present in functional foods and nutraceuticals. Emphasis will be given to phytochemical biosynthesis, classification, distribution among food and medicinal crops, analysis, and current scientific knowledge on the potential health benefits of the bioactive phytochemicals. The course also introduces global marketing trends, government regulations, principles of designer food, and value-added food processing concepts in functional foods and nutraceuticals.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Rupasinghe

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: CHMA 2000

#### **FOOD 4000.03: Directed Studies in Food and Bioproduct Science (A).**

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of food and bioproduct science. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

NOTE: Fall or Winter semester - French

INSTRUCTOR(S): Coordinator: Prof. Rupasinghe

FORMAT: as arranged.

PREREQUISITE: CHMA 2000 and 60 credit hours; students taking FOOD 4000 are strongly encouraged to take CHMA 2003 or CHMA 2004



## II. Technical Level course

### FOOD 0020.00: Topics in Agriculture & Food Enterprise Management.

Students participate in an examination of the structure of agri-food industry and of the context in which individual enterprises operate. They are required to identify current issues facing the agri-food industry at all levels, and to examine their potential impact on sustainability and opportunities in the Atlantic Canadian industry.

NOTE: Winter semester– This is a Workplace Readiness course required in the

Agriculture option of the Diploma in Business Management.

INSTRUCTOR(S): Coordinator: Prof. Sanderson

FORMAT: Lecture 1 hour per week for 12 weeks.

## French

Below are classes offered in French by the Faculty of Agriculture. Please see the French Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### FRNA 1000.03: French Language I (H).

This course is designed to fill the needs of students who have studied French in high school, and is intended to review grammar and provide an opportunity to polish and refine language skills. Classes will emphasize basic grammatical structures, pronunciation, listening comprehension, and speaking skills. FRNA 1000 is designed to provide the student with opportunities to use the language and enhance written, spoken, and comprehension skills. This course is not intended as an introduction to the French language. Students whose first language is French or who are fluent in the French language are not eligible to take this course.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

PREREQUISITE: Grade 12 French or equivalent within the last five years

#### FRNA 1001.03: French Language II (H).

This course is designed to fill the needs of students who have already studied French, and is intended to review grammar and provide an opportunity to refine language skills. Classes will emphasize basic grammatical structures, pronunciation, listening comprehension, and speaking skills. FRNA 1001 is designed to provide the student with opportunities to actively use the language. This course is intended not as an introduction to French language but as a review and continuation of the major aspects of FRNA 1000. It is expected that students have a basis grasp of French grammar and some vocabulary. Students whose first language is French or who are fluent in the French language are not eligible to take this course.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, tutorial 2 hours per week.

PREREQUISITE: FRNA 1000

# Genetics

## I. Undergraduate Degree Level Class Descriptions

### GENE 2000.03: Genetics.

This course studies heredity and variation in plants and animals, including man, and the relationships of genetics to evolution and breeding practices.

NOTE: Fall semester

INSTRUCTOR(S): Prof. McLean

FORMAT: Lecture 3 hours, lab 3 hours per week.

### GENE 3000.03: An Introduction to Molecular Genetics.

The objective of this course is to provide students with a general foundation in molecular genetics and recombinant DNA technology. Replication, transcription, protein synthesis, recombinant DNA, and the regulation of gene expression in procaryotes and eucaryotes will be studied in detail. Ethical and legal issues related to the production, testing, and ownership of genetically engineered organisms will be discussed. In the laboratory, students will be exposed to a range of molecular genetic techniques, including isolation and restriction site mapping of bacterial plasmids, bacterial transformation, isolation and restriction enzyme digestion of genomic DNA, and PCR amplification. Students completing this course will be able to read original research papers in the molecular genetic literature, and will be prepared for advanced training in molecular biology, plant breeding, or animal breeding.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Wang-Pruski

FORMAT: Lecture 3 hours, lab/discussion period 2 hours per week.

PREREQUISITE: GENE 2000, preparatory: one course in biochemistry

### GENE 3001.03: Population and Quantitative Genetics.

An introduction to population and quantitative genetics, with particular emphasis on the forces causing genetic change in populations. Applications from natural populations, conservation biology, and plant and animal breeding will be used to illustrate theories of evolution and modern breeding methods. Contemporary ideas about evolution at both the molecular and organismal levels will be explored. Laboratory sessions include discussion of concepts and use of computer simulations to model populations under natural and artificial selection.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week. Offered in alternate years; next offered in 2014/2015

PREREQUISITE: GENE 2000, STAA 2000

### GENE 4000.03: Molecular Applications to Animal Production (A).

This upper-level course is designed for students interested in the molecular and cellular techniques that are being applied to animal production systems and research. Topics include molecular techniques used in research, DNA fingerprinting, marker-assisted selection, embryo IVF/sexing/nuclear transfer, recombinant protein production, the use of recombinant microbes in ruminants, and stem cell and transgenic animal production.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Farid

FORMAT: Lecture 3 hours per week.

PREREQUISITE: CHMA 3001 (or CHMA 2005), GENE 3000

### GENE 4003.03: Biotechnology.

Biotechnology includes the generation of new medicine, generation of biofuel, new chemicals and materials, removal of pollutants, and production of better and safer foods. The objective of this course is to provide students with general information on the theory and technologies that are currently used in biotechnology. Course topics will include gene identification, transformation and expression regulations, tissue culture and cell culture techniques, and other

genomics-related agricultural applications. Nutraceutical and pharmaceutical applications will be addressed.

NOTE: Fall semester Offered in alternate years; next offered in 2014/2015

INSTRUCTOR(S): Prof. Wang-Pruski

FORMAT: Lab 6 hours per week.

PREREQUISITE: GENE 2000

CROSS-LISTING: AGRI 5750

### GENE 4004.03: Laboratory Techniques in Genomics.

An intensive course that provides hands-on training in manipulations used routinely in molecular labs. An exercise for both hands and minds; students will work in pairs and should be prepared to spend four hours per laboratory session as well as two hours of instruction and preparation on the day immediately preceding lab class. Laboratory reports will account for the bulk of the mark, with a participation score and a final exam rounding out the grade.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Benkel

FORMAT: Lecture 3 hours per week.

PREREQUISITE: GENE 3000 or GENE 4000

## Geography

Below are classes offered in Geography by the Faculty of Agriculture. Please see the Geography Section in the Faculty of Science for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### **GEOA 1000.03: Introductory Human Geography (H).**

This course is an introduction to the field of Human Geography. The objectives of the course are to present the spatial point of view on human/land interactions. Lectures, readings, and assignments consider geographical patterns, processes, and problems in rural and urban settings. Some emphasis will be given to the Canadian and Atlantic region contexts.

NOTE: Winter semester

INSTRUCTOR(S): O. Ferguson

FORMAT: Seminar 3 hours per week.

#### **GEOA 3000.03: Rural Geography (H).**

This course focuses on rural geographic problems in Canada and the Atlantic region. Discussion will include, for example, rural land use issues, settlement dynamics, rural resource problems, urban/rural interaction, agricultural change, rural well-being, and rural planning. The geographic perspective emphasizes spatial variability and human/land interactions.

NOTE: Winter semester

INSTRUCTOR(S): O. Ferguson

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: GEOA 1000

## Geology

Below are classes offered in Geology by the Faculty of Agriculture. Please see the Geology Section in the Faculty of Science for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### **GELA 2000.03: Introduction to Geology.**

This course introduces the student to the basic concepts of Earth Science and Physical Geology. Geology, as a subject matter area in the Earth Sciences, is closely related to soil science. This course will examine the nature of Earth materials as well as Earth processes, both internal and surface. Minerals, rocks, earthquakes, streams, and groundwater are just some of the areas investigated in this course. Many geological processes are of importance to the Environmental Sciences because an understanding of Earth processes is fundamental for the understanding of human impacts on our landscape.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Brewster

FORMAT: Lecture 3 hours, lab 2 hours per week.

# History

Below are classes offered in History by the Faculty of Agriculture. Please see the History Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### HISA 1000.03: Introduction to Canadian History I 1000–1867 (H).

This course introduces students to the theory and practice of history through a general historical survey of Canadian history for the period from approximately 1000 CE [Common Era] to about the mid- 19th century. Historical theories and methodologies will be introduced in this course. A social and/or cultural approach is emphasized, with focus on Aboriginal peoples and Contact; Acadia and New France; and British North America to Confederation.

NOTE: Fall semester

INSTRUCTOR(S): M. MacLeod

FORMAT: Lecture 3 hours per week.

### HISA 1001.03: Introduction to Canadian History II 1867–Present (H).

This course will examine the problems of modernity, through an exploration of Canadian history from the mid- 19th century through to the present. Political, social, and cultural developments and transformations will be emphasized. In addition to the exploration of Canadian history from Confederation to the present, students will be introduced (or, in the case of those who have previously taken HISA 1000, reintroduced) to concepts, theories, and methodologies employed in historical study.

NOTE: Winter semester

INSTRUCTOR(S): M. MacLeod

FORMAT: Lecture 3 hours per week.

### HISA 3000.03: Rural History (H).

This course will introduce students to selected problems in the study of rural history. Problems to be considered in at least two time periods may include the following: the problem of change in rural society vis à vis industrialization; the intersection of national, ethnic, and other “identity” with rurality; the changing nature of work in rural societies; rural political movements; idealizations or distortions related to the concept of rural; agriculture and other “cultures” in the rural context of the past.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Stiles

FORMAT: Lecture 3 hours per week.

PREREQUISITE: HISA 1000 or HISA 1001

# Horticulture

## I. Undergraduate Degree Level Class Descriptions

### HORT 2000.03: Vegetable Production (A).

Production technology for the major vegetables grown in the Atlantic region is studied in detail, including botanical and horticultural characteristics, soil and fertility requirements, cultivar selection, pest management, and harvest and storage requirements. Commercial vegetable enterprises are visited.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: Preparatory: AGRI 1000

CROSS-LISTING: HORT 0211

### HORT 2001.03: Principles of Organic Horticulture (A) DE.

Study of the principles that form the basis for organic production systems. Special attention is given to soil fertility, organic soil amendments, compost and mulches, crop rotation, plant health, management of diseases and pests, companion planting, and produce storage/handling and marketing. Seminar topics will include making the transition to organic production, and definition and legislation of organic food in Canada.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Goodyear

FORMAT: DE - only offered as a web-based distance education course.

PREREQUISITE: Preparatory: AGRI 1000

### HORT 2003.03: The British Garden.

The history of British landscape development is studied, supported by visits to gardens that exemplify period design. Period garden features and the design philosophy that fostered the evolution of landscape development will be discussed. The maintenance and management of these landscapes will be examined. North American and British landscape maintenance standards and techniques will be compared. Plant identification will be a component of this course. This course involves self-directed study.

NOTE: Summer semester –The course is offered in England, subject to enrollment. Expenses associated with the course are the responsibility of the student.

INSTRUCTOR(S): Prof. Goodwin

FORMAT: 4 weeks intensive.

### HORT 2004.03: Introduction to Viticulture (A).

Note: Students taking this course must be 19 years of age or older. This course on viticulture in the Atlantic region will initially examine the taxonomy, morphology, physiology, and biochemistry of grapevine growth and fruit maturation. Emphasis will be placed on the environmental regulation of grapevine growth, development, yield and composition, and management strategies to optimize grape production in cool-climate viticulture production areas. Included will be an examination of the importance of site selection, soil management, grapevine cultivars, rootstocks, clones, production systems, and vineyard establishment. Cultural management practices including pruning, training, canopy management, crop control, and mechanization will be discussed, and an overview of pest pressures and other environmental concerns including winter hardiness will be covered. Lastly, the harvesting and vinification of wine grapes will be examined with the inclusion of “hands-on” laboratory sessions at a commercial vineyard and winery. Successful completion of the course should prepare students for upper-division courses in viticulture and oenology.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Percival

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 1002

### **HORT 2005.03: Design & Construction of Turf Facilities.**

Includes the interpretation and implementation of design and construction plans for various facilities such as golf courses and recreational fields. Topics include understanding the basic concepts involved in golf course construction, individual components of a golf course, design and construction of sport turf facilities, and development and maintenance of high-end facilities, including those using synthetic turfgrass. Emphasis will be placed on the special considerations needed to “grow in” a new turf in each of these situations.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours per week.

### **HORT 2006.03: Tree Fruit Crops (A).**

Tree fruit production with emphasis on resource conservation is investigated in relation to the region. Origins, history, biosystematics, adaptation, and culture of tree fruits, including organic systems, are studied. Propagation, pruning, training, harvesting, and marketing of these crops are covered in this course.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: HORT 0203

### **HORT 2007.03: Small Fruit Crops (A).**

The course consists of the study of strawberry, blueberry, raspberry, cranberry, currant, gooseberry, kiwi, elderberry, Saskatoon berry, and grape production. Aspects of propagation through to harvesting and marketing of each crop is discussed. Some aspects of organic production of small fruits are included. Origins, adaptation, and distribution of each crop are examined. New small fruit crop development for nutraceuticals is covered.

NOTE: Fall semester – Note: Field trips to small fruit farms, small fruit crop nurseries, and research institutes are included during the term.

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: HORT 0202

### **HORT 2009.03: Landscape Plant Nursery Management (A).**

Nursery crops are those plant materials generally used for outdoor landscape plantings, including trees, shrubs, vines and other plants having persistent woody stems, and all herbaceous perennials. This course will examine the selection, propagation, growing, handling and marketing of these materials. The course uses an entrepreneurial approach with emphasis on the importance of new plant introductions, and plant and landscaping trends analysis. The course also examines the nursery industry from the standpoint of where it fits into the bigger picture, i.e., the overall “green” industry.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Mapplebeck

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: AGRI 1000, preparatory: BIOA 2002

CROSS-LISTING: HORT 0200

### **HORT 2010.03: Greenhouse and Floriculture Crop Management (A).**

Greenhouse and floriculture crop production is one of the most exacting specialties in the many areas of agriculture. It is the only type of crop production where almost complete control of plant growth is achieved with the modification of environmental conditions. This is obtained through atmosphere modification (increasing CO<sub>2</sub> levels); temperature control; control of light, nutrition, and water; the application of growth-modifying chemical regulators; and pest control. Greenhouse management can therefore be one of the most interesting and intriguing of the agricultural sciences. This course will examine the greenhouse, its environment, and the production of crops in this environment, plus outdoor cut-flower production.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Mapplebeck

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: AGRI 1000, preparatory: BIOA 2002

CROSS-LISTING: HORT 0201

### **HORT 3000.03: Environmental Processes and Natural Landscape Functions.**

The structure, functions, and dynamics of landscapes that are altered by human design are discussed. Key ecological processes and their disruption, landscape

modification, and landscape planning and management will be examined.

Students are expected to participate in field work, and to engage in self-directed study.

NOTE: Fall semester

INSTRUCTOR(S): Coordinator: Prof. MacKenzie

FORMAT: Lecture 3 hours, lab 3 hours per week.

### **HORT 3001.03: Landscape Project Management.**

This is an advanced course in landscape design, estimating, and construction.

Principles and processes for cost estimating will be studied, using actual landscape projects and considering local building codes and regulations. Computers will be utilized in the process.

NOTE: Fall semester

INSTRUCTOR(S): Prof. MacKenzie

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: A previous course in landscape design and construction

### **HORT 3008.03: Horticultural Therapy (H).**

An in-depth study of the application of horticultural activities as a treatment modality, e.g., working with youth and older adults, the rehabilitation of handicapped individuals, treatment of emotional problems and substance abuse, and others. Attention is given to understanding problems associated with client groups and specific horticultural activities used in therapeutic programs.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Goodyear

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: Second-year standing

### **HORT 4000.03: Urban Tree Management.**

This course focuses on the management of the urban forest. Tree inventory systems, planning the urban forest, rhizosphere management, site reclamation, the valuation of urban trees, and trees and the law will be included. Lab exercises will include tree assessment techniques, tree inventory exercises, use of tree inventory software, new techniques for hazard tree assessment, new techniques for managing pests and diseases in urban trees, and site assessment and remediation. Tree pruning exercises will emphasize preservation of tree structure, quality of cuts, and work efficiency and safety.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Goodwin

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: HORT 0207 or a previous course in arboriculture, or permission of the instructor

## **II. Technology Level Class Descriptions**

### **HORT 0100.02: Landscape Plants I.**

Herbaceous and woody plants are studied with respect to their identification, landscape value, and use. Special groups of plants to be studied include plants with fall interest, shade-loving plants, groundcovers, and vines, as well as many other plants suited to Atlantic landscapes. The lab involves the study of plant families, plant morphology, use of plant keys, plant collecting, and preparation of herbarium specimens. A plant collection is required.

NOTE: Fall semester

INSTRUCTOR(S): J. Morton

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **HORT 0101.02: Landscape Plants II.**

Herbaceous, woody, and aquatic plants are studied with respect to their identification, landscape value, and use. Special plant groups covered in the course include interior plants, culinary herbs, plants with special growth habits, native plants, and bog and marginal plants for aquatic gardens, in addition to many other plants for Atlantic landscapes. The recognition of deciduous woody plants by their winter wood characteristics is included.

NOTE: Winter semester

INSTRUCTOR(S): J. Morton

FORMAT: Lecture 3 hours per week.

### **HORT 0102.02: Turfgrass Production and Management.**

A study of cool-season turfgrasses, their characteristics, and proper usage. The establishment, maintenance, and renovation of turfgrass will be studied. Cultural topics covered will emphasize proper fertilizing, watering, and pest control.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **HORT 0103.02: Landscape Horticulture I.**

An introduction to landscape horticulture. Plant/environment interaction and the fundamental principles governing plant growth are discussed, as well as the functional uses of ornamental plants in the contemporary landscape. Laboratory exercises will concentrate on the basic skills associated with the use of plants in the landscape.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Goodwin

FORMAT: Lecture 3 hours, lab 3 hours per week.

### **HORT 0200.02: Landscape Plant Nursery Management.**

Nursery crops are those plant materials generally used for outdoor landscape plantings, including trees, shrubs, vines and other plants having persistent woody stems, and all herbaceous perennials. This course will examine the selection, propagation, growing, handling, and marketing of these materials. The course uses an entrepreneurial approach with emphasis on the importance of new plant introductions, and plant and landscaping trends analysis. The course also examines the nursery industry from the standpoint of where it fits into the bigger picture, i.e., the overall "green" industry.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Mapplebeck

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: PLSC 0100

CROSS-LISTING: HORT 2009

### **HORT 0201.02: Greenhouse and Floriculture Crop Management.**

Greenhouse and floriculture crop production is one of the most exacting specialties in the many areas of agriculture. It is the only type of crop production where almost complete control of plant growth is achieved with the modification of environmental conditions. This is obtained through atmosphere modification (increasing CO<sub>2</sub> levels); temperature control; control of light, nutrition and water; the application of growth-modifying chemical regulators; and pest control.

Greenhouse management can therefore be one of the most interesting and intriguing of the agricultural sciences. This course will examine the greenhouse, its environment, and the production of crops in this environment, plus outdoor cut-flower production.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: PLSC 0100

CROSS-LISTING: HORT 2010

### **HORT 0202.02: Small Fruit Crops.**

The course consists of the study of strawberry, blueberry, raspberry, cranberry, currant, gooseberry, kiwi, elderberry, Saskatoon berry, and grape production. Aspects of propagation through to harvesting and marketing of each crop is discussed. Some aspects of organic production of small fruits are included. Origins, adaptation, and distribution of each crop are examined. New small fruit crop development for nutraceuticals is covered.

NOTE: Fall semester – Note Field trips to small fruit farms, small fruit crop nurseries, and research institutes are included during the term.

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: HORT 2007

### **HORT 0203.02: Tree Fruit Crops.**

Tree fruit production with emphasis on resource conservation is investigated in relation to the region. Origins, history, biosystematics, adaptation, and culture of tree fruits, including organic systems, are studied. Propagation, pruning, training, harvesting, and marketing of these crops are covered in this course.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: HORT 2006

### **HORT 0204.02: Landscape Plants III.**

Herbaceous, woody, and aquatic plants are studied with respect to their identification, use, and value in landscape settings. Special plant groups included in the course include woodland plants, sensory plants, container plants, medicinal herbs, xeric plants, submerged and floating aquatic plants, and salt-tolerant plants, in addition to many other plants for Atlantic landscapes. The recognition of woody plants by their winter wood characteristics is included.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Goodwin

FORMAT: Lecture 2 hours per week.

### **HORT 0205.02: Residential Landscape Design and Construction.**

This course introduces a systematic process for developing residential landscape designs. Emphasis is placed upon maximizing the usefulness of the property and developing it in an environmentally sound and sustainable manner. Lab exercises will utilize the computer as a design tool as well as conventional graphic techniques.

NOTE: Winter semester

INSTRUCTOR(S): Prof. MacKenzie

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: HORT 0100, HORT 0103, HORT 0209

### **HORT 0207.02: Arboriculture.**

Emphasis is placed on arboriculture theory and practice. Tree problems arising from pest and disease injury, as well as environmental and non-parasitic injury of trees, will be addressed. The course will focus on the tree in an urban environment. Laboratory exercises concentrate on specific arboriculture skills and techniques.

NOTE: Fall semester

INSTRUCTOR(S): Prof. MacKenzie

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: HORT 0103

### **HORT 0208.02: Landscape Maintenance.**

Provides an overview of site management. Time studies, scheduling of horticultural work and management techniques are included. Plant healthcare strategies, including pesticides and their application, are discussed, and provincial pesticide applicator exams are written in preparation for licensing. A calendar of landscape maintenance tasks will be developed by the student.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Goodwin

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: HORT 0102, HORT 0103

### **HORT 0209.02: Landscape Horticulture II.**

A study of herbaceous plants and their uses in landscape. Special plant groups, gardening techniques, and styles will be examined. Both computer and conventional methods of drafting will be utilized in design.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Goodwin

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: HORT 0100; Prerequisite/Corequisite: HORT 0103

### **HORT 0210.02: Landscape Installation.**

This course provides theoretical and practical training in landscape construction and installation. Skills and standards identified by the Canadian Nursery and Landscape Association and tested through the Canadian Certified Horticultural Technician Program are considered minimum in levels of information presented in a modular format. Topics include plan reading, construction drawings, and site grading.

NOTE: Winter semester

INSTRUCTOR(S): Prof. MacKenzie

FORMAT: Lecture 3 hours, lab 3 hours per week.

CO-REQUISITE: Corequisite: ENGN 0101

### **HORT 0211.02: Vegetable Production.**

Production technology for the major vegetables grown in the Atlantic region are studied in detail, including botanical and horticultural characteristics, soil and fertility requirements, cultivar selection, pest management, and harvest and storage requirements. Commercial vegetable enterprises are visited.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: Preparatory: PLSC 0100

CROSS-LISTING: HORT 2000

# International Development

Below are classes offered in International Development by the Faculty of Agriculture. Please see the International Development Studies Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### IAGR 2001.03: Agricultural Systems of Central Europe.

This course examines agricultural systems in central Europe with particular reference to Slovakia, the Czech Republic, and Hungary. Students will learn about the geography, history, farming systems, crop and animal husbandry, agricultural equipment and machinery, landscape development, and agricultural economics of central Europe. Field trips to various agri-industry operations will be undertaken.

NOTE: Spring semester, following exams in April. This intensive two-week course is offered in Slovakia at the Slovak University of Agriculture in Nitra, in the Czech Republic at the University of Agriculture in Prague, and in Hungary at the Szent Istvan University in Budapest. Additional fees for travel, meals, and accommodations apply.

INSTRUCTOR(S): Coordinator: TBA

FORMAT: Spring semester, following exams in April.

### IAGR 2002.03: International Rural Development (H).

This course explores the history, defining characteristics, and diversity of developing societies, with a focus on the people and issues of rural communities. Students will explore the main issues facing rural communities in developing regions, as well as the many cultural, social, political and economic factors that can impact the success of development projects and initiatives at the community level. Students will be expected to develop an understanding of a variety of perspectives on international community development and also to develop an appreciation for the opportunities and challenges of sustainable development in different societies and cultures.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Cameron

FORMAT: Lecture 3 hours per week.

### IAGR 2003.03: Food Security & Rural Development in Cuba (A, H).

The focus of the course is food production and food security in Cuba, with emphasis on animal production, urban gardens, herbal medicine, environmental protection, ecotourism, and rural development. Students will also learn about Cuba's history, politics, economy, and culture and how these socioeconomic factors influence food production and food security. Readings, discussions and self-directed study are required during the semester.

NOTE: Winter semester—One week of the course is spent in Cuba in conjunction with the University of Cienfuegos. The week consists of volunteer work projects and tours (augmented with lectures) of urban gardens, an experimental dairy cooperative, an alternative agro-ecological farm, an herbal medicine farm, and coastal and mountain ecosystems. Additional fees for travel, meals, and accommodation apply.

INSTRUCTOR(S): Prof. G. Beyeler

FORMAT: Lecture 3 hours per week, plus one week in Cuba.

### IAGR 3000.03: Tropical Agriculture (A).

This course will introduce the student to food production, storage, and handling systems in tropical and subtropical countries. The sustainability of these systems and issues that limit the use of the environment for long-term food production will be identified. Farming systems and the role of national/international research centres are examined. The instruction will include resource people from several disciplines.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Asiedu

FORMAT: Lecture 3 hours per week.

### IAGR 3001.03: Directed Studies in International Development (A).

Independent study of topics in international development at an advanced level, with a focus on agriculture and rural development. Topics are developed through literature review, assigned readings, and discussion, and may include independent research. Students are expected to present the final project at a public seminar. Students are encouraged to use international travel or study opportunities as a focus, but this is not required. Topics must be supervised by a faculty member in the proposed area of interest, and approved by the Dean of Internationalization. Students must apply to the Dean of Internationalization at least six weeks before the semester start date. This course would normally be taken by undergraduate students in their final year.

NOTE: Fall, Winter or Summer

INSTRUCTOR(S): Coordinator: Dean of Internationalization

FORMAT: as arranged.

PREREQUISITE: 90 credit hours or final-year standing

### IAGR 4000.03: Global Seminar on Rural Sustainability (A).

An international course which brings together students from around the world to investigate and discuss local and global issues. The course will consist of a number of case studies, and the students must choose four in which to participate. Students will work in groups to research the topic using e-mail and discussion forums, and present their findings to the class using electronic classroom technology. Together the students will participate in a truly global seminar course.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Goodyear

FORMAT: Lecture 3 hours per week (either through virtual classroom or on campus).

# International Food Business

## I. Undergraduate Degree Level Class Descriptions

### INFB 1000.03: International food Policy & Environment (INFB)

This course is taught along with ECOA1002 Introduction to Economic Reasoning as part of the International Food Business program in Module 1: Acquiring Knowledge of International Food Systems. Students will successfully complete a series of practical tasks/assignments while learning about the global food environment. Topics will include study of emerging country markets, policy formulation, and multilateral agreements.

NOTE: Fall Semester - Module #1 INFB

### INFB 1001.03: International Food Business Project I (INFB)

This course is part of an underlying theme of the first year of the International Food Business Program. It allows students to integrate the work of the entire first year into a series of assignments and tasks embedded in international consumer behaviour and entrepreneurship. Students will learn about consumer behaviour applied to a new food product from Iceland and be tasked with preparing a Webpage highlighting the opportunities in both Europe and North America for the product. This is a year-long project concluding in International Food Business Project II.

NOTE: Fall Semester - Module #1 & #2 INFB

INSTRUCTOR: INFB Faculty

### INFB 1002.03: International Food Business Project II (INFB).

This course is part of an underlying theme of the first year of the International Food Business Program. It allows students to integrate the work of the entire first year into a series of assignments and tasks embedded in international consumer behaviour and entrepreneurship. Students will learn about consumer behaviour applied to a new food product from Iceland and be tasked with preparing a Webpage highlighting the opportunities in both Europe and North America for the product. This is a year-long project originating in International Food Business Project I.

NOTE: Winter Semester - Module #1 & #2 INFB

INSTRUCTOR: INFB Faculty

### INFB 1003.03: Introductory Second Language.

This course will be offered in The Netherlands by CAH Dronten as part of the International Food Business program. It is designed for an initial competency in spoken and written language. Students are ineligible to take a language course in which they are already fluent.

INSTRUCTOR: CAH Dronten Faculty

# Internship

## I. Technology Level Class Descriptions

### INTA 0100.00: Internship.

The student will be required to work under contract with an approved employer in their chosen field for a period of at least 12 weeks ( 480 hours). Contract details will be relevant to the student's area of study and will be negotiated between the student, the employer, and the course coordinator. Assessment will be based on this contract and will be carried out jointly by the employer and the course coordinator.

NOTE: Spring semester – 12 weeks.

INSTRUCTOR: Coordinators: Prof. Sanderson and G. Fraser

FORMAT: 12 weeks.

PREREQUISITE: Completion of the first year in the Diploma in Business Management, plus Workplace Readiness courses



# Management

Below are classes offered in Management by the Faculty of Agriculture. Please see the Faculty of Management Section for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### MGTA 1000.03: Small Business Entrepreneurship.

This course provides students with an overview of small business management theory and practice presented from an entrepreneurial perspective. Topic areas discussed include identifying and evaluating new business opportunities, financing the business, marketing management, human resources, and financial management. Upon successful completion of the course, students will understand the elements of business planning required for successful small businesses today.

NOTE: Winter semesters

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 0104

### MGTA 1001.03: Introduction to International Business (INFB).

This course is taught along with ECOA1002 Introduction to Economic Reasoning as part of the International Food Business program in Module 2: Analyzing Business Processes. Students will successfully complete a series of practical tasks/assignments while learning about essential aspects of international management. Topics will include the business task environment, organizational behaviour and operational management.

NOTE: Fall Semester - Module #2 INFB

INSTRUCTOR: INFB Faculty

### MGTA 1002.03: Food Supply Chain Management (INFB).

This course is part of Module 4 of the International Food Business program - Developing External Communications Strategies. It provides students with an introduction to global business communications issues and application. Topics include information and communication, intercultural aspects of communication, and emerging international media and techniques.

NOTE: Winter Semester - Module #4 INFB

INSTRUCTOR: INFB Faculty

### MGTA 1003 International Business Communications (INFB)

This course is part of Module 4 of the International Food Business program - Developing External Communications Strategies. It provides students with an introduction to global business communications issues and application. Topics include information and communication, intercultural aspects of communication, and emerging international media and techniques.

NOTE: Winter Semester - Module #4 INFB

INSTRUCTOR(S): INFB Faculty

### MGTA 2000.03: Human Resource Management.

An introduction to the human side of business organizations. The course focuses on the challenges of motivation, recruitment and selection, performance evaluation, compensation, and labour management relations.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 0205

### MGTA 2001.03: Introduction to Business Law.

An introduction to general principles of law relating to the management of a business. Major areas studied are torts and contracts. Specialized topics include

forms of business organizations, sale of goods, conditional sales, real property, mortgages, insurance, and wills.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 0103

### MGTA 2002.03: Marketing.

Designed to introduce basic marketing principles and their application to marketing problems. Topics such as promotion, pricing, distribution, and marketing research are examined. The case method of instruction is used extensively. Class participation is a vital component of this course.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours.

CROSS-LISTING: MGTA 0206

### MGTA 2003.03: Financial Management (A).

Principles and methods of organizing and analyzing financial businesses are examined. Practical problems associated with financial analysis, planning, capital budgeting, resource use, and credit acquisition are included. The role of the financial manager is identified throughout.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Russell

FORMAT: Lecture 2 hours, lab 3 hours per week.

PREREQUISITE: MGTA 2004

CROSS-LISTING: MGTA 0204

### MGTA 2004.03: Financial Accounting.

A study of the basic principles and procedures relevant to the accounting function of a business firm. Topics discussed include recording transactions, making adjusting entries, and preparing financial statements; accounting for a merchandising concern; computerized accounting software; accounting for cash, credit sales, and accounts receivable; inventories and cost of goods sold; and plant and equipment.

NOTE: Fall semester

INSTRUCTOR(S): E. Arnfast

FORMAT: Lecture 3 hours, lab 2 hours per week.

### MGTA 2006.03: Advertising and Promotion.

Students examine the process of planning, implementing, and evaluating advertising and promotional strategies for small businesses. Topics include an evaluation of conventional advertising media and web-based advertising, the preparation of customer profiles and target marketing, the creation of advertising copy, and the evaluation and monitoring of the advertising program. Case studies and class projects are essential elements of the course.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 2002

CROSS-LISTING: MGTA 0207

### MGTA 2007.03: Retail Sales Management.

Students examine effective sales techniques for a retail business and learn to use records systems for tracking sales performance. They also explore strategies for integrating front-line sales techniques with the overall marketing and promotional strategy for the business. The course will enable the student to track and interpret sales performance for the business, and to work with sales managers or consultants in identifying ways to improve sales performance.

NOTE: Winter semester

INSTRUCTOR(S): M. Brodie

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 2002

CROSS-LISTING: MGTA 0208

### MGTA 2008.03: Managing Retail Operations and Physical Resources.

This course is designed to train students in the daily office, sales, and inventory operations important in managing a small business. The course also covers the requirements for the siting and layout of a retail facility, and the factors important in designing a retail space. The maintenance, safety, and security requirements for the retail operation are also considered.

NOTE: Fall semester

INSTRUCTOR(S): M. Brodie

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 2004  
CROSS-LISTING: MGTA 0202

### **MGTA 2009.03: Customer Relations Management.**

The objective of this course is to provide students with a practical approach to the provision of exceptional customer service for a small business. Students are expected to identify the various factors that affect the provision of quality service and to identify ways to ensure client satisfaction. The course also provides training in point-of-sale techniques and complaint management.

NOTE: Fall semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 3 hours per week.  
CROSS-LISTING: MGTA 0203

### **MGTA 2010.03: Innovation Management (INFB).**

This course is part of Module 5A of the International Food Business program which is taught in The Netherlands. It provides students with an introduction to innovation management from an international perspective. Topics include innovation management, managing technology and knowledge, and managing research and development projects. This course is taught in The Netherlands.

NOTE: Fall Semester - Module #5A INFB  
INSTRUCTOR: CAH Dronten Faculty

### **MGTA 2011.03: International Marketing Research (INFB).**

This course is part of Module 7A of the International Food Business program - Performing Market Research. It provides students with an introduction to marketing research in an international setting. Topics include the research process, primary and secondary data collection, and analyzing data. This course is taught in The Netherlands.

NOTE: Fall Semester - Module #7A INFB  
INSTRUCTOR: CAH Dronten Faculty

### **MGTA 2012.03: Fundamentals of Management (INFB).**

This course is covered in Module #8A of the International Food Business program in the second year of study - Performing as a Leader and Manager. It provides students with the basic management functions and their performance as a business leader. Topics include planning, organizing, leading and controlling. This course is taught in The Netherlands.

NOTE: Fall Semester - Module #8A INFB  
INSTRUCTOR: INFB Faculty

### **MGTA 2013.03: Business Planning (INFB).**

This course is part of Module 9A of the International Food Business program - Developing Business Plans. It provides students with an introduction to business planning from an international perspective. Topics include starting a new business, alternative start-up methods, managing growth, and business succession. This course is taught in The Netherlands.

NOTE: Winter Semester - Module #9A INFB  
INSTRUCTOR: CAH Dronten Faculty

### **MGTA 3000.03: Management Accounting.**

This course introduces students to the use of accounting information in making effective management decisions. Topics include cost control and analysis, cost/volume/profit analysis, break-even analysis, differential analysis, and capital investment analysis.

NOTE: Fall semester  
INSTRUCTOR(S): Prof. McCormick  
FORMAT: Lecture 3 hours, lab 2 hours per week.  
PREREQUISITE: MGTA 2004

### **MGTA 3001.03: International Marketing.**

This course provides an introduction to international marketing and the international trading system. Students will be exposed to the unique aspects of international market research, selection, entry, pricing, and communications that differentiate them from their domestic equivalents. In addition, the international trading system will be examined with an emphasis on institutions such as the WTO and the IMF and on international commodity agreements, which directly impact the movement of goods and services. Cases are used extensively in the course and class participation is vital.

NOTE: Winter semester  
INSTRUCTOR(S): TBA  
FORMAT: Lecture 3 hours per week.  
PREREQUISITE: MGTA 2002

### **MGTA 3002.03: Consumer Behaviour.**

The course introduces the student to the basics of consumer behaviour and then applies this knowledge to the food marketing system. Topics covered include external influences on consumer behaviour, motivation, perception, learning, and decision-making. Historical and recent trends in product marketing, pricing, and advertising also form part of the course. Cases are used extensively and class participation is vital.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Lu  
FORMAT: Lecture 3 hours per week.  
PREREQUISITE: MGTA 2002

### **MGTA 3003.03: European Placement I (INFB)**

Students will broaden their experience of European business management by participating in a planned learning experience in an approved business or entrepreneurial venture. Based on their area of interest students will find placements in suitable businesses or other organizations and submit a work plan to the course coordinator and the host organization. Students will be required to keep a journal of the placement experience and to submit a report upon completion of the placement. The host organizations will evaluate students on their development of critical skills and abilities. Placements may be volunteer or paid positions, and cover three months at the end of the second year in The Netherlands.

NOTE: Winter semester  
INSTRUCTOR: Coordinator: TBA

### **MGTA 3004.03: European Placement II (INFB)**

Students will broaden their experience of European business management by participating in a planned learning experience in an approved business or entrepreneurial venture. Based on their area of interest students will find placements in suitable businesses or other organizations and submit a work plan to the course coordinator and the host organization. Students will be required to keep a journal of the placement experience and to submit a report upon completion of the placement. The host organizations will evaluate students on their development of critical skills and abilities. Placements may be volunteer or paid positions, and cover three months at the end of the second year in The Netherlands.

NOTE: Winter semester

### **MGTA 3005.03: New Product Development (INFB).**

This course is part of Module 5B of the International Food Business program which is taught in Canada. It provides students with an introduction to new product development from an international perspective. Topics include new product development process, packaging, and managing the development team.

NOTE: Fall Semester - Module #5B INFB  
INSTRUCTOR: INFB Faculty

### **MGTA 3006.03: Retail Management (INFB).**

This course is part of Module 6B of the International Food Business program - marketing management which is taught in Canada. It provides students with an introduction to retail management from an international perspective. Topics include: overview of strategic management, location and layout, merchandise management, and retail strategy.

NOTE: Fall Semester - Module #6B INFB  
INSTRUCTOR: INFB Faculty

### **MGTA 3007.03: Quality Management (INFB).**

This course is part of Module 8B of the International Food Business program - performing as a leader and manager which is taught in Canada. It provides students with an intermediate level of study in management from an international perspective. Topics include: organizational effectiveness, quality systems, and organizational leadership.

NOTE: Fall Semester - Module #8B INFB  
INSTRUCTOR: INFB Faculty

### **MGTA 3008.03: Intermediate Marketing Research (INFB).**

This course is part of Module 7B of the International Food Business program - performing marketing research which is taught in Canada. It provides students with an intermediate level research from an international perspective. Topics include: qualitative research methods, quantitative methods, presenting research results, and ethical issues in research.

NOTE: Fall Semester - Module #7B INFB  
INSTRUCTOR: INFB Faculty

**MGTA 4000.03: Strategic Management.**

This is a capstone course that will integrate all the business disciplines (marketing, finance, accounting, etc.) and prepare the student to formulate and implement strategy in an agribusiness setting. Students will be expected to gain a full understanding of the complexity and interrelationships of modern managerial decision-making and apply this knowledge to real managerial problems. Lectures, case studies, projects, and guest speakers will be utilized.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Hartt

FORMAT: Lecture 3 hours per week.

PREREQUISITE: Students will normally be Agricultural Business majors who have successfully completed the first three years of the program.

**MGTA 4001.03: Advanced Entrepreneurship (A).**

This course will apply the concepts of entrepreneurship to creating and managing a small business. Students will investigate opportunities for new agribusinesses and develop business plans that consider management structure, financing, production, marketing, and taxation. Lectures, case studies, guest speakers, and project assignments will be utilized.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Russell

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: MGTA 2002, MGTA 2003, and at least third-year degree standing

**MGTA 4002.03: North American Placement I (INFB).**

Students will broaden their experience of North American business management by participating in a planned learning experience in an approved business or entrepreneurial venture. Based on their area of interest students will find placements in suitable businesses or other organizations and submit a work plan to the course coordinator and the host organization. Students will be required to keep a journal of the placement experience and to submit a report upon completion of the placement. The host organizations will evaluate students on their development of critical skills and abilities. Placements may be volunteer or paid positions, and cover three months at the end of the third year in Canada.

NOTE: Winter semester

INSTRUCTOR: Coordinator: TBA

**MGTA 4003.03: North American Placement II (INFB).**

Students will broaden their experience of North American business management by participating in a planned learning experience in an approved business or entrepreneurial venture. Based on their area of interest students will find placements in suitable businesses or other organizations and submit a work plan to the course coordinator and the host organization. Students will be required to keep a journal of the placement experience and to submit a report upon completion of the placement. The host organizations will evaluate students on their development of critical skills and abilities. Placements may be volunteer or paid positions, and cover three months at the end of the third year in Canada.

NOTE: Winter semester

INSTRUCTOR: Coordinator: TBA

**II. Technology Level Class Descriptions****MGTA 0020.00: Business Leadership, Ethics, and Professionalism**

Students explore the ethical and professional context in which individual enterprises operate, and develop effective strategies for professional participation and leadership in their industry. They also develop the team skills necessary for participation in seminars, conferences, and other special events. This module course requires the development and presentation of a proposal for a business plan, which will be completed in MGTA 0201.

NOTE: Fall semester – This is a Workplace Readiness course required for all options in the Diploma in Business Management

INSTRUCTOR(S): Prof. Sanderson

FORMAT: Lecture 2 hours per week.

**MGTA 0100.02: Accounting**

An introduction to accounting topics useful to managers. Topics include recording transactions, forms of business organization, cash and accrual bases of accounting, financial statements, internal control, payrolls, bank reconciliation, and types of accounting systems, with an introduction to microcomputer applications.

NOTE: Fall semester

INSTRUCTOR(S): P. MacCormick

FORMAT: Lecture 3 hours per week.

**MGTA 0101.02: Applied Accounting and Taxation**

The basic principles and procedures relevant to the accounting function of a business. Topics discussed include recording business transactions, year-end adjustments, and preparation of financial statements. Considerable time will be spent on Canadian income tax and a computerized accounting project.

NOTE: Winter semester

INSTRUCTOR(S): K. McNutt

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: MGTA 0100

**MGTA 0103.02: Business Law**

Introduces several legal topics relevant to the management of a business. Topics discussed are: legal structure in Canada, Law of Torts, contracts, sale of goods, consumer protection legislation, creditors, employment, forms of business organization, insurance, and real estate.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 2001

**MGTA 0104.02: Small Business Entrepreneurship**

This course provides students with an overview of small business management theory and practice presented from an entrepreneurial perspective. Topic areas discussed include identifying and evaluating new business opportunities, financing the business, marketing management, human resources, and financial management. Upon successful completion of the course, students will understand the elements of business planning required for successful small businesses today.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 1000

**MGTA 0201.02: Business Project**

An opportunity to examine, in detail, enterprise management topics. Projects are organized and carried out by the students under the supervision of various staff members. Projects started in MGTA 0020 will be completed in this course.

NOTE: Winter semester

INSTRUCTOR(S): Coordinator: Prof. Russell

FORMAT: Lab 5 hours per week.

PREREQUISITE: MGTA 0020, MGTA 0204, and MGTA 0206

**MGTA 0202.02: Managing Retail Operations and Physical Resources**

This course is designed to train students in the daily office, sales, and inventory operations important in managing a small business. The course also covers the requirements for the siting and layout of a retail facility, and the factors important in designing a retail space. The maintenance, safety, and security requirements for the retail operation are also considered.

NOTE: Fall semester

INSTRUCTOR(S): M. Brodie

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 0100

CROSS-LISTING: MGTA 2008

**MGTA 0203.02: Customer Relations Management**

The objective of this course is to provide students with a practical approach to the provision of exceptional customer service for a small business. Students are expected to identify the various factors that affect the provision of quality service and to identify ways to ensure client satisfaction. The course also provides training in point-of-sales techniques and complaint management.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Lewis

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 2009

**MGTA 0204.02: Financial Management (A)**

Principles and methods of organizing and analyzing financial businesses are examined. Practical problems associated with financial analysis, planning, capital budgeting, resource use, and credit acquisition are included. The role of the financial manager is identified throughout.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Russell

FORMAT: Lecture 2 hours, lab 3 hours per week.

PREREQUISITE: Preparatory: MGTA 0100

CROSS-LISTING: MGTA 2003

## MGTA 0205.02: Human Resource Management

An introduction to the human side of business organizations. The course focuses on the challenges of motivation, recruitment and selection, performance evaluation, compensation, and labour management relations.

NOTE: Fall and Winter semester

INSTRUCTOR(S): Prof. Lewis

FORMAT: Lecture 3 hours per week.

CROSS-LISTING: MGTA 2000

## MGTA 0206.02: Marketing

Designed to introduce basic marketing principles and their application to marketing problems. Topics such as promotion, pricing, distribution, and marketing research are examined. The case method of instruction is used extensively. Class participation is a vital component of this course.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Lewis

FORMAT: Lecture 3 hours, lab 2 hours per week.

CROSS-LISTING: MGTA 2002

## MGTA 0207.02: Advertising and Promotion

Students examine the process of planning, implementing, and evaluating advertising and promotional strategies for small businesses. Topics include an evaluation of conventional advertising media and web-based advertising, the preparation of customer profiles and target marketing, the creation of advertising copy, and the evaluation and monitoring of the advertising program. Case studies and class projects are essential elements of the course.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 0102 or MGTA 0206

CROSS-LISTING: MGTA 2006

## MGTA 0208.02: Retail Sales Management

Students examine effective sales techniques for a retail business and learn to use records systems for tracking sales performance. They also explore strategies for integrating front-line sales techniques with the overall marketing and promotional strategy for the business. The course will enable the student to track and interpret sales performance for the business, and to work with sales managers or consultants in identifying ways to improve sales performance.

NOTE: Winter semester

INSTRUCTOR(S): M. Brodie

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MGTA 0206

CROSS-LISTING: MGTA 2007

# Mathematics

Below are classes offered in Mathematics by the Faculty of Agriculture. Please see the Mathematics Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### MTHA 1000.03: Introductory Calculus I.

Topics will include functions and their inverses, limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product and quotient rules, and implicit differentiation, with applications to curve sketching, maxima and minima problems, and velocity and acceleration problems. This course also includes an introduction to anti-derivatives and applications of the definite integral to a variety of problems. Students are required to confirm their eligibility for admission to this course by means of a mathematics diagnostic test, to be taken the day following registration. Students not admitted must take MTHA 0050.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Nguyen-Quang

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: Grade 12 Mathematics or MTHA 0050

### MTHA 1001.03: Introductory Calculus II.

A continuation of the study of calculus with topics including both the definite and indefinite integral: techniques of integration, with applications to areas, volumes, arc length, surface areas, elementary differential equations and their applications. The course may also include parametric equations and polar coordinates, and sequences and series and their applications.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Nguyen-Quang

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: MTHA 1000

### MTHA 1002.03: Business Math.

This course will provide the mathematical skills needed to understand, analyse and solve the mathematical problems encountered in business, finance and investment decision making. Course topics will include arithmetic and algebraic operations, mathematics of marketing, mathematics of finance, probability and statistical applications.

NOTE: Fall Semester - 3 lects and one tutorial per week.

INSTRUCTOR: TBA

### MTHA 2000.03: Multivariable Calculus.

This course covers functions of several variables: vectors, dot product, cross product, differentiation and integration of vector-valued functions, space curves, partial derivatives, optimization, multiple integrals and their applications, vector fields, line integrals, flux integrals, divergence and curl, Stokes Theorem, and the Divergence Theorem.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 4 hours, lab 2 hours per week.

PREREQUISITE: MTHA 1001

### MTHA 2001.03: Differential Equations.

This course introduces the basic theory of differential equations, considers various techniques for their solution, and looks at various applications. Topics include First Order Linear and Non-Linear differential equations; differential equations of higher order; Laplace Transforms; Series solutions; systems of equations; and Fourier Series. Topics from Linear Algebra are included as required to solve systems of differential equations, Linear Algebraic equations, matrices and

vectors, eigenvalues and eigenvectors, and solutions to both homogeneous and nonhomogeneous systems.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 4 hours, tutorial 2 hours per week.

PREREQUISITE: MTHA 1001

### **MTHA 3000.03: Applied Linear Algebra.**

This course covers geometric vectors in three dimensions, dot product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer's rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvalues and eigenvectors.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 2 hours per week.

### **MTHA 4000.03: Agricultural Modelling.**

The aim of the course is to teach agricultural students when and how to attempt to express their ideas mathematically, and how to solve the resulting mathematical model and compare its predictions to experimental data. Topics include techniques of creating a model, techniques of solving models, testing and evaluating models, growth models, and a directed study project of an example of a model used in the agricultural sciences.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Georgallas

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: MTHA 1001 and at least third-year standing

## **II. Technology Level Class Descriptions**

### **MTHA 0050.02: Functions.**

This is a one-semester non-credit course designed for those who do not have the requisite skills for the first-year mathematics courses but have shown sufficient basic mathematical ability to warrant a one semester course to make up for the deficiencies. This course will emphasize the study of the basic functions used in the sciences. Topics to be covered include linear, exponential, logarithmic, and trigonometric functions. Emphasis is placed on use of a graphing calculator. MTHA 0050 is not intended to duplicate or replace Grade 12 Pre-Calculus Mathematics.

NOTE: Fall semesters

INSTRUCTOR(S): P. Nelson

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: If required as a result of performance on a mathematics diagnostic test, or approval of the Registrar

### **MTHA 0100.02: Business Math.**

This course introduces the basic mathematical skills needed to understand, analyze, and solve mathematical problems encountered in business, finance, and investment decision-making. Students are expected to be able to understand and perform arithmetic and algebraic operations.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Stackhouse

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

## **Microbiology**

Below are classes offered in Microbiology by the Faculty of Agriculture. Please see the Microbiology and Immunology Section in the Faculty of Science for classes offered on the Halifax campuses.

### **I. Undergraduate Degree Level Class Descriptions**

#### **MCRA 2000.03: Microbiology.**

A general introduction to microbiology. Topics include history, morphology, structure, cultivation, reproduction, metabolism, genetics, classification, and control of microorganisms. The importance of microorganisms to soil productivity, foods, industry, veterinary science, public health, and sanitation is discussed. Students are required to have laboratory coats.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

PREREQUISITE: Preparatories: BIOA 1002, BIOA 1003

#### **MCRA 3000.03: Food Microbiology (A).**

A study of microorganisms involved in the production and processing of food products. Topics will include the use of microorganisms for food production and processing, food spoilage and potential for food poisoning, and sanitation procedures, including government regulations and standards for the food industry. The use of conventional plating as well as rapid assay techniques will be discussed.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours per week.

PREREQUISITE: MCRA 2000

#### **MCRA 4000.03: Soil Microbiology (A).**

A study of the biology of the various classes of microorganisms in soil, including bacteria, blue-green algae, fungi, algae, protozoa, and viruses. This course includes details of biochemical transformation of carbon, nitrogen, sulfur, and phosphorus, as well as pesticides and wastes in the environment.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Burton

FORMAT: Lecture 3 hours per week. Alternate year course, next offered in 2014/2015

PREREQUISITE: MCRA 2000, SOIL 2000

CROSS-LISTING: AGRI 5250

# Nutrition

## I. Undergraduate Degree Level Class Descriptions

### NUTR 3000.03: Animal Nutrition (A).

A study of the principles of nutrition, including the digestion, absorption, and metabolism of nutrients by domestic animals. Functions of protein, lipids, carbohydrates, vitamins, and minerals are studied.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Firth

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: CHMA 2000

### NUTR 3001.03: Applied Animal Nutrition (A).

Classification and characteristics of feedstuff and regulations governing their use are described. Methodology for evaluating the relative merits of typical feedstuffs is discussed. The principles of nutrition are applied in the formulation of rations for monogastric, avian, and ruminant species.

NOTE: Winter semester

INSTRUCTOR(S): Profs. Firth and Anderson

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: NUTR 3000

### NUTR 3002.03: Fish Nutrition (A).

Nutrients required by finfish, shellfish, crustaceans, and molluscs are discussed in context with current and future sources of these nutrients. Digestive physiology and specific feeding problems of aquatic species are addressed. Diet formulations and feeding strategies for maintenance, growth, and reproductive performance of fish are covered.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Anderson

FORMAT: Lecture 3 hours, lab 2 hours per week.

### NUTR 4000.03: Ruminant Digestive Physiology and Metabolism.

This course is designed to provide an intensive study of food intake and digestion, and nutrient absorption and metabolism, in the ruminant animal. The course details current knowledge and focuses on aspects of future research interest. Students are expected to contribute to discussions and present reviews to the class on various aspects of the subject.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Fredeen

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: BIOA 2006, CHMA 3006, NUTR 3000

CROSS-LISTING: AGRI 5620

# Physics

Below are classes offered in Physics by the Faculty of Agriculture. Please see the Physics Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### PHYS 1000.03: Physics for the Life Sciences I.

In this course an understanding of physics is acquired by exploring the physical principles that underlie complex biological structures. The nature of materials and the forces that act on them is introduced through a series of topic examples taken from evolution, mammalian physiology, plant structure, and others.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Georgallas

FORMAT: Lecture 3 hours per week, lab/tutorial 1½ hours per week (alternating weekly).

PREREQUISITE: Grade 12 Physics or PHYS 0050, Prerequisite/Corequisite: MTHA 1000

EXCLUSION: Students may take either PHYS1000 or PHYS1002, but not both, for credit.

### PHYS 1001.03: Physics for the Life Sciences II.

In this course the physical principles underlying perception throughout the animal kingdom are introduced. The examples chosen emphasize adaptation and strategies (e.g., echolocation and noctuid moths) and represent a wide range of forms (e.g., eyes of the common scallop pecten, electric location by the fish *Gymnarchus niloticus*).

NOTE: Winter semester

INSTRUCTOR(S): Prof. Georgallas

FORMAT: Lecture 3 hours, lab/tutorial 1½ hours per week (alternating weekly).

PREREQUISITE: PHYS 1000 or PHYS 1002

### PHYS 1002.03: Physics I.

Fundamental physical principles that are necessary for the understanding of the agricultural sciences form the core material of this course. Classical physics topics include vector analysis, dynamics, statics, fluid mechanics, acoustics, and heat. Concepts derived from modern physics are added in order to complete the classical theories. Weekly student laboratory sessions allow for direct investigation of the theories studied in the course. Students may take either PHYS1000 or PHYS1002, but not both, for credit.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Georgallas

FORMAT: Lecture 3 hours, lab 1½ hours, tutorial 1 hour per week.

PREREQUISITE: Grade 12 Physics or PHYS 0050, Prerequisite/Corequisite: MTHA 1000

### PHYS 1003.03: Physics II.

A continuation of PHYS 1002. The course mainly deals with electromagnetic theory, including such topics as electric charges, fields, potential, magnetic theory, induction, and Maxwell's Equations. Fundamental wave theory and optics are also studied, together with an introduction to nuclear physics. The laboratory provides an opportunity to investigate the theories in a hands-on environment.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Georgallas

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: PHYS 1002

## II. Technology Level Class Descriptions

### PHYS 0050.00: Introductory Physics.

An introductory non-credit course for entering students who do not have the equivalent of NS Grade 12 Physics. Course topics include one-dimensional kinematics, vector theory, Newton's Laws, equilibrium, kinetic energy and work, and other topics as determined by a review of the class. PHYS 0050 is not intended to duplicate or replace Grade 12 Physics.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): P. Nelson

FORMAT: Lecture 3 hours, tutorial 1 hour per week.

PREREQUISITE: Approval of the Registrar

## Philosophy

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Below are classes offered in Philosophy by the Faculty of Agriculture. Please see the Philosophy Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### PHLA 3000.03: Environmental and Agricultural Ethics (H).

This course offers a general introduction to environmental ethics with emphasis on agricultural issues. Students will be introduced to modern ethical theory and to techniques of philosophical reasoning, and will be provided with a general context for overall discussion by examining the origins of the modern world view (the rise of modern science, market economics, and liberalism). Students will be evaluated on class participation and a series of short weekly essays based upon directed readings and field experience. Essay-style midterm and final exams are required.

NOTE: Winter semester

INSTRUCTOR(S): A. Kernohan

FORMAT: one 2-hour seminar per week.

PREREQUISITE: At least third-year standing

## Psychology

Below are classes offered in Psychology by the Faculty of Agriculture. Please see the Psychology Section in the Faculty of Science for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### **PSYC 1000.03: Introductory Psychology I (H).**

This course will introduce students to the mental processes that underlie human behaviour. Topics covered include brain function, the nervous system, sensation, perception, states of consciousness, learning, memory and cognition. The course will be taught primarily through lecture and in-class demonstrations and activities.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Dukeshire

FORMAT: Lecture 3 hours per week.

#### **PSYC 1001.03: Introductory Psychology II (H).**

This course will introduce students to important elements that describe, explain, predict, and influence human behaviour. Topics covered include human development, emotion, social influences, personality, health, psychological disorders, and therapy. The course will be taught primarily through lecture and in-class demonstrations and activities.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Dukeshire

FORMAT: Lecture 3 hours per week.

## Political Science

Below are classes offered in Political Science by the Faculty of Agriculture. Please see the Political Science Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### **POLS 1000.03: Introduction to Political Science (H)**

An introductory study of the ideologies of modern movements. Liberal democracy, conservatism, democratic socialism, fascism, and Marxist perspectives will be covered. Analysis of such central concepts as liberty, equality, power, authority, justice, law, constitutionalism, democracy, and authoritarianism will be presented and discussed. This course provides an overview of the various institutions and policies involved in governing. There will be a focus on rural social movements.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Cameron

FORMAT: Lecture 3 hours per week.

#### **POLS 1001.03: Structure and Function of Government (H)**

Students will study the legislative, executive, and judicial aspects of the Canadian state, and their interactions. They will look at political processes and policy development. This course will provide students with the basic knowledge of how governments operate at all levels. It will offer insight into how and why political decisions are made about the issues that affect all Canadians: taxation, education, employment, health care, and the debt. There will be a focus on issues of interest to rural Canada.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Cameron

FORMAT: Lecture 3 hours per week



# Plant Science

## I. Undergraduate Degree Level Class Descriptions

### PLSC 1000.03: Farm Woodlot Management (A).

This course will focus on the importance of privately owned woodlands to the landowner, the forest industry, and the agricultural sector. It will examine forest ecology, tree identification, forest measurement, aerial photo interpretation, and forest management practices including silviculture. The course will review Christmas tree and maple syrup production. The role of appropriate equipment and machinery in the woods will also be discussed. A field lab will be held weekly. Steel-toed boots and hard hats are required.

NOTE: Fall semester – This course has limited enrollment.

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week.

### PLSC 2000.03: Specialty Crops (A).

This course will examine opportunities for specialty crop production, using an entrepreneurial approach. A core group of specialty crops will be examined. Production requirements, production and marketing potential, end use, and value adding will be studied. Students will have optional crop choices to reflect individual interest. A major project is required.

NOTE: Winter semester

INSTRUCTOR(S): Coordinator: Prof. Mapplebeck

FORMAT: Lecture 3 hours, lab 2 hours per week.

### PLSC 3000.03: Theory and Practice of Plant Propagation (A).

This course is intended to give students an advanced knowledge in the area of biology, physiology and practical aspects of plant propagation. It is strongly recommended for students wishing to undertake graduate work in plant sciences, biotechnology, environmental sciences, and ecology. It is also recommended for managers of greenhouses and nurseries. Topics will include biology of plant propagation, propagation environment, breeding systems, seed and vegetative propagation, cell and tissue micropropagation, and propagation of selected plant species for commercial production.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 2002

### PLSC 4000.03: Plant Breeding (A).

An introduction to the principles and practices of plant breeding, including the genetics of agriculturally important traits, germplasm conservation, breeding biotechnology, and the structure of the Canadian seed industry.

NOTE: Winter semester

INSTRUCTOR(S): Prof. McLean

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: GENE 2000, STAA 2000, one crop production subject

### PLSC 4002.03: Plant Ecophysiology (A).

This course is designed to stimulate interest, critical thinking, and investigative processes for the understanding of growth, development, distribution, acclimation, and adaptation of crop plants that are influenced by their physiological ecology; the interaction with the climatological, physical, chemical, and biological environments; and the ecophysiological responses that are modulated by input and crop management factors. This course will also enhance knowledge of crop stress diagnostics, physiological mechanisms of acclimation, and adaptation to various challenging abiotic and biotic stress factors. Agricultural practices and agroecosystem management will be related to the economic and environmental responsibilities. This course will use several "Participatory Learning" techniques.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Lada

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: BIOA 2002, one crop production course

### PLSC 4003.03: Problem Solving in Plant Science (A).

The objective of this course is to review and integrate material from prerequisite courses in crop production, environment, business, soils, climate, and basic sciences into a comprehensive understanding of crop management systems. Students will work with each other and the instructor to develop group and individual study plans and learning contracts to address individual needs to fill gaps in knowledge and skills in Plant Science. Activities and assignments will be tailored to the needs of the group and the individuals.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Caldwell

FORMAT: Lecture 3 hours per week.

PREREQUISITE: Fourth-year standing in Plant Science major or minor

### PLSC 4004.03: Root Physiology Underground Secrets (A).

The objective of this course is to give students a fundamental understanding of the mysteries of the hidden half of plants – roots. The architectural, physiological, metabolic and ecological significance of roots is often less understood, frequently forgotten or ignored. Students will study the intricacies of root architecture, growth, development, physiology and the role of roots in plant defence. Attention is given to the soil ecosystem and how roots respond to their environment. Students will also learn about root-derived secondary metabolites and their roles in plant and human health, and appreciate the emerging opportunities in "milking roots".

NOTE: Winter semester

INSTRUCTOR(S): Prof. Lada

FORMAT: Lecture 3 hours, lab 2 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: BIOA 2002

## II. Technology Level Course Descriptions

### PLSC 0100.02: Utilization of Plant Resources.

Using an integrated systems approach, students are introduced to the principles and practices involved in the sustainable production of crop plants. Practical exercises will give the students an opportunity to gain knowledge and skills involved in economic and environmental growing of agronomic and horticultural crops.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Mapplebeck

FORMAT: Lecture 3 hours, lab 2 hours per week.

### PLSC 0200.02: Plant Propagation.

This course studies physiological and anatomical bases of plant propagation, and techniques of sexual and asexual propagation of agricultural and horticultural crops as well as landscape plant material and herbaceous perennials. Propagation structures, containers, media and sanitation, pedigreed seed production, and in-vitro techniques for micropropagation are also components of this course.

NOTE: Fall semester and complete the project in the Winter semester.

INSTRUCTOR(S): Prof. Pruski

FORMAT: Lecture 3 hours, lab 3 hours per week.

### PLSC 0201.02: Technology Project.

This project provides an opportunity for the student to study in detail a Plant Science topic of special interest. The topic may build on other aspects of the study program. The student pursues studies under a project supervisor. The project plan developed with the advisor must include the purpose of the study, the procedures and materials used, a time schedule for the work involved, the method in which the information will be collected, the way in which comparisons and conclusions will be developed, and the format for the final report. Both a written and an oral report will be required.

NOTE: Fall and Winter semesters – Students register in the

INSTRUCTOR(S): Coordinator: Prof. Asiedu

FORMAT: Lecture 2 hours per week.

### PLSC 0202.02: Plant Science Techniques.

This is a Spring semester course intended for students in the Plant Science Technology program following their first year of study. Students will be required to work under contract in an area of Plant Science with an approved employer for a period of at least 12 weeks (480 hours). Contract content will be relevant to the student's area of study and will be negotiated between the employer, the course

coordinator, and the student. Assessment will be based on this contract and will be carried out jointly by the employer and the course coordinator.  
NOTE: Spring semester  
INSTRUCTOR(S): Coordinator: S. Kilyanek  
FORMAT: 12 weeks  
PREREQUISITE: Completion of the first year of the Plant Science Technology program

## Research Methods/Project Seminars

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### I. Undergraduate Degree Level Class Descriptions

#### **RESM 4000.03: Bio-Environmental Systems Management Project-Seminar I (A).**

Students will study an operation (information gathering) and review management of technological, human, financial, and environmental resources. A group report and individual oral and poster presentations are required.

NOTE: Winter semester

INSTRUCTOR(S): Coordinator: TBA

FORMAT: Seminar 3 hours per week.

PREREQUISITE: Integrated Environmental Management student in third year, or consent of the coordinator

#### **RESM 4001.03: Bio-Environmental Systems Management Project-Seminar II (A).**

This is a continuation of RESM 4000, with a study and examination of identified problems within the operation. Working with industry representatives, the course will identify alternatives to solve current problems. Written and oral reports are presented to class and industry.

NOTE: Fall semester

INSTRUCTOR(S): Coordinator: Prof. Price

FORMAT: Lab 4 hours per week.

PREREQUISITE: RESM 4000; Integrated Environmental Management student in final year or consent of the coordinator

#### **RESM 4002.03: Animal Science Project-Seminar I (A).**

In consultation with a faculty advisor, Animal Science majors select a research topic. This topic is investigated and presented orally and in a written report. Other topics of current interest are also presented and discussed in the weekly seminar period.

NOTE: Fall semester

INSTRUCTOR(S): TBA; Coordinators: Profs. Barrett and Fredeen

FORMAT: Seminar 2 hours per week.

PREREQUISITE: Animal Science major in third or fourth year of the program, or consent of the coordinator

#### **RESM 4003.03: Animal Science Project-Seminar II (A).**

The continuation and conclusion of the project selected in RESM 4002.

NOTE: Winter semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty; Coordinators: Profs. Fredeen and Barrett

FORMAT: Seminar 2 hours per week.

PREREQUISITE: RESM 4002

#### **RESM 4004.03: Research Methods for Economics and Business (A).**

The lectures cover general methodological issues within business and social sciences research, as well as considering specific research techniques. Students undertaking fourth-year projects within the Department of Business and Social Sciences begin their projects, under faculty supervision, through this course's project development process. Other students may instead write one or more papers on research methodology.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Grant

FORMAT: Lecture 2 hours, lab 2 hours per week.

PREREQUISITE: At least third-year standing, including ECOA 1000

**RESM 4005.03: Project-Seminar for Economics and Business (A).**

Under the supervision of faculty, students complete the research projects begun in RESM 4004. Each student is required to submit the first draft for evaluation by faculty. The student presents a final report and participates in peer evaluation of the presentations of the other students.

NOTE: Winter semester

INSTRUCTOR(S): Dept. of Business and Social Sciences Faculty; Coordinator: Prof. Dunlop

FORMAT: Seminar 2 hours per week.

PREREQUISITE: RESM 4004

**RESM 4006.03: Environmental Sciences Project-Seminar I (A).**

A required course for all B.Sc.(Agr.) students registered in the Department of Environmental Sciences. Each student will choose a research project and faculty advisor in consultation with the course coordinator. Each student will present periodic oral and written reports on their subject of investigation. Other written and seminar topics may be assigned. Topics on communication skills and the presentation of scientific information in various formats will be discussed in the weekly seminar periods.

NOTE: Fall semester

INSTRUCTOR(S): Dept. of Environmental Sciences Faculty; Coordinators: Profs. Burton and France

FORMAT: Seminar 2 hours per week.

PREREQUISITE: Students registered for their final year in the Department of Environmental Sciences, or consent of the coordinator

**RESM 4007.03: Environmental Sciences Project-Seminar II (A).**

A continuation of RESM 4006. Students will continue with their research projects. The course will culminate in the presentation of project results, in several formats. Other written and seminar topics may be assigned.

NOTE: Winter semester

INSTRUCTOR(S): Dept. of Environmental Sciences Faculty; Coordinators: Profs. Nams and France

FORMAT: Seminar 2 hour per week.

PREREQUISITE: RESM 4006

**RESM 4008.03: Plant Science Project-Seminar I (A).**

Involves the selection of an appropriate project and the preparation of a research plan to investigate the chosen subject. Fundamentals of experimental design and data analysis are covered in lectures. Under the supervision of a faculty advisor, each student will select a topic, conduct a detailed literature review, and prepare an experimental plan for implementation in RESM 4009. The research project and faculty advisor are to be chosen in consultation with the course coordinator during Semester VI, and work initiated soon thereafter. This is a required course for all students in Year 3 of the Plant Science option.

NOTE: Winter semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty; Coordinators: Profs. Asiedu and McLean

FORMAT: Lecture 2 hours per week.

**RESM 4009.03: Plant Science Project-Seminar II (A).**

The continuation and conclusion of the subject selected in RESM 4008. This consists of both a written and an oral presentation of the project.

NOTE: Fall semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty; Coordinators: Profs. Asiedu and McLean

FORMAT: Lecture 2 hours per week.

PREREQUISITE: RESM 4008

**RESM 4010.03: Aquaculture Project-Seminar I (A).**

In consultation with a faculty advisor, each student will select a research topic. This topic is investigated and presented both orally and in a written report. Other topics of current interest are also presented and discussed in the weekly seminar period.

NOTE: Fall semester

INSTRUCTOR(S): TBA, Coordinators: Profs. Barrett and Fredeen

FORMAT: Seminar 2 hours per week.

PREREQUISITE: Aquaculture major in third or fourth year of the program, or consent of the coordinator

**RESM 4011.03: Aquaculture Project-Seminar II (A).**

The continuation and conclusion of the project selected in RESM4010.

NOTE: Winter semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty; Coordinators: Profs. Fredeen and Barrett

FORMAT: Seminar 2 hours per week.

PREREQUISITE: RESM 4010

# Rural Studies

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## I. Undergraduate Degree Level Class Descriptions

### **RURS 3000.03: Rural Community Economic Development (H).**

This course examines the evolution of key paradigms, theories and principles in the field of rural community development studies, and explores the economic and social contexts in which rural community development has emerged. It also examines the community development process and the organizations, processes and strategies associated with rural community organization and development. A key aspect of the course will be an exploration of the defining characteristics of rural communities (e.g. co-operatives), as well as their diversity in current and historical social and economic contexts.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Cameron

FORMAT: Lecture 3 hours per week.

PREREQUISITE: At least third-year standing

# Sociology

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Below are classes offered in Sociology by the Faculty of Agriculture. Please see the Sociology and Social Anthropology Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### **SOCI 1000.03: Introductory Sociology (H).**

An introduction to the field of modern sociology. Themes addressed in the course are sociological theory and method, social process, social organization, social institutions, social differentiation, and social change. Discussion will include social issues, e.g., rural/urban conflict, an aging society, and family changes. Some emphasis will be given to rural social problems.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Dukeshire

FORMAT: Lecture 3 hours per week.

### **SOCI 1001.03: Introductory Sociology II (H).**

The study of social issues uses sociological theory and research to examine social dynamics and social consequences associated with various current concerns. The topics covered will vary from year to year, but may well include problems such as gender and race relations, child and spousal abuse, substance abuse, poverty, work and alienation, and environmental issues. There will be a focus on issues of interest to rural Canada.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Dukeshire

FORMAT: Lecture 3 hours per week.

### **SOCI 3000.03: Rural Sociology (H).**

This course provides a focus on rural sociological themes, particularly in the Canadian and Atlantic region context. Themes addressed include: the theory and nature of rural social change; rural communities and response to forces of change; problems and issues in rural society (e.g., crime, aging, health care); environmental issues and their links to society; and the social implications of economic and political change for rural Canada.

NOTE: Fall semester

INSTRUCTOR(S): I. Landry

FORMAT: Seminar 3 hours per week.

PREREQUISITE: SOCI 1000

# Soils

## I. Undergraduate Degree Level Class Descriptions

### SOIL 2000.03: Introduction to Soil Science (A).

General principles of soil science relating to the origin, development, and classification of soils; and the biological, physical, and chemical properties of soils and their relation to proper soil and crop management, land use, and soil conservation.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Brewster

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: Corequisite: CHMA 1001

### SOIL 3000.03: Soil Fertility and Nutrient Management (A).

The study of the soil chemical environment as it affects crop production. The course investigates the biogeochemical cycling of nitrogen, phosphorus, potassium, calcium, magnesium, sulphur, and micronutrients in crop production. It considers the use and management of supplemental nutrients in both conventional and certified organic production. Soil pH and other factors that influence soil fertility, directly or indirectly, are also discussed. Labs take the form of problem-solving tutorials on nutrient management.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Sharifi

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: SOIL 2000; preparatory: BIOA 2002

### SOIL 3001.03: Soil Conservation in Agriculture (A).

A study of the processes of soil degradation and its prevention or amelioration. A major part of the course concerns the erosion of agricultural soils and its control. Other topics include soil compaction and soil acidification, soil reclamation, use of soil in waste recycling, and the role of soil in water conservation. Lab periods may be used for field trips, tutorials, or seminars.

NOTE: Fall semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2014/2015.

PREREQUISITE: AGRI 1000

### SOIL 4000.03: Environmental Soil Chemistry.

A study of chemical composition of soils (soil acidity, oxidation-reduction, ion exchange, adsorption-desorption reactions, clay mineralogy and organic matter transformations) in the context of environmental soil chemistry. Labs and seminar-discussions integrate basic soil chemical principles with problems in waste disposal, metal contamination, nutrient leaching, pesticide degradation, etc.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Hoyle

FORMAT: Lecture 3 hours, lab 3 hours per week. Offered in alternate years; next offered in 2013/2014.

PREREQUISITE: SOIL 2000

CROSS-LISTING: AGRI 5450

### SOIL 4001.03: Directed Studies in Soil Science (A).

Directed studies involve a suitable combination of directed reading, written assignments, individual study or laboratory research projects in the area of soil science. Classes are organized and scheduled by appropriate faculty via a course coordinator. Students should approach potential instructors directly with their requests.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Coordinator: Prof. Burton

FORMAT: as arranged.

PREREQUISITE: SOIL 2000 and 60 credit hours

## II. Technology Level Class Descriptions

### SOIL 0100.02: Principles of Soil Science.

Designed to form a basis for the understanding of soil productivity, the course investigates the physical, chemical, and biological properties of soil. Laboratory exercises, using soils from the Atlantic region, illustrate the lecture material and introduce methods of soil analysis.

NOTE: Fall semester

INSTRUCTOR: Prof. Hammermeister

FORMAT: Lecture 3 hours, lab 2 hours per week.

### SOIL 0200.02: Soil Management.

A study of the chemical, physical, and biological properties of soil as they relate to crop production. Soil fertility and fertilizer use, tillage and water management, and biological husbandry are discussed. Labs take the form of problem-solving tutorials in soil management.

NOTE: Winter semester

INSTRUCTOR: Prof. Lynch

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: SOIL 0100

## Spanish

Below are classes offered in Spanish by the Faculty of Agriculture. Please see the Spanish Section in the Faculty of Arts and Social Sciences for classes offered on the Halifax campuses.

### I. Undergraduate Degree Level Class Descriptions

#### SPNA 1000.03: Basic Spanish I (H).

This course is designed to offer an initial competency in spoken and written Spanish. Comprehension, reading, writing, and conversation are encouraged throughout the course. An introduction to basic grammar is offered. Anglophone, francophone, and International students are encouraged to take this course. Students whose first language is Spanish will not be eligible.

NOTE: Fall semester – This course will be offered subject to minimum enrollment.

INSTRUCTOR(S): M. Medina

FORMAT: Lecture 3 hours per week.

#### SPNA 1001.03: Basic Spanish II (H).

This course is designed for anglophone, francophone and International students. It is a continuation of SPNA 1000, with emphasis on comprehension, conversation, reading, and writing.

NOTE: Winter semester– This course will be offered subject to minimum enrollment.

INSTRUCTOR(S): M. Medina

FORMAT: Lecture 3 hours per week.

PREREQUISITE: SPNA 1000

## Special Topics

### I. Undergraduate Degree Level Class Descriptions

#### SPEC 2000.03: Topics in Economics and Business Management (A).

An opportunity for students throughout the University to study introductory topics defined by an individual student, a group of students, or faculty. The course is conducted by classes, tutorials, assigned readings, assignments and/or other appropriate activities. Topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Dept. of Business and Social Sciences Faculty

FORMAT: as arranged.

PREREQUISITE: 10 degree or diploma courses

#### SPEC 2001.03: Topics in International Development (A).

An opportunity for students to study introductory topics in international development, with a focus on agriculture and rural development. Topics may be defined by the individual student, a group of students, or faculty. The course is conducted by classes, tutorials, assignments, readings, and/or other appropriate activities. Students are encouraged to use international travel or study opportunities as a focus for the course, but this is not required. Topics must be supervised by a faculty member in the proposed area of interest, and approved by the Dean of Internationalization. Students must apply to the Dean of Internationalization at least six weeks before the semester start date.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Coordinator: Dean of Internationalization

FORMAT: as arranged.

PREREQUISITE: Second-year standing

#### SPEC 4000.03: Special Topics in Animal Science or Aquaculture.

This is an opportunity to study a special topic in the area of animal science or aquaculture as defined by an individual student, group of students or faculty. The course is conducted by tutorials, assigned readings, assignments, field trips and/or other appropriate activities. The special topics would normally be supervised by a faculty or staff member associated with the Animal Science program or the Aquaculture program and approved by the department head.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty and Staff;

Coordinator: TBA

FORMAT: as arranged.

PREREQUISITE: Two years of full-time study at a post-secondary institution (normally 20 degree courses), and permission of the instructor

#### SPEC 4005.03: Special Topics in Agricultural Economics and Business I (A).

An opportunity to study a special topic in the area of agricultural economics and business as defined by an individual student, a group of students, or faculty. The course is conducted by tutorials, assigned readings, assignments, and/or other appropriate activities. Special topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Dept. of Business and Social Sciences Faculty

FORMAT: as arranged.

PREREQUISITE: 30 degree courses

**SPEC 4006.03: Special Topics in Agricultural Economics and Business II (A).**

A second special topics course provides additional opportunity for students to individualize their program with in-depth study of an approved topic. Although the second topic selected may be in a similar area of interest to that studied in SPEC 4005, it must be sufficiently distinct to warrant additional study. Special topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Dept. of Business and Social Sciences Faculty

FORMAT: as arranged.

PREREQUISITE: 30 degree courses

**SPEC 4007.03: Special Topics in Environmental Studies (A).**

This is an opportunity to study a special topic in the area of agricultural, environmental or environmental horticultural studies as defined by an individual student, a group of students, or faculty. The course is conducted by tutorials, assigned readings, assignments, and/or other appropriate activities. Special topics would normally be supervised by a faculty member associated with either the Environmental Sciences or Environmental Landscape Horticulture program, and must be approved by the coordinator.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Dept. of Environmental Sciences Faculty; Coordinator: TBA

FORMAT: as arranged.

PREREQUISITE: 20 degree, technology or technical courses, including ENVA 2000 and ENVA 2001, and permission of the coordinator

**SPEC 4009.03: Special Topics in Rural Studies (H).**

This is an opportunity to study a special topic in the area of rural studies as defined by an individual student, a group of students, or faculty. The course will consist of tutorials, assigned readings, writing assignments, and/or other appropriate activities. Special topics must be supervised by a Faculty member and approved by the Business and Social Sciences department head.

NOTE: Fall, Winter, or Summer semester

INSTRUCTOR(S): Dept. of Business and Social Sciences Faculty

FORMAT: as arranged – Lecture 3 hours per week.

PREREQUISITE: At least third-year standing

**SPEC 4010.03: Special Topics in Plant Science I (A).**

An opportunity to study a special topic in the area of plant science as defined by an individual student, a group of students, or faculty. The course is conducted by tutorials, assigned readings, assignments, and/or other appropriate activities. Special topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty

FORMAT: as arranged.

PREREQUISITE: 20 degree courses or enrollment in the B.Tech (Env. Hort.) program

**SPEC 4011.03: Special Topics in Plant Science II (A).**

A second special topics course provides additional opportunity for students to individualize the program with in-depth study of an approved topic. Although the second topic selected may be in a similar area of interest to that studied in SPEC 4010, it must be sufficiently distinct to warrant additional study. Special topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall, Winter or Summer semester

INSTRUCTOR(S): Dept. of Plant and Animal Sciences Faculty

FORMAT: as arranged.

PREREQUISITE: 20 degree courses or enrollment in the B.Tech (Env. Hort.) program

**SPEC 4012.03: Directed Studies in Agricultural Engineering I (A).**

Independent studies are developed through literature review or laboratory or field research on topics pertinent to agricultural engineering. Topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Engineering Department Faculty

FORMAT: as arranged.

**SPEC 4014.03: Directed Studies in Agricultural Engineering II (A).**

Independent studies are developed through literature review or laboratory or field research on topics pertinent to agricultural engineering. Lectures may be required depending on the instructors' and students' needs. Topics must be supervised by a faculty member and approved by the department head.

NOTE: Fall or Winter semester

INSTRUCTOR(S): Engineering Department Faculty

FORMAT: as arranged.

PREREQUISITE: 20 degree courses

# Statistics

Below are classes offered in Statistics by the Faculty of Agriculture. Please see the Statistics Section in the Faculty of Science for classes offered on the Halifax campuses.

## I. Undergraduate Degree Level Class Descriptions

### STAA 2000.03: Introduction to Statistics.

Graphical presentation of data; descriptive statistics; normal, binomial, t and F distributions; sampling distributions and the central limit theorem; estimation and hypothesis testing of a single mean and the difference between two means; and introduction to correlation, regression and analysis of variance for simple experimental designs.

NOTE: Fall and Winter semesters

INSTRUCTOR(S): Prof. Astatkie

FORMAT: Lecture 3 hours, tutorial 1 hour, computer lab 1 hour per week.

### STAA 2001.03: Probability and Statistics for Engineering.

This calculus-based first course in probability and statistics is designed to interact with the major disciplines within engineering. Topics include descriptive statistics, mathematics of probability, random variables and probability distributions, estimation, hypothesis testing, linear regression and correlation, and introduction to analysis of variance. Problem-solving skills in material related to engineering will be emphasized.

NOTE: Winter semester

INSTRUCTOR(S): TBA

FORMAT: Lecture 3 hours, tutorial 1 hour, lab 1 hour per week.

### STAA 3000.03: Introduction to Planned Studies: Surveys and Experiments

This course is a continuation of STAA 2000. Topics covered include sampling techniques, simple and multiple linear regression, analysis of variance for completely randomized and randomized block designs, nonparametric tests, and introduction to categorical data analysis.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Astatkie

FORMAT: Lecture 3 hours, tutorial 1 hour, computer lab 1 hour per week

### STAA 4000.03: Intermediate Statistical Methods.

Analysis of single-factor experiments, randomized blocks, latin squares, and factorial and two-level fractional factorial designs.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Astatkie

FORMAT: Lecture 3 hours, computer lab 2 hour per week

# Veterinary Technology

## I. Technology Level Class Descriptions

### VTEC 0034.00: Externship in Specialty Field.

This course is designed to encourage the student to pursue the practical application of special interests in Veterinary Technology that would not be addressed in the externships in general practice or at the Atlantic Veterinary College. The externship is customized to the venue and contracted in a manner similar to the general practice externship.

NOTE: Typical institutions that sponsor this optional externship are farm animal or equine veterinary practices, intensive care and emergency clinics, specialty veterinary clinics, zoos, humane societies, and research facilities.

INSTRUCTOR(S): Coordinator: Prof. Parsons

### VTEC 0111.02: Animal Medicine and Nursing I.

This is the first in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics include animal handling and restraint; drug routes; prescription, control and narcotic drugs; vaccines and vaccination; anaesthesiology; surgical preparation; radiography principles and processing; and clinical calculations.

NOTE: Fall semester

INSTRUCTOR(S): Prof. Parsons

FORMAT: Lecture 3 hours per week.

### VTEC 0112.02: Clinical Exercises I.

This is the first in a stream of clinical exercises courses designed to enable the student to practise medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, common clinical equipment, anaesthesiology, surgical preparation, and radiography.

NOTE: Fall semester

INSTRUCTOR(S): K. Murray

FORMAT: Lecture 1 hour, lab 4 hours per week.

### VTEC 0113.02: Veterinary Clinical Pathology I.

This is the first in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the Clinical Pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are microscopy, practical parasitology, urinalysis, the microhaematocrit, haemoglobin and the red blood cell, and initial blood film assessment.

NOTE: Fall semester

INSTRUCTOR(S): C. Spears

FORMAT: Lecture 3 hours, lab 3 hours per week.

### VTEC 0114.02: Fundamentals in Veterinary Technology I.

This is the first in a stream of courses designed to address discrete topics in veterinary technology. These topics may not warrant full course status; they may require attention at specific times in the syllabus; they may need to be addressed at several levels. Topics in this first fundamentals course are: orientation to the profession and to the program; first-aid training; WHMIS; workplace safety; and an introduction to zoonotic disease, animal husbandry, cleaning and disinfection, nutrition, animal behaviour, records in veterinary medicine, and veterinary medical terminology.



NOTE: Fall semester  
INSTRUCTOR(S): Prof. Parsons  
FORMAT: Lecture 5 hours per week.

### **VTEC 0115.02: Anatomy–Physiology–Pathophysiology I.**

This is the first of two courses designed to enable the student to apply the principles of anatomy, physiology, and pathophysiology to animal nursing and medicine. Clinical applications are stressed, and progress through this course is coordinated with other courses in the semester. This course addresses the general topics of cell, tissue, organ, and system plus terms and processes in anatomy, physiology, and disease generally. It then deals with the anatomy, physiology, and typical disease processes in the major body systems. Systems in this course include musculoskeletal, cardiovascular, respiratory, and urinary/excretory.

NOTE: Fall semester  
INSTRUCTOR(S): Prof. Parsons and L. MacIntosh  
FORMAT: Lecture 3 hours, lab 3 hours per week.

### **VTEC 0121.02: Animal Medicine and Nursing II.**

This is the second in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics included in this course are: anaesthesiology, surgical preparation and assisting, radiography exposure and positioning, clinical calculations, fluid therapy, blood sampling, common infectious diseases of companion animals, feeding in disease states, and introduction to dental disease and treatment.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Parsons, K. Murray and M. MacKay  
FORMAT: Lecture 3 hours per week.  
PREREQUISITE: VTEC 0111, VTEC 0112

### **VTEC 0122.02: Clinical Exercises II.**

This is the second in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, general nursing, anaesthesiology, surgical preparation, radiography, fluid therapy, sampling for the laboratory, and dental equipment and supplies.

NOTE: Winter semester  
INSTRUCTOR(S): K. Murray  
FORMAT: Lecture 1 hour, lab 4 hours per week.  
PREREQUISITE: VTEC 0111, VTEC 0112

### **VTEC 0123.02: Veterinary Clinical Pathology II.**

This is the second in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the Clinical Pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are all prior topics, plus white blood cell development and assessment, total white blood cell counts, the differential count, toxic white cells, QBC/E evaluation, various blood film stains, Unopette/E counting systems, RBC indices, microscopic evaluation of urine, kit immunoassay tests, canine heartworm assays, Mycoplasma hemofelis, and clinical pathology case studies.

NOTE: Winter semester  
INSTRUCTOR(S): C. Spears  
FORMAT: Lecture 3 hours, lab 3 hours per week.  
PREREQUISITE: VTEC 0113

### **VTEC 0124.02: Fundamentals in Veterinary Technology II.**

This is the second in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. Topics included in this course are: communications in the veterinary practice, veterinary medical records, credentialing and legislation in the veterinary professions, veterinary medical terminology, pharmacology, parasitology, computer applications in veterinary practice, and the economics of veterinary practice.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Parsons and L. MacIntosh  
FORMAT: Lecture 5 hours per week.  
PREREQUISITE: VTEC 0114

### **VTEC 0125.02: Anatomy–Physiology–Pathophysiology II.**

This is the second of two courses designed to enable the student to apply the principles of anatomy, physiology, and pathophysiology to animal nursing and medicine. Clinical applications are stressed, and progress through this course is co-ordinated with other courses in the semester. This course addresses the anatomy, physiology, and typical disease processes in the remainder of the major body systems. Systems and topics in this course include: digestive, reproductive, nervous, and endocrine systems; organs of special sense; and skin. The principles of inheritance and genetics and embryology are dealt with using examples of common congenital diseases.

NOTE: Winter semester  
INSTRUCTOR(S): Prof. Parsons and L. MacIntosh  
FORMAT: Lecture 3 hours, lab 3 hours per week.  
PREREQUISITE: VTEC 0115

### **VTEC 0131.02: Internship in Veterinary Technology.**

This is a capstone course. In this course the learning objectives of all courses in the first two semesters are consolidated and re-tested. Students rotate through clinical, laboratory, and off-campus cooperating hospital experiences, with daily classroom sessions for discussion and testing. In clinical and diagnostic laboratory sessions, students hone skills learned in the first two semesters and acquire some new ones. Completion of this course is a prerequisite for registration in VTEC 0133 and for registration in all second-year courses (Semesters 4 and 5). The approximate division of elements of this course is: Clinical 64 hours (2 x 8 hr per week); Clinical Pathology 36 hours (3 x 3 hr per week); Cooperating Hospital 16 hours (1 x 4 hr per week); and Cognitive Classroom Sessions 16 hours (4 x 1 hr per week). Animal care and maintenance duties are in addition to scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, anaesthesiology, surgical preparation and assisting, radiography, clinical calculations, fluid therapy, blood sampling, feeding, and introduction to dental disease and treatment.

NOTE: Spring semester  
INSTRUCTOR(S): Vet Tech Instructor Team  
FORMAT: 4 weeks.

### **VTEC 0132.02: Externship at the Atlantic Veterinary College.**

This course is an off-campus externship delivered by the Atlantic Veterinary College (AVC). During these four weeks students are on duty with technical staff for approximately one-half of their time at the Veterinary Teaching Hospital (VTH). Evening and night shifts are a large part of the AVC Externship. Day shifts allow some opportunity for the student to choose specific areas of interest. In addition, there are structured learning exercises. There is a significant livestock and equine component to the AVC Externship. Students attend this externship in two or more sections. Attendance is required at all scheduled duty shifts and exercises. Completion of this course is a prerequisite for registration in VTEC 0133 and for registration in all second-year courses (Semesters 4 and 5).

NOTE: Spring semester. Note: Cost of transportation to AVC and room and board in Charlottetown are the responsibility of the student. Staff of the Veterinary Technology Program will assist the student where possible, but the responsibility for living arrangements is the student's.

INSTRUCTOR(S): TBA  
FORMAT: 4 weeks.

### **VTEC 0133.02: Externship in General Veterinary Practice.**

This course is an off-campus learning experience in a general veterinary practice. Students locate these externship practices from a list provided by the VT Program staff, but an unlisted practice contacted by a student may be approved. To be approved the practice must have a significant companion-animal (small-animal) clientele and employ at least one graduate AHT/VT. Students may apply to complete this externship in practices outside of the Atlantic Region. A contract between the student, the practice, and the University must be completed before this externship can begin. Weekly report forms and a final report are completed by practice personnel. Student assignments must be completed before a credit can be entered for this course.

NOTE: Spring semester  
INSTRUCTOR(S): TBA

FORMAT: 6 weeks.  
PREREQUISITE: VTEC 0131

### **VTEC 0211.02: Animal Medicine and Nursing III.**

This is the third in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. In conjunction with other courses in the Veterinary Technology Program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Topics included in this course are anaesthesiology, pain management, surgical preparation and assisting, radiography, clinical calculations, fluid therapy, emergency procedures, blood sampling, non-infectious diseases of companion animals, feeding in disease states, and dental disease and treatment.

NOTE: Fall semester

INSTRUCTOR(S): T. MacLeod

FORMAT: Lecture 4 hours per week.

PREREQUISITE: VTEC 0131, VTEC 0132

### **VTEC 0212.02: Clinical Exercises III.**

This is the third in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. In conjunction with other courses in the Veterinary Technology program and the related internship and externships, these courses equip the graduate to perform entry-level clinical tasks in the veterinary practice workplace. Animal care and maintenance duties are in addition to the scheduled hours in this course. Task areas included in this course are animal and facilities maintenance, drug administration, general nursing, anaesthesiology, surgical preparation and assistance, radiography, fluid therapy, sampling for the laboratory, and dental procedures.

NOTE: Fall semester

INSTRUCTOR(S): K. Murray

FORMAT: Lecture 1 hour, lab 4 hours per week.

PREREQUISITE: VTEC 0131, VTEC 0132

### **VTEC 0213.02: Veterinary Clinical Pathology III.**

This is the third in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. In conjunction with other courses in the clinical pathology stream and the related internship and externships, these courses equip the graduate to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Task areas and topics included in this course are all prior topics, plus theory of blood chemical tests, serum chemistry, large-animal parasites, haematology of alternate species, microbiology and antibiotic susceptibility testing, yeast and other fungi, advanced parasitology techniques, quality control in the laboratory, submissions to external laboratories, and clinical pathology case studies.

NOTE: Fall semester

INSTRUCTOR(S): M. MacKay

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: VTEC 0131, VTEC 0132

### **VTEC 0214.02: Fundamentals in Veterinary Technology III.**

This is the third in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. Case reports from externships are delivered and discussed. Topics included in this course are veterinary medical terminology, pharmacology and dispensing, parasitology, clinical calculations, computer applications in veterinary practice, bookkeeping in the veterinary practice, and presentations to small groups.

NOTE: Fall semester

INSTRUCTOR(S): L. MacIntosh

FORMAT: Lecture 5 hours per week.

PREREQUISITE: VTEC 0131, VTEC 0132

### **VTEC 0215.02: Livestock and Equine Principles.**

Through a mixture of classroom and field trip exercises, this course enables the Veterinary Technology student to recognize common equine and livestock breeds; describe livestock production cycles and methods; and use appropriate terminology. Common diseases of large animals as they relate to the veterinary technician are dealt with. Urgent and emergency clinical signs in large-animal species are stressed. Common clinical procedures in large-animal practice are outlined.

NOTE: Fall semester

INSTRUCTOR(S): M. MacKay, D. MacCallum and D. Pelkey-Field

FORMAT: Lecture 3 hours, lab 2 hours per week.

PREREQUISITE: VTEC 0131, VTEC 0132

### **VTEC 0221.02: Animal Medicine and Nursing IV.**

This is the last and capstone course in a stream of medicine and nursing courses designed to enable the student to grasp cognitively the principles and practices of veterinary medical, surgical, and related topics. Upon completion of this course and the related course VTEC 0222, the graduate is able to perform entry-level clinical tasks in the veterinary practice workplace. Problem-oriented case studies are used as models. All task areas included in prior Animal Medicine and Nursing courses are revisited, and some are elaborated. Students are re-evaluated comprehensively.

NOTE: Winter semester

INSTRUCTOR(S): M. MacKay and T. MacLeod

FORMAT: Lecture 4 hours per week.

PREREQUISITE: VTEC 0211, VTEC 0212

### **VTEC 0222.02: Clinical Exercises IV.**

This is the last and capstone course in a stream of clinical exercises courses designed to enable the student to perform medical, surgical, and related clinical skills. Upon completion of this course and the related VTEC0221, the graduate is able to perform entry-level clinical tasks in the veterinary practice workplace. All task areas included in prior Clinical Exercises courses are reviewed, some are elaborated, and students are re-evaluated.

NOTE: Winter semester

INSTRUCTOR(S): K. Murray

FORMAT: Lecture 1 hour, lab 4 hours per week.

PREREQUISITE: VTEC 0211, VTEC 0212

### **VTEC 0223.02: Veterinary Clinical Pathology IV.**

This is the last and capstone course in a stream of theory and practical clinical pathology courses designed to enable the student to perform, and cognitively grasp the principles of, essential tasks in the in-house veterinary practice laboratory. Upon completion of this course the graduate is able to perform entry-level laboratory diagnostic tasks in the veterinary practice workplace. Students are re-evaluated comprehensively. Task areas and topics included in this course are all prior topics, plus cytology of the reproductive tracts, soft tissues, and body fluids; transfusion medicine; bone marrow evaluation; semen evaluation; cerebrospinal fluid; blood dyscrasias; coagulation factor evaluations; quality control programs; trouble shooting problems in the laboratory; and clinical pathology case studies.

NOTE: Winter semester

INSTRUCTOR(S): M. MacKay

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: VTEC 0213

### **VTEC 0224.02: Fundamentals in Veterinary Technology IV.**

This is the last and capstone course in a stream of courses designed to address discrete topics in veterinary technology that do not warrant full-course status or that require attention during the semester to support other courses. All topics included in prior Fundamentals courses are reviewed and some are elaborated, and students are re-evaluated comprehensively in all areas.

NOTE: Winter semester

INSTRUCTOR(S): Prof. Parsons

FORMAT: Lecture 5 hours per week.

### **VTEC 0225.02: Laboratory Animal and Alternative Pet Medicine.**

This course enables the student to apply the principles of clinical nursing to alternate and exotic pets as well as to common laboratory animal species. It also enables the graduate to enter the research facility and, with supplemental training and experience, prepares the graduate for certification with the Canadian Association for Laboratory Animal Sciences. Topics include specialized animal sources, barriers and containment, bio-hazards, special requirements of various species, handling of and common techniques used on alternate and laboratory animal species, and the ethics of animal research and of wild animal species as pets.

NOTE: Winter semester

INSTRUCTOR(S): L. MacIntosh

FORMAT: Lecture 3 hours, lab 3 hours per week.

PREREQUISITE: VTEC 0211, VTEC 0212, VTEC 0213, VTEC 0214

## Faculty of Architecture and Planning

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## I. Introduction

The Faculty of Architecture and Planning includes the School of Architecture and the School of Planning. The Faculty's degree programs are primarily for individuals who intend to become a professional architect or planner. The Faculty also offers several classes that are open to all students in the university, as well as undergraduate and graduate classes that may be taken with permission from the instructor. The professional Architecture program (BEDS/MArch) is described in the Architecture section of this calendar. The Bachelor of Community Design program is described in the Planning section of this calendar. Please see the Graduate Studies calendar for a description of all graduate Architecture and Planning programs.

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Jackson, A., Dipl. Arch (Poly London), ARIBA  
Wanzel, J.G., BArch, MArch (Toronto), MRAIC

### Professors

Cavanagh, E., BSc, BArch (McGill), PhD (Lehigh)  
Kroeker, R., BES (Manitoba), AADipl, ARCUK  
MacKay-Lyons, B., BEDS, BArch (TUNS), MArchUD (UCLA), FRAIC, (Hon.) FAIA, NSAA, AAPEI, OAA  
Macy, C., BA (Arch) (California at Berkeley), MArch (MIT), Reg.Arch.(WA)  
Mannell, S., BES, BArch (Waterloo), NSAA, OAA  
Parcell, S., BArch (Toronto), MArch (Cranbrook), PhD (McGill)

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Burnay, D., Dipl. Arch (Technical University Lisbon), MSc (Arch) (University College London)  
Lilley, B., BES (Manitoba), AA Dipl  
Savage, N., BA (Alberta), BEDS, MArch (FP) (TUNS), NSAA

## Assistant Professors

Hudson, R., BSc, MArch, PhD (Bath)  
 Mullin, R., BEDS, MArch (FP) (TUNS)  
 Navarro Morales, M. E., BArch (Universidad de los Andes), MArch (Post-prof) (McGill)  
 Parsons, A., BSc (McGill), MES (Dalhousie), SMBT (MIT)  
 Venart, C.A.S., Cert. Eng. (Mt. A), BFA (Toronto), MArch (SCI-Arc), AK NWF (prof. reg. Germany)

## Lecturer

Kelly, P., BSc (Dalhousie), MSc (TUNS)

## Cross-Appointed Faculty

Palermo, F., BArch (Toronto), MArch UD (Harvard) - Planning

## Adjunct Professors

Burns, C., BA (Bryn Mawr), BA, MArch (Yale)  
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## Instructor

Jannasch, E., BEDS (TUNS), MArch (FP) (Dalhousie)

## I. Introduction

The School of Architecture, which is part of the Faculty of Architecture and Planning at Dalhousie University, was established in 1961 to serve the Atlantic region. While it continues to fulfil its original mandate, the School also contributes nationally and internationally to architecture through its dynamic faculty and committed student body. Its primary aim is to educate individuals who intend to become professional architects. The School's professional degree program includes the two-year Bachelor of Environmental Design Studies degree and the two-year Master of Architecture degree. Most of the program is conducted within the School of Architecture by full-time faculty members. It also includes two co-op work terms in which students gain practical experience in an architectural office. The curriculum enables architectural education and practice to develop in parallel.

## Design

The central activity of the professional degree program is architectural design - the creative study of buildings and cities. In the School's design studios, students examine historical and contemporary buildings in Canada and abroad, and respond through the design of new architectural projects. From the core studies of the undergraduate program to the elective studies and design thesis of the graduate program, students learn to rely on their artistic skill, their knowledge of history and technology, their social and cultural awareness, and their critical imagination. Architecture is a multi-disciplinary profession, with alliances to the fine arts, the humanities and technologies, and many undergraduate disciplines provide an effective entry into architecture. Conversely, architectural studies provide an excellent foundation for careers in a variety of design-related fields.

## Facilities

The School is housed in the original home of the Nova Scotia Technical College, built in 1909 and renamed the Ralph M. Medjuck Building in 2005. Corresponding to the School's emphasis on architectural design, one-third of the building is devoted to studio spaces that are open to students twenty-four hours a day. The building also has several computer labs with a wide array of equipment, a fully-equipped woodworking shop, an experimental construction lab, a digital modeling shop, photographic and GIS facilities, and a large exhibition hall. The University Library's architecture collection is located nearby and a student resource centre is housed within the Faculty.

## Co-op Work Terms

The School's professional degree program includes two work terms that provide students with practical experience in building design and responsible professional practice. The School's Co-op Program has been operating since 1970, and the Faculty of Architecture and Planning's Co-op Office assists students in finding suitable work term placements. In recent years, Architecture students have been employed in every province and territory in Canada, and approximately one-third have chosen to work abroad - most recently, in Argentina, Austria, China, Egypt, England, Germany, Iran, Japan, Netherlands, Norway, Singapore, Switzerland, and the United States.

## Accreditation

The School's professional degree program is fully accredited by the Canadian Architectural Certification Board (CACB). The entire six-year program consists of two years of general studies at a recognized university, followed by two years of undergraduate study at the School of Architecture (BEDS) and two years of graduate study at the School of Architecture (MArch).

In Canada, all provincial associations recommend a degree from an accredited professional degree program as a prerequisite for licensure. The Canadian Architectural Certification Board, which is the sole agency authorized to accredit Canadian professional degree programs in architecture, recognizes two types of accredited degrees: the Bachelor of Architecture and the Master of Architecture. A program may be granted a five-year, three-year, or two-year term of accreditation, depending on its degree of conformance with established educational standards. Master's degree programs may consist of a pre-professional undergraduate degree and a professional graduate degree, which, when earned sequentially, comprise an accredited professional education. However, the pre-professional degree is not, by itself, recognized as an accredited degree.

## Professional Registration

After receiving the professional degree, a graduate may fulfil additional requirements for professional registration, including a period of post-graduate practical experience and the completion of registration examinations. In Canada, these additional requirements are determined by provincial organizations that are empowered to register an individual for professional practice. An American citizen who graduates from the School's MArch program is qualified to become an architectural intern in the United States and to complete the examination for professional registration there. Applicants from other countries are advised to contact their national architectural organization about requirements for professional registration.

## II. Classes Open to Non-Majors

The School of Architecture offers several classes that are open to all students in the university:

- ARCH 1000X/Y.06: Introduction to Architecture
- ARCH 1200X/Y.06: Science of the Built Environment
- ARCH 2000.03: Visual Thinking A
- ARCH 2001.03: Visual Thinking B
- ARCH 2025.03: Design Drawing

Please consult the university's academic timetable for available classes. Individuals who are not currently registered at Dalhousie University should refer to the university's regulations in this calendar for details on Special Student status.

## III. Undergraduate Degree Program

### Bachelor of Environmental Design Studies

BEDS is a two-year, full-time, pre-professional program for a student who has already completed at least two years of general studies in subjects other than architecture. It consists of four academic terms in residence and a four-month work term. The BEDS degree recognizes a student's successful completion of a minimum of four years of university study, including two at the School of Architecture.

The BEDS program consists primarily of required classes in Design, Humanities, Technology, Representation, and Professional Practice. These classes provide a base of academic knowledge and design skill from which a student may proceed to a graduate program. The BEDS program leads to the MArch program, as well as to the Faculty's other graduate programs in Environmental Design Studies and Planning. A BEDS graduate may also choose to continue into another related field in design, environmental studies, management, etc., at Dalhousie or elsewhere.

## IV. Undergraduate Regulations

For academic regulations that apply to undergraduate students in the School of Architecture (including workload, class changes, withdrawal, transfer credits, part-time studies, duration of undergraduate studies, minimum degree requirements, assessment, incomplete class work, reassessment of a grade, and academic standing), please refer to the Academic Regulations section in this calendar and the Current Students section of the School of Architecture Website. Please note that some undergraduate regulations differ from their graduate counterparts.

## V. Undergraduate Classes Offered

### A. Professional Degree Program

The following chart illustrates the distribution of terms throughout the four years of the professional degree program in the School of Architecture. Following the two-year general studies prerequisite, the next two years are Bachelor of Environmental Design Studies and the final two years are Master of Architecture.

Fall	Winter	Summer
<b>Year 3 - BEDS</b> B1 (academic term)	B2 (academic term)	<b>Year 4 - BEDS</b> B3 (academic term)
B4 (work term)	B5 (academic term)	<b>Year 5 - MArch</b> M1 (academic term)
M2 (academic term)	M3 (work term)	M4 (work term)
<b>Year 6 - MArch</b> M5 (academic term)	M6 (academic term)	

### B. Bachelor of Environmental Design Studies

#### Year 3 - Term B1 (Fall)

- ARCH 3001.06: Design
- ARCH 3104.03: Foundations in Architectural History and Theory
- ARCH 3207.03: Building Technology
- ARCH 3301.01: Professional Practice
- ARCH 3501.03: Representation

#### Year 3 - Term B2 (Winter)

- ARCH 3002.06: Design
- ARCH 3105.03: Architectural History and Theory - 20th Century
- ARCH 3208.03: Building Technology
- ARCH 3302.01: Professional Practice
- ARCH 3502.03: Representation

#### Year 4 - Term B3 (Summer)

- ARCH 4003.03: Design
- ARCH 4004.03: Free Lab
- ARCH 4110.03: Architectural History and Theory - 14th-18th Century
- ARCH 4211.03: Building Systems Integration
- ARCH 4303.01: Professional Practice
- ARCH 4501.03: Representation

#### Year 4 - Term B4 (Fall)

- ARCH 8892.03: Professional Practice (Co-op Work Term)

#### Year 4 - Term B5 (Winter)

- ARCH 4005.06: Design
- ARCH 4111.03: Architectural History and Theory - 19th Century
- ARCH 4212.03: Building Systems Integration
- ARCH 4304.01: Professional Practice
- ARCH 4502.03: Representation

## VI. Undergraduate Class Descriptions

### Class Numbers

The first digit of an ARCH class number indicates its level: introductory classes open to all university students (1 and 2); Year 3 - BEDS (3); Year 4 - BEDS (4); or Undergraduate Co-op Work Term (8). The second digit indicates the area of study: Design (0), Humanities (1), Technology (2), Professional Practice (3), or Representation (5). Classes in the BEDS program have various credit-hour extensions (01-06) that indicate the approximate class hours each week and the appropriate balance of subjects for professional accreditation. Classes may be

interchanged between academic terms, depending on the availability of instructors.

### ARCH 1000X/Y.06: Introduction to Architecture.

This class introduces architectural theory and practice through enduring themes in the discipline. It emphasizes design as a method of study, considers the materiality of buildings, and interprets the built environment as an expression of culture.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P. Henry

FORMAT: Lecture/seminar

### ARCH 1200X/Y.06: Science of the Built Environment.

This class introduces a broad range of scientific principles that influence the construction and environment of buildings. It studies topics such as mechanics, ecology, light, heat, and sound. The class uses a "common-sense" approach involving graphic images, practical understanding, and problem-solving; a background in science or mathematics is not required.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): D. Pitcairn

FORMAT: Lecture

### ARCH 2000.03: Visual Thinking A.

Architects, scientists, political activists, manufacturers, and others employ a variety of visual tools to study and engage with the world. Students in this class learn to evaluate maps, simple technical drawings, and other visual devices, and use them to analyze actual situations and to generate and present innovations. Hands-on work is emphasized, but no prior experience in drawing or design is needed. With its focus on conceptualizing the concrete, outer world, this class is a useful complement to ARCH 2001.03.

INSTRUCTOR(S): K. Kam

FORMAT: Lecture/seminar

PREREQUISITE: Completion of first year university or permission of instructor

### ARCH 2001.03: Visual Thinking B.

As the world becomes more visually oriented, a critical appreciation of visual information becomes indispensable. Students use charts, diagrams and other means of externalizing, developing, and sharing ideas. In doing so, they learn to analyze the form of graphic information as well as the content. Hands-on work is emphasized, but no prior experience in drawing or design is needed. This class is a more abstract and reflective complement to ARCH 2000.03.

INSTRUCTOR(S): K. Kam

FORMAT: Lecture/seminar

PREREQUISITE: Completion of ARCH 2000.03 or permission of instructor

### ARCH 2025.03: Design Drawing.

This class enables students to enhance their design literacy skills through attention to graphic design, layout, composition, and typography. Students will gain experience in a range of techniques in design drawing and portfolio presentation.

INSTRUCTOR(S): L. Tondino

FORMAT: Lecture/lab

PREREQUISITE: ARCH 1000, PLAN 1002 or permission of instructor

CROSS-LISTING: PLAN 2025.03

### ARCH 3001.06: Design.

This class studies basic principles of architecture through studio projects using drawings and models. Students design elementary building forms beginning with the room and the pavilion, on various sites. Working with basic building elements of floor, wall and roof, students consider architectural composition and materials at the three scales of detail, building, and site. The class includes historical design studies to understand how other architects have responded to similar problems.

INSTRUCTOR(S): Staff

FORMAT: Lecture/studio

RESTRICTION: Year 3 BEDS students

### ARCH 3002.06: Design.

This class studies principles of architecture by focusing on the design of the house. Building on topics from ARCH 3001, it considers issues of composition (structural, volumetric, and spatial), building program, interior environment, and relations to community context and ecological surroundings. The class includes historical design studies to understand how other architects have responded to these issues.

INSTRUCTOR(S): Staff

FORMAT: Lecture/studio

RESTRICTION: Year 3 BEDS students

### ARCH 3104.03: Foundations in Architectural History and Theory.

This class introduces basic topics in architecture and interpretive methods in architectural research. It focuses on selected buildings and the role of the architect in the ancient and medieval eras. To develop research skills and architectural awareness, students interpret local buildings through direct experience and study distant and historical buildings through publications.

INSTRUCTOR(S): S. Parcell  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 3 BEDS students

### ARCH 3105.03: Architectural History and Theory - 20th Century.

This class is a survey of late modern architecture, focusing on Europe and North America. Buildings and urban projects are situated in their social and political contexts and the theoretical constructs that influenced their development. Students are exposed to extramural archives and resources to research local modern buildings and their architects.

INSTRUCTOR(S): C. Macy  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 3 BEDS students

### ARCH 3207.03: Building Technology.

This class studies aspects of building technology that act as primary generators of architectural form: structure, material, light and sound. Construction process is examined in terms of materials, methods and sequences. Principles of building structure and methods of structural analysis are introduced. The physics and perception of light in built environments are studied. Quizzes and tests are complemented by studio exercises.

INSTRUCTOR(S): E. Jannasch  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 3 BEDS Students

### ARCH 3208.03: Building Technology.

This class studies aspects of building technology that mediate the relationship between interior and exterior environments. Building materials studies include structural and environmental properties, constructional implications, and principles of assembly and jointing. The principles of heat flow, air flow and moisture flow in building enclosures are presented. Students undertake a series of design exercises applying knowledge of topics studied in the class.

INSTRUCTOR(S): E. Jannasch  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 3 BEDS students

### ARCH 3301.01: Professional Practice.

This class introduces the role and place of the architect in society, with an emphasis on the development of the profession through history. It also studies representation methods employed by architects and their implications for design.

INSTRUCTOR(S): S. Fitzgerald  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 3 BEDS students

### ARCH 3302.01: Professional Practice.

In this week-long module students learn about the architect in society; the political, social, economic and ethical environments in which architects practice; and an introduction to office organization and project management.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 3 BEDS students

### ARCH 3501.03: Representation.

This class studies fundamental concepts, techniques, and applications of architectural representation. class work involves freehand drawing, orthographic drawing, model making, and digital media. Drafting and modeling equipment are required.

INSTRUCTOR(S): L. Katsepointes  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 3 BEDS students

### ARCH 3502.03: Representation.

This class builds on the principles of drawing, modeling, imaging, and composition studied in ARCH 3501. It emphasizes manual skills and concepts of the 2D and 3D interplay in drawing, imaging, and spatial form. Topics include construction of drawings and material devices, tone, colour, composition, perspective, and atmospheric phenomena.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 3 BEDS students

### ARCH 4003.03: Design.

This class studies principles of architecture through the design of a public building. Building on previous courses, it includes the organization of a public program and issues of context and interpretation. As an intensive studio it encourages students to focus on design intentions and to develop an awareness of design process.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 4 BEDS students

### ARCH 4004.03: Free Lab.

To complement studio-based learning, this class is an experimental hands-on workshop in design led by an instructor. Investigations of a particular architectural topic may include design-and-build, documentary work, landscape installations, community design projects and interdisciplinary work. Projects may be done locally or involve travel to a distant site.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 4 BEDS students

### ARCH 4005.06: Design.

This class studies advanced principles of architectural design through the design of a medium-sized institutional building. Elaborating on topics from the previous design courses, students organize a complex program on an urban site and develop a project that uses building technology strategically and engages relevant issues in architectural

history and theory. Emphasis is also placed on fluency in architectural representation.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 4 BEDS students

### ARCH 4110.03: Architectural History and Theory - 14th-18th Century.

This class studies significant buildings and the role of architecture from the Renaissance to the Enlightenment, mainly in Europe. It follows the transition from master builder to architect, and the humanist search for order and its manifestation in built form. Students analyze the design of significant buildings by studying historical documents and making interpretive drawings and models.

INSTRUCTOR(S): M.E. Navarro  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 4 BEDS students

### ARCH 4111.03: Architectural History and Theory - 19th Century.

This class studies impacts of industrialization on architecture and the city in nineteenth-century Europe and North America. It considers major urban transformations in their socio-political context. Students examine primary and secondary sources to develop skills in research and criticism.

INSTRUCTOR(S): S. Bonnemaion  
 FORMAT: Lecture/seminar  
 RESTRICTION: Year 4 BEDS students

### ARCH 4211.03: Building Systems Integration.

This class studies the integration of building structural and enclosure systems in architectural design. Long span structural systems and lateral forces are examined, including their interaction with the enclosure system. Building enclosure studies include the performance of materials in assemblies, the performance of the building envelope, and the sequence of construction. The integration of structure and enclosure is examined through the construction detail. Students complete case studies and design projects integrating structure and enclosure in buildings.

INSTRUCTOR(S): R. Hudson  
 FORMAT: Lecture/studio  
 RESTRICTION: Year 4 BEDS students

### ARCH 4212.03: Building Systems Integration.

This class studies performance standards related to human activities in buildings, and the systems and configurations required to support those activities. Building systems are considered in relation to climate, urban situation, and the natural environment. Principles of systems thinking, as well as the use of physical and computational modeling methods, are applied to the comprehensive design of a

building to achieve defined performance standards and to consider issues of sustainability with regard to energy balance, water conservation, and component materials.

INSTRUCTOR(S): R. Kroeker, R. Hudson

FORMAT: Lecture/studio

RESTRICTION: Year 4 BEDS students

### **ARCH 4303.01: Professional Practice.**

This class introduces contemporary office practices and project delivery including marketing, contracts, project phases and contract administration. The class also introduces issues related to the co-op work term, including job placement and the role of the student in a professional office.

INSTRUCTOR(S): B. Nycum

FORMAT: Lecture/seminar

RESTRICTION: Year 4 BEDS students

### **ARCH 4304.01: Professional Practice.**

In this week-long module students learn about the architect in society; professional ethics; models of practice; legal aspects of practice; authorities having jurisdiction over building; finance and costing techniques; and internship.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Year 4 BEDS students

### **ARCH 4501.03: Representation.**

This class studies the expressive use of manual and digital media to present design work to various audiences, including the architectural community and the public. Topics include image editing, rendering, and the integration of text, image, and model. Design work may be presented in an exhibition installation, printed book, and/or online portfolio.

INSTRUCTOR(S): R. Mullin

FORMAT: Lecture/studio

RESTRICTION: Year 4 BEDS students

### **ARCH 4502.03: Representation.**

This class studies advanced strategies of representation. It promotes the fluent use of manual and digital media in design development, guided by architectural intentions and an understanding of architectural history, theory, and technology.

INSTRUCTOR(S): S. Parcell

FORMAT: Lecture/studio

RESTRICTION: Year 4 BEDS students

### **ARCH 8892.03: Professional Practice (Co-op Work Term).**

A student works in some aspect of the profession for a total of 500 hours to be accomplished in no less than 12 weeks, and completes a research report or assignment. Work placements are coordinated by the co-op coordinator for Architecture and must be approved by the School. In exceptional circumstances a student may apply to satisfy up to 500 hours of the time requirement through supervised research related to professional practice.

RESTRICTION: Year 4 BEDS students

## **VII. Graduate Degree Program**

The Master of Architecture program description is included here in the undergraduate calendar to provide an overview of the entire professional degree program, which includes both the BEDS and MArch degrees.

### **Master of Architecture**

Master of Architecture is a two-year, full-time program consisting of four academic terms in residence and an eight-month work term. It includes required classes that complete the core requirements for the School's professional degree program. Elective classes also enable a student to focus on a particular area of study such as housing, urban design, history and theory, building technology, environmental design, or computer applications. In the final year each student works on a design thesis, supervised by a faculty member.

For admission requirements, refer to the graduate calendar.

## **VIII. Graduate Classes Offered**

### **A. Master of Architecture**

#### **Year 5 - Terms M1 and M2 (Summer and Fall)**

- two core classes in Design (ARCH 50xx.06)
- two core classes in Humanities (ARCH 51xx.03)
- two core classes in Technology (ARCH 52xx.03)
- two graduate electives (ARCH 5xxx.03 or ARCH 6xxx.03)

#### **Year 5 - Terms M3 and M4 (Winter and Summer)**

- ARCH 5308.03: Professional Practice (Co-op Work Term)
- ARCH 5309.03: Professional Practice (Co-op Work Term)

#### **Year 6 - Term M5 (Fall)**

- ARCH 5216.06: Building Systems Integration for Design Thesis
- ARCH 9007.06: MArch Thesis Preparation
- one graduate elective (ARCH 5xxx.03 or ARCH 6xxx.03)

#### **Year 6 - Term M6 (Winter)**

- ARCH 5311.03: Professional Practice
- ARCH 9008.06: MArch Thesis
- one graduate elective (ARCH 5xxx.03 or ARCH 6xxx.03)

### **B. Graduate Classes**

#### **Core Classes - Design**

- ARCH 5002.06: Urban Housing Studio
- ARCH 5003.06: Adaptive Reuse Studio
- ARCH 5004.06: Urban Systems Studio
- ARCH 5005.06: Material Detail Studio
- ARCH 5006.06: Light Frame Building Studio
- ARCH 5007.06: Landscape Studio
- ARCH 5009.06: Ephemeral Architecture Studio
- ARCH 5010.06: Public Architecture Studio
- ARCH 5011.06: Coastal Studio
- ARCH 5012.06: Urban Program Studio

#### **Core Classes - Humanities**

- ARCH 5102.03: Housing Theory
- ARCH 5103.03: Residential Real Estate Development
- ARCH 5104.03: Urban Systems
- ARCH 5105.03: History and Theory of Cities
- ARCH 5106.03: International Sustainable Development
- ARCH 5107.03: Theory and the Built Environment
- ARCH 5108.03: Architectural Theory of the Enlightenment
- ARCH 5109.03: Ephemeral Architecture
- ARCH 5110.03: Architectural Exhibitions
- ARCH 5112.03: Documentation and Conservation of the Modern Movement in Architecture
- ARCH 5113.03: Technology, Culture and Society
- ARCH 5198.03: Humanities Seminar

#### **Core Classes - Technology**

- ARCH 5202.03: From Timber to Lumber
- ARCH 5203.03: From Lumber to Structure
- ARCH 5204.03: Composite Materials
- ARCH 5207.03: Light and Material
- ARCH 5208.03: Acoustics
- ARCH 5209.03: Energy Efficient Design
- ARCH 5210.03: Life Cycle Analysis
- ARCH 5211.03: The Construction Detail
- ARCH 5212.03: From Principle to Detail
- ARCH 5213.03: Facades
- ARCH 5214.03: Tensile Architecture
- ARCH 5215.03: Fabrication
- ARCH 5217.03: Innovation in Computers and Building
- ARCH 5218.03: Site and Material Processes
- ARCH 5219.03: Technology of Heritage Conservation
- ARCH 5298.03: Technology Seminar

## Electives

- ARCH 6001.03: Design Seminar
- ARCH 6002.03: Free Lab
- ARCH 6121.03: Architecture and Archaeoastronomy
- ARCH 6122.03: Humanities Seminar
- ARCH 6209.03: Material Investigation
- ARCH 6210.03: Material Investigation in Wood
- ARCH 6211.03: Technology Seminar
- ARCH 6215.03: Earth Construction
- ARCH 6216.03: Natural Finishes
- ARCH 6304.03: Entrepreneurship
- ARCH 6305.03: Permission to Build
- ARCH 6306.03: Professional Practice Seminar
- ARCH 6501.03: Graphic Design in Architecture
- ARCH 6502.03: Painting in Architecture
- ARCH 6503.03: Photography in Architecture
- ARCH 6504.03: Montage in Architecture
- ARCH 6505.03: Multimedia in Architecture
- ARCH 6506.03: Spatial Constructions in Digital Video
- ARCH 6507.03: Language as Representation
- ARCH 6508.03: Alternatives to Perspective
- ARCH 6509.03: Digital Form
- ARCH 6510.03: Architectural Documentation and Analysis
- ARCH 6511.03: Documentation of Historic Buildings
- ARCH 6512.03: Developments in Architectural Representation
- ARCH 6513.03: Representation Seminar

## IX. Graduate Class Descriptions

### ARCH 5002.06: Urban Housing Studio.

This studio explores the aesthetic, tectonic, social/cultural and economic challenges presented by contemporary high-density, mixed-use development. The relationships of architecture to urbanism, and building to city, will be explored through exemplary precedents and the design of housing and its associated commercial, institutional, and recreational components.

INSTRUCTOR(S): J. G. Wanzel

FORMAT: Studio

RESTRICTION: Graduate Students - Architecture

### ARCH 5003.06: Adaptive Reuse Studio.

This class studies architectural design through the adaptation of an existing building. It examines tensions between existing built facts (structure, enclosure, and circulation) and new ambitions (habitation, construction, and cultural representation). It also considers historical and urban contexts and the heritage value of existing buildings.

INSTRUCTOR(S): Staff

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5004.06: Urban Systems Studio.

This studio examines the infrastructure of the metropolis and its influence on urban form and development. Topics include systems for transportation, energy use, water distribution, civic institutions, spaces of social exchange, and ecology. Students develop urban infrastructure propositions with reference to innovative urban projects worldwide.

INSTRUCTOR(S): Staff

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5005.06: Material Detail Studio.

This studio uses bricolage as a method to represent architectural ideas, observations, and intentions in a built artifact. Students interpret, modify, and project material details in architecture. The conceptual development of the work informs strategies for the development of an architectural design.

INSTRUCTOR(S): R. Mullin

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5006.06: Light Frame Building Studio.

This class studies the material and constructional orders of light-weight framing and cladding systems. Through drawing, model, and full-scale construction, case studies of buildings by modern and contemporary designers inform design projects for a multiple residential or small institutional building.

INSTRUCTOR(S): Staff

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5007.06: Landscape Studio.

This studio investigates architectural responses to landscape. It regards the land as a physical and cultural context requiring appropriate methods of visualization and representation. Referring to recent projects in land art, it considers how to engage local materials and interests while promoting the sustainable occupation of a particular site.

INSTRUCTOR(S): B. Lilley, N. Savage

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5009.06: Ephemeral Architecture Studio.

This studio examines temporal, fleeting and ephemeral architecture, in contrast to the permanent, monumental, and timeless architecture that has been stressed throughout history. Students address concepts of alterity, the carnivalesque, *l'informe*, and inversion by designing spaces and/or activities on the edges of the established order.

INSTRUCTOR(S): S. Bonnemaïson

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5010.06: Public Architecture Studio.

This studio examines the role of public architecture in manifesting cultural values through the design of a civic institution. It also considers public architecture as an expression of material culture that mediates between the scales of artifact and landscape.

INSTRUCTOR(S): B. MacKay-Lyons, T. Sweetapple

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5011.06: Coastal Studio.

This studio investigates building on the coast. It explores conjunctions of ecology, culture, and traditional technical knowledge. Through participatory design, students work with a coastal community to develop innovative responses to situations with sensitive ecologies, extreme climate, and local cultural traditions.

INSTRUCTOR(S): T. Cavanagh

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5012.03: Urban Program Studio

This studio focuses on a basic human need (eating, sleeping, etc.) and investigates the customs and institutions we have developed around it. Questioning local practices and considering distant references, each student formulates a program, defines a site in the city of Halifax, and designs a building with a critical and/or innovative intent.

INSTRUCTOR(S): S. Parcell

FORMAT: Studio

RESTRICTION: Graduate students - Architecture

### ARCH 5102.03: Housing Theory.

This class introduces the history and theory of contemporary practice in housing design and production. The focus is on the quality of housing and the residential environment. A comparative analysis of significant past and current examples is used to provide insight into the way houses and neighbourhoods are designed.

This understanding is placed in the context of differing economic, political and housing market situations.

INSTRUCTOR(S): J. G. Wanzel

FORMAT: Lecture/seminar

CROSS-LISTING: PLAN 6111.03

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 5103.03: Residential Real Estate Development.

This class introduces the basic issues, vocabulary, and conceptual approaches of residential real estate development. It also engages the range of design, development, financing, approval, and construction processes that are involved in the production of housing.

INSTRUCTOR(S): J. G. Wanzel

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor



**ARCH 5104.03: Urban Systems.**

This seminar examines the infrastructure of the metropolis and its influence on urban form and development. It considers transportation, energy use, water distribution, civic institutions, spaces of social exchange, and ecological systems. It emphasizes new concepts of what is "urban" and what is "natural," referring to innovative urban designs worldwide.

INSTRUCTOR(S): C. Macy

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5105.03: History and Theory of Cities.**

This class examines selected major cities, their originating form, important buildings, and building types in their history. The primary aim is to explore the relationship between architecture and urbanism and the relationship between individual buildings and the city.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5106.03: International Sustainable Development.**

This class examines sustainable development in developed and developing countries. Local building practices and cultural appropriateness are studied through case studies. It considers how architects have handled materials and technology to engender patterns of living in a reflective and symbiotic manner.

INSTRUCTOR(S): R. Kawar

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5107.03: Theory and the Built Environment.**

This class is an overview of contemporary architectural theory, structured into three themes: architecture as a poetic act, moral act, and meaningful act. These themes allow students to develop their research and design interests in the graduate program. In a major project, students translate theoretical concerns into an architectural installation.

INSTRUCTOR(S): C. Macy, S. Bonnemaison

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5108.03: Architectural Theory of the Enlightenment.**

This class focuses on the phenomenon of the Enlightenment and the search for origins. The terms "Classic" and "Romantic" are examined in depth, as are archaeology, the culture of ruins, historiography, association theory, and the Picturesque. Architectural theories are compared with selected works of architecture and architectural representation.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5109.03: Ephemeral Architecture.**

This seminar explores ideas of "otherness" in the city, manifested as ephemeral or temporary constructions and as critical responses to established norms. Theories of alterity, the carnivalesque, *l'informe* and inversion are used to interpret spaces and activities in the city that are marginal, liminal, repressed, neglected, or abandoned.

INSTRUCTOR(S): S. Bonnemaison

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5110.03: Architectural Exhibitions.**

This seminar introduces students to contemporary discussions in the field of exhibit design for architecture, including the role of the viewer, the use of display techniques to frame objects, and the curatorial voice. Groups of students develop an exhibition on a subject of their choice.

INSTRUCTOR(S): S. Bonnemaison

FORMAT: Seminar/studio

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5112.03: Documentation and Conservation of the Modern Movement.**

This class studies the documentation and conservation of buildings, sites and neighbourhoods of the Modern Movement. It examines international charters, protocols, and issues of identifications, evaluation and public awareness. Students undertake fieldwork and research on specific projects and contribute to a general register of modern works.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5113.03: Technology, Culture, and Society.**

This class studies the technology of architecture in its broad cultural and social context. It explores the issue of technology in History, philosophy, sociology, and material culture, using contemporary and historical building as an example.

INSTRUCTOR(S): T. Cavanagh

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5198.03/5199.03: Humanities Seminar.**

This class focuses on an advanced topic in architectural humanities. The topic changes from year to year. It may emphasize history, theory, criticism, urban studies, or architecture in development.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 5202.03: From Timber to Lumber.**

This class examines principles of forestry and ecology pertaining to woodlot management. It considers forest ecology, wood production, and the conversion of trees into building products such as dimensional lumber and engineered wood products.

INSTRUCTOR(S): A. Parsons

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5203.03: From Lumber to Structure.**

This class focuses on the structural analysis of wood framed buildings and structures. Structural principles in simple beam theory, column design, and lateral load design are studied in traditional and contemporary wood framed buildings.

INSTRUCTOR(S): A. Parsons

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5204.03: Composite Materials.**

This class surveys the history of materials, focusing on natural and synthetic polymers, resins, and composite material systems. It studies their origin, chemical content, and manufacturing processes. These materials and their related processes are used to fabricate functional objects, with attention to structure, assembly, and environmental impact.

INSTRUCTOR(S): R. Mullin

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5207.03: Light and Material.**

This class examines characteristics of daylight and artificial light. It analyzes and experiments with how light is produced, is transmitted, and interacts with various materials. By considering lighting options for a particular use, it regards light as an integral element in the design of interior and/or exterior space.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5208.03: Acoustics.**

This seminar studies principles of interior room acoustics and audio-visual design. To address acoustical requirements in various types of spaces, it considers sound projection and isolation, and the control of mechanical and environmental noise through building design and acoustical materials.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5209.03: Energy Efficient Design.**

This class focuses on sustainable building services. It studies building energy codes and rating systems - specifically LEED - in the Atlantic region. It also examines international strategies for low-energy building; passive systems in ventilation, heating, and cooling; renewable energy systems; and the integration of engineering systems into architectural design.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5210.03: Life Cycle Analysis.**

This class studies the range of environmental impacts associated with building materials and assemblies, from their raw state to the end of their useful life. It considers operating energy, embodied energy, and carbon sequestration, with particular attention to the structure and building envelope of wood framed heritage buildings.

INSTRUCTOR(S): A. Parsons

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5211.03: The Construction Detail.**

This class examines the construction detail and its dialectical relationship to the architectural whole. Case studies of details in major twentieth-century buildings inform detail practice, in which students investigate material options and construction details for a project of their own design.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5212.03: From Principle to Detail.**

This class advances the technological content of a concurrent design project or thesis. It focuses on the integration of building systems (e.g., structure, construction, environmental technology), beginning with an overview of principles, followed by a self-directed material exploration, and culminating in the production of a relevant building detail.

INSTRUCTOR(S): B. Lilley

FORMAT: Studio/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5213.03: Facades.**

This class examines the various functions of a building facade: protection from weather, interior comfort, urban sign, and potential energy producer. It considers how a facade designed for a particular program can achieve high performance through attention to detail: building materials, manufacturing processes, and construction techniques.

INSTRUCTOR(S): B. Lilley, D. Goodz

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5214.03: Tensile Architecture.**

This class studies the design and behaviour of tensile structures by building and testing models and mock-ups. It also explores the rhetorical potential of tensile structures by integrating technologies such as video, sound, light, sensors, and smart fabrics.

INSTRUCTOR(S): S. Bonnemaïson

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5215.03: Fabrication.**

This class studies the sequence of trades involved in building construction. It examines the material processes of various construction industries and considers their implications for design, with an emphasis on relations between convention and innovation.

INSTRUCTOR(S): T. Sweetapple

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5216.06: Building Systems Integration for Design Thesis.**

This class parallels MArch Thesis Preparation (ARCH 9007). Each student undertakes a technological study of his/her architectural design thesis through an ecological analysis of the site; a definition of performance criteria; an investigation of relevant building systems; and the design, construction, and testing of a significant material detail.

INSTRUCTOR(S): B. Lilley, R. Hudson

FORMAT: Lecture/seminar

PREREQUISITE: Completion of Year 5 MArch

**ARCH 5217.03: Innovation in Computers and Building.**

This class surveys and undertakes research in computer-based architectural models and computer-assisted manufacture, logistics, and construction. After an initial survey of the state of the art, students work on a focused design or problem-solving exercise. Where possible, work will contribute to actual building projects, research, competitions, and/or publication.

INSTRUCTOR(S): R. Hudson, E. Jannasch

FORMAT: Seminar/studio

RESTRICTION: Graduate students - Architecture

**ARCH 5218.03: Site and Material Processes.**

This class includes extensive field studies in Nova Scotia and the southeast United States. It introduces principles and practices of site dynamics such as ecology, and extends student understanding of building materials, manufacture, and innovative construction processes.

INSTRUCTOR(S): T. Cavanagh

FORMAT: Seminar/studio

RESTRICTION: Graduate students - Architecture

**ARCH 5219.03: Technology of Heritage Conservation.**

This class studies issues of building technology in heritage conservation. Based on the Standards and Guidelines for the Heritage Conservation of Historic Places in Canada (2010), it considers building technology issues germane to different conservation interventions (preservation, restoration, and rehabilitation), the appropriate use of materials and details, and the integration of building systems technology.

INSTRUCTOR(S): A. Parsons

FORMAT: Seminar

RESTRICTION: Graduate Students - Architecture

**ARCH 5298.03/5299.03: Technology Seminar.**

This class focuses on an advanced topic in architectural technology. The topic changes from year to year. It may emphasize materials, environmental strategies, or building details.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 5308.03/5309.03: Professional Practice (Co-op Work Term).**

A student works in the architectural profession for 1000 hours in no less than 24 weeks and completes a research report or assignment. Work placements must be approved by the School of Architecture. A student may apply to satisfy up to 500 hours through supervised research related to Professional Practice.

INSTRUCTOR(S): Staff

FORMAT: Work term

RESTRICTION: MArch students

**ARCH 5310.00: Co-op Work Term Continuation.**

A student who has already registered for ARCH 5308 and ARCH 5309 may continue the co-op work term for up to three additional terms. While registered in ARCH 5310, a student's university status changes to part-time.

INSTRUCTOR(S): Staff

FORMAT: Work term

PREREQUISITE: ARCH 5308.03, ARCH 5309.03

RESTRICTION: MArch students

**ARCH 5311.03: Professional Practice.**

This class studies principles of professional ethics, partnerships, corporate practices, professional responsibility, and legal aspects of architectural practice. It also considers issues in practice management: contracts, codes, reference documents, finance, costing techniques, and contract administration.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 6001.03: Design Seminar.**

This seminar focuses on an advanced topic in architectural design. The topic changes from year to year. It may emphasize urbanism, landscape, building, process, program, or habitation.

INSTRUCTOR(S): Staff

FORMAT: Seminar/studio  
 RESTRICTION: Graduate students - Architecture

### ARCH 6002.03: Free Lab.

This class complements normal studio-based learning. It pursues an architectural topic through experimental hands-on work in a group format. Topics change from year to year and may include design-build work, documentaries, landscape installations, community design projects, and interdisciplinary work. Projects may be local or involve travel to a distant site.

INSTRUCTOR(S): Staff  
 FORMAT: Workshop/lab  
 RESTRICTION: Graduate students - Architecture

### ARCH 6121.03: Architecture and Archaeoastronomy.

This class studies the significance of the night sky to various ancient and non-Western cultures, including the Egyptian, Celtic, Mesoamerican, Anasazi, and First Nations. It examines how celestial features and motions guided the design of buildings and influenced cultural practices, including the measurement of time.

INSTRUCTOR(S): P. Kelly  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6122.03/6123.03/6124.03/6125.03: Humanities Seminar.

This class focuses on an advanced topic in architectural humanities. The topic changes from year to year. It may emphasize history, theory, criticism, urban studies, or architecture in development.

INSTRUCTOR(S): Staff  
 FORMAT: Seminar  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6209.03: Material Investigation.

This class uses a controlled workshop environment to examine characteristics of a material (e.g., metal, ceramic, glass) and methods for forming and finishing. Using principles of material science, it considers the harvesting or processing of raw material, the testing of structural capacity and environmental behaviour, and applications in design.

INSTRUCTOR(S): Staff  
 FORMAT: Workshop/seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6210.03: Material Investigation in Wood.

This class uses a controlled workshop environment to examine characteristics of wood and methods for forming and finishing. Using principles of material science, it considers the harvesting of raw material, the testing of structural capacity and environmental behaviour, and applications in design.

INSTRUCTOR(S): Staff  
 FORMAT: Workshop/seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6211.03/6212.03/6213.03/6214.03: Technology Seminar.

This class focuses on an advanced topic in architectural technology. The topic changes from year to year. It may emphasize materials, environmental strategies, or building details.

INSTRUCTOR(S): Staff  
 FORMAT: Seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6215.03: Earth Construction.

This class studies traditional and contemporary methods of earth construction (cob, rammed earth, wattle and daub, earth bag, and adobe) as sustainable, low-impact building systems. Based on the science of soils, it considers appropriate uses of earth technology in the construction of houses.

INSTRUCTOR(S): K. Thompson  
 FORMAT: Lecture/seminar  
 EXCLUSION: ARCH 5205.03  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6216.03: Natural Finishes.

This class examines the use of natural finishes (earth and lime plasters, paint, stone, and wood) for walls, floors, and ceilings in contemporary buildings.

Natural, local, and reused materials are assessed in terms of installation, cost, durability, aesthetic characteristics, and environmental impact in comparison with industrialized products.

INSTRUCTOR(S): K. Thompson  
 FORMAT: Lecture/seminar  
 EXCLUSION: ARCH 5206.03  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6304.03: Entrepreneurship.

Successful entrepreneurship requires an ability to identify opportunities, skill to calculate risks, and the knowledge and determination to promote, develop, and implement a project. This class uses a case study approach to examine entrepreneurship in the public, private, and not-for-profit sectors and to assess potential applications to architectural practice.

INSTRUCTOR(S): J. G. Wanzel  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6305.03: Permission to Build.

Obtaining a building permit is only the last hurdle to clear before a potential architectural project can be realized. This class examines the entire process, including the various authorities, agencies, and groups that are involved, along with municipal planning regulations, building codes, material specifications, and public presentations.

INSTRUCTOR(S): N. Savage  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6306.03: Professional Practice Seminar.

This class focuses on an advanced topic in architectural professional practice. The topic changes from year to year.

INSTRUCTOR(S): Staff  
 FORMAT: Seminar  
 RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

### ARCH 6501.03: Graphic Design in Architecture.

This class applies principles of information design and typography to architectural presentation. Using digital media, it experiments with various graphic design methods to organize text, images, and graphics in a clear, consistent way for particular presentation purposes.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6502.03: Painting in Architecture.

This class examines how some architects have used painting in design development. Through studio work, students also consider how certain modes of painting may be integrated into the design process for their concurrent architectural studio project. Previous experience in any paint medium (e.g., watercolour, gouache, acrylic, oil) is required.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6503.03: Photography in Architecture.

This class examines architectural photography from the late nineteenth century to the present. By analyzing and applying various photographic styles and techniques, students learn about photographic representation in architecture.

INSTRUCTOR(S): K. Kam  
 FORMAT: Lecture/seminar  
 RESTRICTION: Graduate students - Architecture

### ARCH 6504.03: Montage in Architecture.

This class examines the history, concepts, and uses of montage in architectural representation. It also considers how digital photography and computer technology can generate various forms of montage for analyzing and developing architectural designs.

INSTRUCTOR(S): K. Kam  
 FORMAT: Seminar/studio  
 RESTRICTION: Graduate students - Architecture

**ARCH 6505.03: Multimedia in Architecture.**

This class examines the use of various technologies to visualize, develop, and display multimedia presentations of architecture that may include text, graphics, photographs, sound, voice, animation, and/or video. It also considers how architectural designs can be developed using multimedia. These topics may apply also to projects in urban planning.

INSTRUCTOR(S): P. Kelly

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

**ARCH 6506.03: Spatial Constructions in Digital Video.**

This seminar investigates how digital audio and video can represent physical and spatial qualities of existing architectural, urban, or rural conditions. It emphasizes the use of the video camera and digital software for recording, imaging, and editing.

INSTRUCTOR(S): C. Venart

FORMAT: Studio/seminar

PREREQUISITE: ARCH 6505

RESTRICTION: Graduate students - Architecture

**ARCH 6507.03: Language as Representation.**

This class examines the reciprocal role of language and visual perception in architecture. It considers architectural description and criticism according to linguistic or dialectical models such as the theory of language games, classical rhetoric, or religious apology.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 6508.03: Alternatives to Perspective.**

This class examines the limitations of linear perspective as a definitive method for representing objects and spaces. It analyzes Renaissance premises of perspective and considers other periods and cultures for alternatives that might be applied in contemporary architectural representation.

INSTRUCTOR(S): Staff

FORMAT: Seminar

RESTRICTION: Graduate students - Architecture

**ARCH 6509.03: Digital Form.**

This class considers the influence of emerging representational technologies on the making of architectural form. By analyzing how the design process is affected by working only in a digital environment, students learn about the limitations and possibilities of digital form.

INSTRUCTOR(S): N. Savage

FORMAT: Lecture/studio

PREREQUISITE: ARCH 6505.03

RESTRICTION: Graduate students - Architecture

**ARCH 6510.03: Architectural Documentation and Analysis.**

This class investigates techniques for documenting and analyzing existing architectural or urban conditions. Various modes of representation (drawing, model, video, and photography) are used to interpret the complex experience of physical form.

INSTRUCTOR(S): C. Venart

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 6511.03: Documentation and Reconstruction of Historic Buildings.**

This class studies the use of drawings to document existing buildings, structures, and landscapes. It also studies drawings as a means of projection and examines their role in the reconstruction of past built works and projects.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

**ARCH 6512.03: Developments in Architectural Representation.**

This class studies historical developments in the graphic language of architecture and its various modes of representation. By examining works by selected architects, students consider relationships between what is drawn and what is built.

INSTRUCTOR(S): N. Savage

FORMAT: Lecture/studio

RESTRICTION: Graduate students - Architecture

**ARCH 6513.03: Representation Seminar.**

This class focuses on an advanced topic in architectural representation. The topic changes from year to year. It may emphasize medium, relation to design, or history and theory.

INSTRUCTOR(S): Staff

FORMAT: Seminar/studio

RESTRICTION: Graduate students - Architecture

**ARCH 7001.04: MArch (Post-Prof.) Major Project.**

A major project is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The major project is guided by a supervisor and an advisor.

RESTRICTION: MArch (Post-Prof.) students

**ARCH 7002.04: MEDS Major Project.**

A major project is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The major project is guided by a supervisor and an advisor.

RESTRICTION: MEDS students

**ARCH 7003.00: Continuation - MArch (Post-Prof.) Project.**

Continuation of ARCH 7001.04.

RESTRICTION: MArch (Post-Prof.) students

**ARCH 7004.00: Continuation - MEDS Project.**

Continuation of ARCH 7002.04.

RESTRICTION: MEDS students

**ARCH 9002.08: MArch (Post-Prof.) Thesis.**

A thesis is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The thesis is guided by a supervisor and an advisor. The student presents the work at an oral examination, and the thesis document is prepared in accordance with university thesis standards and submitted to the University.

RESTRICTION: MArch (Post-Prof.) students

**ARCH 9003.08: MEDS Thesis.**

A thesis is intended to address a question of personal interest and relevance to the field of study. It may be a work of design (accompanied by a written document) or an entirely written document. The thesis is guided by a supervisor and an advisor. The student presents the work at an oral examination, and the thesis document is prepared in accordance with university thesis standards and submitted to the University.

RESTRICTION: MEDS students

**ARCH 9005.00: Continuation - MArch (Post-Prof.) Thesis.**

Continuation of ARCH 9002.08.

RESTRICTION: MArch (Post-Prof.) students

**ARCH 9006.00: Continuation - MEDS Thesis.**

Continuation of ARCH 9003.08.

RESTRICTION: MEDS students.

**ARCH 9007.06: MArch Thesis Preparation.**

Within a seminar group, each student formulates a thesis question and explores it through design, analytical, and interpretive studies. The student is expected to develop and demonstrate expertise in the subject area. ARCH 9007 and ARCH 9008 must be completed in consecutive terms.

INSTRUCTOR(S): Staff

FORMAT: Seminar/studio

PREREQUISITE: Completion of Year 5 MArch

RESTRICTION: MArch students

**ARCH 9008.06: MArch Thesis.**

Each student proposes, develops, and completes an architectural design project that investigates the thesis question. The thesis concludes with a graphic/model presentation, an oral examination, and a formal thesis document that is submitted to the university. The entire thesis requires a minimum of two consecutive terms of residence.

INSTRUCTOR(S): Staff

FORMAT: Studio

PREREQUISITE: ARCH 9007

RESTRICTION: MArch students

**ARCH 9009.00: MArch Thesis Continuation.**

This continuation of ARCH 9008: MArch Thesis is for students who have not completed the thesis in the minimum two terms. The maximum duration of a thesis is five terms (including ARCH 9007).

INSTRUCTOR(S): Staff

FORMAT: Studio

PREREQUISITE: ARCH 9008

RESTRICTION: MArch students

## School of Planning

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**Cross-Appointed Faculty**

Beazley, K., Resource and Environmental Studies

Boxall, J., Major appointment as Map and Geospatial Information Librarian,

Killam Library

Buszard, D., Biology, Environmental Programs

Rainham, D., Environmental Science

Wright, T., Environmental Programs

## I. Community Design

Community design studies the shape, patterns, processes, and issues in human and natural communities. It explores the world as a system of interconnected and embedded communities linked by cultural and natural processes. Classes examine interventions by which people can work towards creating and maintaining healthy and sustainable communities.

The study of community design at Dalhousie is distinguished by:

- **an emphasis on design.** The School recognizes the importance of visual and spatial information and analysis, and introduces design as a method of learning, analyzing, and addressing problems. Design is comprehensive, integrative, context-sensitive, and synthetic.
- **a focus on reasoned, creative, and practical outcomes.** Classes will attract students eager to make changes in the world they inhabit. They will develop the knowledge and skills to allow them to analyze community issues, and to propose and implement appropriate classes of action to achieve desired outcomes.

The School of Planning offers undergraduate education in community design. Various programs are possible; the Bachelor of Community Design (BCD) is a three year program; a Double Major in Community Design and Sustainability is a four year program.

Students with high academic standing may apply for the Bachelor of Community Design (Honours) program, with a Major in either Environmental Planning or Urban Design Studies (a four year program). The BCD Honours program is a first professional degree recognized by the Canadian Institute of Planners. Students considering the BCD Honours program (either Environmental Planning or Urban Design Studies Major) have the option of doing a Minor in Environmental Studies, a Minor in Geography or a Double Major with Sustainability.

The Bachelor of Community Design is a three-year general program for students interested in understanding how communities work and the principles that planners and other design professionals use in creating communities. Students with a strong commitment to sustainability may take the four-year Double Major in Community Design and Sustainability. Students who meet the requirements for admission to the Honours program take specialized fourth year classes in either Environmental Planning or Urban Design Studies.

Students wishing to enter the program must have completed grade 12 with a 70% or greater average in five grade 12 subjects including English, Math, and one Science (Biology or Geology are recommended). Grade 12 Geography is recommended, and a background in art or design is an asset. Students who have successfully completed a full year of university or college level studies may apply to transfer to the Bachelor of Community Design and may be considered for advanced standing. (Those admitted as transfer students should consult the Undergraduate Coordinator in Planning for advice on class selection.)

All students admitted to the BCD must meet the Dalhousie requirement for a full class or equivalent in classes with a significant writing requirement, usually completed in the first year of university study. Students must complete at least a full class or equivalent in a science subject, and a full class or equivalent in an arts, humanities, or social sciences subject to graduate.

Students must complete at least 42 credit hours (seven full class equivalents) at the 2000 level or higher for the three year (90 credit hour) degree, or at least 72 credit hours (12 full class equivalents) at the 2000 level or above for a four year degree (120 credit hours).

### Bachelor of Community Design (three year program)

The Bachelor of Community Design normally takes three years of full time study. It includes 15 full class equivalents, or 90 credit hours of class work. Core required classes for the program include PLAN 1001.03, 1002.03, 2001.03, 2002.03, 2005.03, 2006.03, 3001.03, 3002.03, 3005.03, 3006.03, 3025.03. In year one students take PLAN 1001.03, PLAN 1002.03, and GEOG/ERTH 1030.03. They also select either ARCH 1000.06 or ENVS 1000.06 or SUST 1000.06 (although they may take two). Students must complete six credit hours of an approved English writing requirement class (see below), six credit hours of science classes and six credit hours of classes from the humanities or social science disciplines.

Students will select six credit hours in one subject from the following classes approved for the Bachelor Community Design English writing requirement. Other writing requirement classes may be considered by the School of Planning on an individual basis:

CLAS 1010X/Y.06, CLAS 1100X/Y.06, ENGL 1000X/Y.06, ENGL 1010.03, ENGL 1020.03, ENGL 1040.03, ENGL 1100.03, ENGL 2100.03, ENGL 2110.03, HIST 1005.06, HSTC 1800.03, HSTC 1801.03, JOUR 1001X/Y.06, POLI 1103X/Y.06, PHIL 1010X/Y.06, SOSA 1050.06, SUST 1000.06, THEA 1000X/Y.06, THEA 1300X/Y.06

### Program requirements are as follows:

#### Year 1

- PLAN 1001.03: Introduction to Community Design 1
- PLAN 1002.03: Introduction to Community Design 2
- GEOG/ERTH 1030.03: Physical Geography
- Select from among: ARCH 1000.06 or ENVS 1000.06 or SUST 1000.06
- Plus 2.5 more full classes (15 credit hours), normally including the six credit hours English writing requirement

The School of Planning recommends that students also consider taking at least one of EARTH 1080.03 or 1090.03, or GEOG 1035.03 in their first year.

#### Year 2

- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design Methods
- PLAN 2005.03: Community Design Context

- PLAN 2006.03: Space, Place and GIS
- Select one class (three credit hours) from among: *core electives list* (see below)
- Plus 15 more credit hours - electives of student's choice

#### Year 3

- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3006.03: Reading the Landscape
- PLAN 3025.03: Representation in Design.
- Select three credit hours from among: *core electives list*
- Plus 12 more credit hours - electives of student's choice

### Bachelor of Community Design, Double Major in Community Design and Sustainability (four year program)

For complete details about the College of Sustainability see page 44. The Double Major in Community Design and Sustainability normally requires four years of full time study (120 credit hours). It includes 20 full class equivalents, or 120 credit hours of class work. Core classes required for the Community Design portion of the program include PLAN 1001.03, 1002.03, 2001.03, 2002.03, 2005.03, 2006.03, 3001.03, 3002.03, 3005.03, 3006.03, 3025.03; and GEOG 1030.03. Students also select 15 credit hours from the BCD core electives list.

Core classes required for the Sustainability portion of the program include SUST 1000.06, 1001.06, 2000.06, 2001.06, 3000.03, 3502.03, 3002.03, 4000.06.

Students NOT enrolling in the BCD Honours program must also complete SUST 3002.03, SUST 4000.06 and one full credit (six credit hours) from the list of ESS electives.

### Program requirements are as follows:

#### Year 1

- PLAN 1001.03: Introduction to Community Design 1
  - PLAN 1002.03: Introduction to Community Design 2
  - EARTH/GEOG 1030.03: Physical Geography
  - SUST 1000.06: Introduction to Environment, Sustainability and Society 1
  - SUST 1001.06: Introduction to Environment, Sustainability and Society 2
  - Plus 1.5 credits or nine credit hours of electives
- [Note: SUST 1000 and 1001 fulfil the first year writing requirement, the science requirement, and the social science requirement.]

#### Year 2

- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design Methods
- PLAN 2005.03: Community Design Context
- PLAN 2006.03: Space, Place and GIS
- SUST 2000.06: Humanity in the Natural World: An Introduction to Problem-based Learning
- SUST 2001.06: Environment, Sustainability and Governance: A Global Perspective
- Plus six credit hours of electives

#### Year 3

- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3006.03: Reading the Landscape
- PLAN 3025.03: Representation in Design
- SUST 3000.03: Global Approaches to Environmental Decision Making
- SUST 3502.03: The Campus as a Living Laboratory
- Select three credit hours from among: BCD core elective list
- Plus six more credit hours - electives of student's choice or if Honours, from list of approved ESS electives

#### Year 4

- SUST 4000.06: Environment, Sustainability and Society: Capstone (not Honours)
- SUST 3002.03: Environment and Sustainability Internship (not Honours)
- Select six credit hours from BCD core electives list (above the 2000 level).
- Plus 15 credit hours (2.5 credits) in electives of student's choice

## Bachelor of Community Design (Honours) (four year program)

The Bachelor of Community Design (Honours) normally takes four years of full-time study. Students complete the requirements for the general community design program and then complete a fourth year of specialized study. The program requires 20 full class equivalents, or 120 credit hours of class work.

The Honours programs provide opportunities for students who do well in their studies to deepen their understanding through additional class work, an internship work placement, and community-based research projects. Students participate in community design studios where learning involves working on community-centred projects. Thus students gain practical experience to bring to bear on their academic studies. The BCD Honours is a first professional degree in planning recognized by the Canadian Institute of Planners.

Students may apply for entry to the BCD Honours program once they have completed all first year requirements, including the English writing requirement, and the mandatory second year (2000 level) planning classes. Admission to the Honours degree requires the following:

- i. 3.0 or higher cumulative GPA, and
- ii. 3.0 or higher GPA calculated for mandatory planning and core elective classes completed at the time of application to the Honours program. (Where students have completed more than nine credit hours of core electives, the highest grades for the nine credit hours will be used in the calculation).

Once in the Honours program, students must maintain both a cumulative GPA of 3.0 or higher and a GPA of 3.0 higher for mandatory Planning classes and core electives. If a student falls below either of these minimum standards, the student can not continue in the Honours program. A student may apply for re-entry to the Honours program once the minimum standard is restored.

Students have a choice of major within the Honours program.

During the Honours year, students require 30 credit hours, as follows.

### *Year 4 of Honours Major in Urban Design and Planning*

- PLAN 4002.06: Urban Design Studio
- PLAN 4050.03: Thesis Proposal
- PLAN 4101.03: History and Theory of Urban Design
- PLAN 3035.03: Application of Planning Law
- PLAN 4100.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- six credit hours from core elective list B (Urban Design Studies) or list C (electives for either major) at 2000 level or above

### *Year 4 of Honours Major in Environmental Planning*

- PLAN 4001.06: Environmental Planning Studies
- PLAN 4050.03: Thesis Proposal
- PLAN 3035.03: Application of Planning Law
- PLAN 4100.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- three credit hours from core electives list A (Environmental Planning) and six credit hours from core electives list A or list C (electives for either major) at 2000 level or above

### *Requirements for Graduation with Honours*

In order to graduate with the Honours (Major) distinction in the BCD the student will have completed the class requirements identified above and will have a cumulative GPA of 3.0 or higher and a calculated GPA of 3.0 or higher for required Community Design classes and core electives.

## BCD Honours Conversion

Students who complete the three-year BCD program and graduated with the degree may apply to convert their degree to Honours with an additional year of study to complete the requirements for the Honours degree.

Eligible students need to meet the following conditions:

- They completed the three-year BCD with a cumulative GPA of 3.0 or greater and a calculated GPA of 3.0 or higher for mandatory Community Design classes and core electives;
- They completed the BCD not more than 10 years prior to application for Honours Conversion.

### *Requirements for graduation*

The Honours Conversion program normally involves one year of full time study while the student completes the requirements for the Honours Major. Thirty (30) credit hours of required classes are completed. Students must maintain a cumulative average of not less than 3.0 and a GPA of not less than 3.0 calculated for mandatory Community Design classes and core electives in the Honours year.

### Conversion Year requirements for the Honours Major in Environmental Planning

- PLAN 4001.06: Environmental planning studio
- PLAN 4100.03: Community design internship
- PLAN 4050.03: Thesis proposal
- PLAN 4500.06: Thesis project
- PLAN 3035.03: Application of planning law
- three credit hours from core electives list A (Environmental Planning) and six credit hours from core electives list A or list C (electives for either major) at 2000 level or above

### Conversion Year requirements for the Honours Major in Urban Design and Planning\*

- PLAN 4002.06: Urban design studio
- PLAN 4100.03: Community design internship
- PLAN 4101.03: History and Theory of Urban Design
- PLAN 4050.03: Thesis proposal
- PLAN 4500.06: Thesis project
- PLAN 3035.03: Application of planning law
- six credit hours from core elective list B (Urban Design Studies) or list C (electives for either major) at 2000 level or above

Students who may have completed any required classes from the honours year as part of the 90 credit hours of the general BCD program will select alternative core elective credits from the lists to make up the credit hours to a total of 30.

## Bachelor of Community Design (Honours) with a Minor in Environmental Studies

The Minor in Environmental Studies is a five credit (30 credit hour) Minor taken in conjunction with the Bachelor of Community Design Honours (It is not available within the three year BCD program). The Minor in Environmental Studies provides a student with an appreciation of the scientific, cultural, economic, historic, legal and social aspects of environmental issues. The student will have the opportunity to earn an additional credential on the degree to recognize the special concentration of classes in environmental studies. Approval for the program is required from the School of Planning and from the Coordinator of Environmental Programs. Students complete all requirements for their Honours Major in addition to these required classes for the minor. Students may count the class ENVS 1000 towards both the BCD requirements and towards the requirement for the Minor. Other classes cannot be counted towards both sets of requirements.

### Required Classes

To earn the minor, students complete:

- ENVS 1000.06: Introduction to Environmental Studies (or DISP)
- PHIL 2480.03: Environmental Ethics
- ENVS 3200.03: Environmental Law
- ENVS 3501.03: Environmental Problem Solving I
- ENVS 3502.03: Environmental Problem Solving II

### Elective requirements

Two full credits (12 credit hours) of classes from the following list:

- BIOL 2605.03: Introduction to Marine Life of Nova Scotia
- BIOL 3601.03: Nature Conservation
- CHEM 2505.03: Environmental Chemistry I
- CHEM 4203.03: Environmental Chemistry II
- ECON 2216.03: Economics of Global Warming
- ECON 2336.03: Regional Development
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- ENVS 3000.03: Environmental Science Internship
- ENVS 3200.03: Introduction to Environmental Law
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Contaminated Site Management
- ENVS 3301.03: Enterprise Sustainability

- ENVS 3220.03: International Environmental Law for Scientists
- ENVS 3400.03: Environment and Human Health
- ENVS 3500.03: Exploring Geographic Information Systems
- ENVS 4001.03: Environmental Impact Assessment
- ESMP 2330.03: Nature Imagined
- ESMP 3000.06: The Study of Nature in Early Modern Europe
- EARTH 3302.03: Quaternary Sedimentary Deposits
- EARTH/GEOG 3440: Geomorphology
- HIST 3370.03: North American Landscapes
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- OCEA 2001.03: The Blue Planet I
- OCEA 2002.03: The Blue Planet II
- OCEA 2800.03: Climate Change
- OCEA 3001.03: Introduction to Physical Oceanography
- OCEA 3002.03: Introduction to Chemical Oceanography
- PHIL 2485.03: Technology and the Environment
- POLI 3385.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea I
- SOSA 2100.06: Environment and Culture
- SOSA 3211.03: Continuity and Change in Rural Society
- SOSA 3220.03: Coastal Communities in the North Atlantic
- SOSA 4072.03: Naturalistic Approaches to the Social Sciences
- STAT 3345.03: Environmental Risk Assessment

### **Bachelor of Community Design (Honours, Major) with a Minor in Geography**

The Minor in Geography is available to students registered in the BCD Honours Major 20 credit degree programs. Students in community design cannot assign required, geography cross-listed planning courses to the minor degree, nor can they assign geography cross-listed planning courses used to meet BCD program elective requirements to the geography minor. EARTH/GEOG 1030 is required for both the BCD degree and the Minor in Geography. See pages 521 for details on the Minor in Geography requirements and course offerings.

### **Bachelor of Community Design Honours, Double Major in Community Design (Urban Design and Planning) and Sustainability**

Students also have the option to earn a double major in Sustainability within the Honours program. Year 4 of the BCD Honours Double Major in Sustainability is the same as year 4 of the BCD Honours Major. Honours Double Major students are not required to take SUST 3002.03, SUST 4000.06 nor one full credit from the approved list of ESS electives.

### **Program core electives for the Bachelor of Community Design**

Each program in Community Design requires that the student select a specified number of credit hours of core electives from the approved lists (see below, or contact the Undergraduate Coordinator for a more current list).

Students earning the three-year Bachelor of Community Design must select from among classes in any of the three categories (environmental planning, urban design studies, or open to both) for their “core electives”. In year three, students select classes at the 2000 level or above for their core electives.

Students earning the four-year Bachelor of Community Design Double Major in Community Design and Sustainability must select from among classes in any of the three categories (environmental planning, urban design studies, or open to both) for their BCD “core electives”. In year three and four, students are recommended to select classes at the 2000 level or above for their core electives.

In their Honours year, students earning the Bachelor of Community Design Honours, Major in Environmental Planning, must select “core electives” from among classes at the 2000 level or above in the categories “Environmental planning” (A) or “Electives for either option” (C).

In their Honours year, students earning the Bachelor of Community Design Honours, Major in Urban Design and Planning, must select “core electives” from among classes at the 2000 level or above in the categories “Urban design studies” (B) or “Electives for either option” (C).

In their Honours year, students earning the Bachelor of Community Design Honours, Double Major in Environmental Planning and Sustainability, must select “core electives” from among classes at the 2000 level or above in the categories “Environmental planning” (A) or “Electives for either option” (C).

In their Honours year, students earning the Bachelor of Community Design Honours, Double Major in Community Design (Urban Design and Planning) and Sustainability, must select “core electives” from among classes at the 2000 level or above in the categories “Urban design studies” (B) or “Electives for either option” (C).

Note: Students must check to ensure they meet the prerequisites for any classes they select. In some cases, classes may be full or unavailable. Some classes may require the instructor’s or department’s consent. Not all classes are offered every year.

### **Environmental planning option core electives (List A)**

- ENVS 1000.06: Introduction to Environmental Studies
- ENVS 3200.03: Environmental Law
- ENVS 3210.03: Administrative Law for Environmental Scientists
- ENVS 3300.03: Contaminated Site Management
- ENVS 3400.03: Environmental and Ecosystem Health
- ENVS 3501.03: Environmental Problem Solving 1
- ENVS 3502.03: Environmental Problem Solving 2
- ENVS 4001.03: Environmental Impact Assessment
- BIOL 1010.03: Principles of Biology Part I
- BIOL 1011.03: Principles of Biology Part II
- BIOL 1020.03: Introductory Biology - DE
- BIOL 1021.03: Introductory Biology - DE
- OCEA/GEOG/PHYC 2800.03: Climate Change
- BIOL 2060.03: Introduction to Ecology
- BIOL 2601.03: The Flora of Nova Scotia
- BIOL 3061.03: Communities and Ecosystems
- BIOL 3601.03: Nature Conservation
- BIOL 3623.03: Applied Coastal Ecology
- BIOL 3624.03: Urban Freshwater Systems
- EARTH 1080.03: Geology I
- EARTH 1090.03: Geology II
- EARTH 2410.03: Environmental and Resource Geology
- EARTH/GEOG 3440.03: Geomorphology
- PHIL 2480.03: Environmental Ethics
- HIST 3370.03: North American Landscapes
- POLI 3585.03: Politics of the Environment
- ENVE 3412.03: Energy and Environment
- ENVE 3432.03: Waste Management
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics

### **Urban Design Studies and Planning\* core electives (List B)**

- ARCH 1000.06: Introduction to Architecture
- ARCH 2000.03/2001.03: Visual Thinking
- HIST 1004.06: Introduction to European History
- HIST 1501.03: Comparative Global History
- HIST 1502.03: Origins of Modern Global Society
- HIST 2006.03: The Atlantic World 1450-1650: Colonization
- HIST 2007.03: The Atlantic World 1650-1800: European Empires in the Americas
- HIST 2212.03: Social History of Canada since 1870
- HIST 3223.03: The Caring Society? Welfare in Canada since 1900
- ECON 2200.03/2201.03: Intermediate Micro/Macro
- ECON 2218.03: The Canadian Economy in the New Millennium: Economic policy debates for the next decade.
- SLWK 2010.03: Introduction to Community Social Work
- SLWK 3011.03/3012.03: Perspectives on Social Welfare Policy
- SOSA 2040.06: Social Inequality
- SOSA 2300.06: Introduction to Social Problems
- SOSA 3031.03: Social Problems and Social Policy
- PLAN 4102.03: Urban Economics

### **Core electives that may count for either Major (List C)**

- ARCH 1200.06: Science of the Built Environment
- GEOG 1035.03: Introduction to Human Geography
- HIST/GEOG 3210.03: Canadian Cultural Landscapes



- POLI 1020.03: Governments and Democracy
- POLI 1035.03: The Political Process in Canada
- POLI 1100.06X/Y.06: Intro to Government and Politics
- POLI 1103.06: Introduction to Government and Politics [wr]
- POLI 2230.03: Local Government
- POLI 3220.03: Intergovernmental Relations
- POLI 3231.03: Urban Governance in Canada
- POLI 3235.03: The Politics of Regionalism
- POLI 4228.03/5231.03: Pressure Politics in Canada
- POLI 4240.03: Policy Formulation in Canada
- POLI 4241.03: Introduction to Policy Analysis
- ECON 1101.03: Principles Micro
- ECON 1102.03: Principles Macro
- ECON 2334.03: Globalization and Economic Development
- ECON 2336.03: Regional Development
- HSTC 1200.06: Introduction to the History of Science
- HSTC 4000.06: Science and Nature in the Modern Period
- INTD 2001.03/ 2002.03: Introduction to Development
- INTD 3001.03/ 3002.03: Seminar in Development
- SOSA 2100.06: Environment and Culture
- SOSA 3220.03: Coastal Communities in the North Atlantic
- SOSA 3284.03: Living in Cities
- PHIL 2485.03: Technology and the Environment
- OCCU 2000.03: Occupation and Daily Life
- ENVS/ERTH/GEOG 3500.03/SCIE 3600.03: Exploring Geographic Information Systems
- PLAN 2025.03: Design Drawing
- PLAN 2010.03: Sustainable Community Design
- PLAN 3010.03: Urban Ecology
- PLAN 3015.03: Site Infrastructure
- PLAN 3020.03: Landscape Design
- PLAN 3040.03: Reading the Suburbs
- PLAN 3045.03: Community Design Practice
- PLAN 3050.03: Topics in Community Design (Other topics included under 3051, 3052, 3053)
- PLAN 3055.03: Computers in Community Design and Planning
- PLAN 3060.03: Statistics for Planners
- PLAN 3225.03: Plants in the Human Landscape
- PLAN 4105.03: Land Development Economics
- PLAN 4106.03: Transportation Planning
- PLAN 4107.03: Regional Planning
- PLAN 4108.03: History and Theory of Landscape Architecture
- PLAN 4111.03: Housing Theory
- PLAN 4150.03: Topics in Planning
- PLAN 4200.03: Independent Study
- ARCH and PLAN (any class for which the School and the class instructor has given permission for the BCD student to enroll)

## II. Classes Offered

Not all classes are offered every term. Please consult the university timetable for current listings.

- PLAN 1001.03: Introduction to Community Design 1
- PLAN 1002.03: Introduction to Community Design 2
- PLAN 2001.03: Landscape Analysis
- PLAN 2002.03: Community Design Methods
- PLAN 2005.03: Community Design Context
- PLAN 2006.03: Space, Place and GIS
- PLAN 2010.03: Sustainable Community Design
- PLAN 2025.03: Design Drawing
- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3006.03: Reading the Landscape
- PLAN 3010.03: Urban Ecology
- PLAN 3015.03: Site Infrastructure
- PLAN 3020.03: Landscape Design
- PLAN 3025.03: Representation in Design
- PLAN 3035.03: Application of Planning Law
- PLAN 3040.03: Reading the Suburbs
- PLAN 3045.03: Community Design Practice
- PLAN 3050.03: Topics in Community Design

- PLAN 3055.03: Computers in Community Design and Planning
- PLAN 3225.03: Plants in the Human Landscape
- PLAN 4001.06: Environmental Planning Studio
- PLAN 4002.06: Urban Design Studio
- PLAN 4050.03: Thesis Proposal
- PLAN 4100.03: Community Design Internship
- PLAN 4101.03: History and Theory of Urban Design
- PLAN 4102.03: Urban Economics
- PLAN 4105.03: Land Development Economics
- PLAN 4106.03: Transportation Planning
- PLAN 4107.03: Regional Planning
- PLAN 4108.03: History and Theory of Landscape Architecture
- PLAN 4111.03: Housing Theory
- PLAN 4150.03: Topics in planning
- This class provides opportunities to examine selected topical issues in planning in a seminar discussion. (Other topics included under 4151, 4152, 4153)
- PLAN 4200.03: Independent Study

## III. Class Descriptions

Not all classes are offered every term. Please consult the university timetable for current listings. Instructors may change.

### PLAN 1001.03: Introduction to Community Design 1.

This course introduces community design by exploring the characteristics of human and natural communities, the connections between them, and the types of interventions designers and planners can make to help people create good living environments. Community design involves applying scientific and creative approaches to helping communities accommodate human needs while respecting the environment.

FORMAT: Lecture/seminar 3 hours (plus tutorial)

### PLAN 1002.03: Introduction to Community Design 2.

This course builds on the lessons from Introduction to Community Design 1 by exploring how designers affect the form, structure, and character of human settlements. It examines principles of design, and helps students understand strategies and develop techniques for documenting, testing, and communicating ideas. Students will work on a community design project.

PREREQUISITE: PLAN 1001.03

FORMAT: Lecture/lab 3 hours (plus tutorial)

PREREQUISITE: PLAN 1001.03

### PLAN 2001.03: Landscape Analysis.

Designers and planners need to understand the influence of physical, biological, and cultural systems in landscape evolution, and the relevance of that information in analyzing land capability. Students develop inventory and analysis tools for understanding environmental processes and their implications for design and planning. There will be field trips and a lab component.

FORMAT: Lecture/lab 4 hours

PREREQUISITE: or Concurrent: GEOG/ERTH 1030.03

CROSS-LISTING: GEOG 2001.03

### PLAN 2002.03: Community Design Methods.

This course explores the design theory, processes, principles, and methods that inform community design. Students will develop design literacy and skills, and engage in problem-solving exercises and projects.

FORMAT: Lecture/lab 5 hours

PREREQUISITE: PLAN 1002.03 or concurrent

### PLAN 2005.03: Community Design Context.

Our communities are shaped by a wide range of factors as varied as the way we organize power within our government system, the significance of the profit motive in our economy, and our cultural desire to separate work and home. This course considers various governance, economic, social, demographic, and service issues that influence the shape and regulation of communities and landscapes in the contemporary context. It examines a range of scales, from international through national, provincial and local.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: PLAN 1001.03 or concurrent

### PLAN 2006.03: Space, Place and Geographic Information Systems.

Planners use Geographical Information systems (GIS) for data collection, coordination, and analysis. Properly interpreted, GIS data contribute to informed

decision-making. This course explores the application of GIS in planning within a project-centred setting. Students learn to use GIS to address and use and site planning issues. The course also considers mapping standards used within the field of planning, and examines legal, privacy, and ethical implications of using GIS data in the public realm.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN/GEOG 2001

CROSS-LISTING: GEOG 2006.03

EXCLUSION: PLAN 3055.03

### **PLAN 2010.03: Sustainable Community Design.**

Through case studies and collaborative design projects, this course explores how the form of communities can change in response to new environmental awareness, shifting economic conditions, emerging technologies, and a focus on sustainable local action.

FORMAT: Lecture/tutorial 4 hours

PREREQUISITE: PLAN 1001.03 and PLAN 1002.03, or SUST 1000.06

### **PLAN 2025.03: Design Drawing.**

This course allows students to enhance their design literacy skills through attention to graphic design, layout, composition, and typography. Students will become familiar with and gain experience in a range of drawing techniques to enhance their skills in design drawing and portfolio presentation.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: ARCH 1000.06 or PLAN 1002.03 or permission of instructor

CROSS-LISTING: ARCH 2025.03

### **PLAN 3001.03: Landscape Ecology.**

Landscapes reflect the interaction of natural and cultural processes. This course introduces the principles of ecology to landscape analysis. It explores relationships between environmental components in the landscape to inform community design and land use planning applications.

FORMAT: Lecture/lab 4 hours

PREREQUISITE: PLAN/GEOG 2001.03

CROSS-LISTING: GEOG 3001.03

### **PLAN 3002.03: Reading the City.**

Any city reflects the history of its topography, cultural traditions, and design interventions. This course introduces the principles, theories, and methods of urban form analysis in the local urban context. Students explore the local urban environment to interpret what the city means, and how it comes to take the shape it does.

FORMAT: Lecture/lab 3 hours

CROSS-LISTING: PLAN 5012.03

### **PLAN 3005.03: Cities and the Environment in History.**

The contemporary landscape reflects a long history of human activities on the land and design and planning interventions through time. Civilizations rise and fall, often because of their degradation of the ecosystems that support them. This course examines the relationship of cities with the environment to enhance our understanding of landscape change, urban form and patterns in human settlements through the ages.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 5005.03, GEOG 3005.03

### **PLAN 3006.03: Reading the Landscape.**

Any landscape reflects its natural and cultural history. This course explores principles, theories, and methods of landscape interpretation. These approaches will be applied to community design problems in local landscapes.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN 3001.03, 3002.03

CROSS-LISTING: GEOG 3006.03

### **PLAN 3010.03: Urban Ecology.**

More than three-quarters of Canadians, and more than half the world's population, now live in urban settings. This course treats the urban system as habitat made by and for people, and takes an ecological approach to the flows of energy and materials which make urban life possible. Students study their own behaviour and surroundings, comparing their observations with data from Canada, North America, and the rest of the world. This leads to discussions about the health and sustainability of urban communities.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 6103.03

### **PLAN 3015.03: Site Infrastructure.**

The course examines the role of infrastructure in community design and site planning. Students are introduced to principles of grading, access, service provision, and cost estimating. Key exercises allow students to apply theory to practical projects.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN 2001.03 or permission of the instructor

CROSS-LISTING: PLAN 5015.03

### **PLAN 3020.03: Landscape Design.**

The course introduces principles and methods of site design. It pays special attention to social, natural, and technical components as factors in adapting sites for human use. Practical projects allow students to develop deeper insight into the challenges and opportunities of landscape design.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: At least one of PLAN 2002.03, PLAN 2025.03, or PLAN 3025.03

CROSS-LISTING: PLAN 5020.03

### **PLAN 3025.03: Representation in Design.**

The course explores techniques of representation in community design work. It examines design drawing conventions such as orthography, paraline, and perspective projections. It helps students develop their awareness of design approaches and their skills in design presentation.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN 2002.03 or PLAN 2025.03 or ARCH 2025.03

CROSS-LISTING: PLAN 5025.03

### **PLAN 3035.03: Application of Planning Law.**

This course explores the application of planning law in the field of community design. The course introduces students to the legal processes and statutory requirements for land use planning in Canada, with particular reference to Nova Scotia.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: PLAN 2005.03 or permission of instructor

### **PLAN 3040.03: Reading the Suburbs.**

An increasing proportion of Canadians live in the suburbs. This course explores issues related to planning and designing the suburbs, and develops techniques for analyzing and developing community form in the suburban environment.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN 2005.03

CROSS-LISTING: PLAN 5040.03

### **PLAN 3045.03: Community Design Practice.**

Community-building constitutes an important component of the Canadian economy. This course explores the financial, regulatory, social, and ethical issues of development practice. Using a case study approach, it examines examples of community design projects and initiatives in Canadian communities. Students gain insight into the financing, planning, and building of projects from the perspective of the development industry.

FORMAT: Lecture 3 hours

PREREQUISITE: PLAN 3001.03 or concurrent

### **PLAN 3050.03: Topics in Community Design.**

This courses provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: (to be announced for each topic)

CROSS-LISTING: PLAN 5050.03

### **PLAN 3051.03: Topics in Community Design 2.**

This course provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 5051.03

### **PLAN 3052.03: Topics in Community Design 3.**

This course provided opportunities to examine selected topical issues in community design.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 5052.03

**PLAN 3053.03: Topics in Community Design 4.**

This course provides opportunities to examine selected topical issues in community design.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 5053.03

**PLAN 3056.03: Computers in Community Design.**

This course explores the opportunities for using computers in community design and planning. Topics may include graphic presentation, business applications (e.g., spreadsheets, databases), computer assisted design, and three dimensional rendering as used in community design and planning.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: PLAN 2001.03 or permission of instructor

EXCLUSION: PLAN 3055.03

**PLAN 3060.03: Statistics for Planners.**

This course introduces students to the use of statistics in planning and community design. It familiarizes students with basic statistical analyses used in the field and helps them develop the ability to evaluate and interpret statistical data presented by experts.

FORMAT: Lecture/lab

PREREQUISITE: Grade 12 Math

**PLAN 3225.03: Plants in the Human Landscape.**

The course covers use of plants for human recreation and aesthetics; in gardens, public parks, suburban and urban landscapes. Topics include: garden design, choice of plant materials, management and maintenance, edible landscaping, use of horticulture as therapy and plants and human health. Course will involve field trips and group projects. Students will be expected to complete a design project as part of the coursework.

FORMAT: Lecture/tutorial

PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (C- or better) and BIOC

1011.03 or BIOC 1021.03 (C- or better) or DISP or PLAN 2001.03

CROSS-LISTING: BIOL 3225.03, ENVS 3225.03

**PLAN 4001.06: Environmental Planning Studio.**

This class provides an applied context for analyzing landscape issues and exploring environmental planning options. Students provide a service to the community by working through projects where local community groups or agencies have identified real needs for information and advice.

FORMAT: Studio 6 hours (one term)

PREREQUISITE: admission to Honours or graduate program

**PLAN 4002.06: Urban Design Studio.**

This studio provides an applied project context for looking at issues related to the design of cities, especially their core areas. Students explore various urban design and planning options. Students provide a service to the local community by working through projects where local community groups or agencies have identified real needs for information and advice.

FORMAT: Studio 6 hours (one term)

PREREQUISITE: admission to Honours or graduate program

**PLAN 4050.03: Thesis Proposal.**

Students in the honours programs in Community Design develop a thesis proposal for their honours thesis. The course will review appropriate research methods and guide the students through background research, literature synthesis, methods development and proposal writing.

NOTE: Students must achieve a B or higher for admission from this course into PLAN 4500.06

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: Admission to Honours programs in BCD

**PLAN 4100.03: Community Design Internship.**

Students locate a company or organization involved in some element of community design or planning and volunteer for eight hours a week in the office. An internship in a relevant workplace allows students to reflect on the knowledge they can bring to practice. Students will keep a work journal, prepare an internship report, and make a brief presentation on the placement at the end of term. Students will meet with the course coordinator for occasional seminars.

FORMAT: Independent study/seminar

PREREQUISITE: PLAN 4001.06 or 4002.06 (limited to Honours BCD students)

**PLAN 4101.03: History and Theory of Urban Design.**

The course introduces the history and theory of urban design as a distinct area of professional knowledge and skill within the spectrum of planning and design concerns and specialities.

FORMAT: Lecture/seminar

CROSS-LISTING: PLAN 6101.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

**PLAN 4102.03: Urban Economics.**

The course applies economic principles to urban growth and structure, urban social and economic problems, and provision of services and government activities. The emphasis is on the use of micro economics and welfare economics to explain and analyze urban processes and patterns of behaviour.

FORMAT: Lecture/seminar

CROSS-LISTING: PLAN 6102.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

**PLAN 4105.03: Land Development Economics.**

This course applies basic techniques for analyzing the financial feasibility of land development projects. Case studies focus particular attention on methods of financing and organizing real-estate development within the planning framework.

FORMAT: Lecture/seminar

CROSS-LISTING: PLAN 6105.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

**PLAN 4106.03: Transportation Planning.**

The class considers transportation trends, the transport needs associated with different activities, and the impact of transport facilities on land development to offer a critical analysis of the interplay between land uses and transportation. Technology, the costs of supplying transport facilities and the demand outlook for different modes are examined. The emphasis is on urban transportation, mobility demands and the supply of efficient and environmentally sound transport facilities.

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 6106.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

**PLAN 4107.03: Regional Planning.**

The class critically examines policies, theories, aims and achievements of regional planning. The course discusses (i) economics, development theories, and regional development policies; (ii) international comparisons of regional development policies and experience; and (iii) Canadian regional development experience with particular reference to government initiatives in the Atlantic region.

FORMAT: Lecture/seminar (2 hours)

CROSS-LISTING: PLAN 6107.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning or permission of instructor

**PLAN 4108.03: History and Theory of Landscape Architecture.**

This lecture and seminar class deals with changing landscapes and perceptions of the natural world during the past 250 years. It discusses the effects of technology and resource use on the design of landscapes as small as a private garden and as large as a bio-region, and examines the changing role of landscape architects, their writings and their collaboration with architects.

FORMAT: Lecture/seminar

CROSS-LISTING: PLAN 6108.03

RESTRICTION: Honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

**PLAN 4150.03: Topics in Planning.**

This class provides opportunities to examine selected topical issues in planning in a seminar discussion.

FORMAT: Seminar

PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor.

CROSS-LISTING: PLAN 6150.03

### **PLAN 4151.03: Topics in Planning II.**

This class provides opportunities to examine selected topical issues in planning in a seminar discussion.

FORMAT: Seminar

PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

CROSS-LISTING: PLAN 6151.03

### **PLAN 4152.03: Topics in Planning III.**

This class provides opportunities to examine selected topical issues in planning in a seminar discussion.

FORMAT: Seminar

PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

CROSS-LISTING: PLAN 6152.03

### **PLAN 4153.03: Topics in Planning IV.**

This class provides opportunities to examine selected topical issues in planning in a seminar discussion.

FORMAT: Seminar

PREREQUISITE: Restricted to honours or graduate students in the Faculty of Architecture and Planning, or permission of instructor

CROSS-LISTING: PLAN 6153.03

### **PLAN 4200.03: Independent Study.**

A student in the honours major may undertake an independent reading or research project under faculty supervision. The student will prepare a proposal that must be signed by the project supervisor and the Director of the School. The proposal will set out a work plan and projected outcomes.

FORMAT: Directed study

PREREQUISITE: permission of instructor and School

### **PLAN 4500.06: Thesis Project.**

Honours students in their final semester work on advanced design or research projects related to their Major concentration. Students will be organized into advanced teams working relatively independently on coordinated topics. The course uses a project management model which emulates professional practice. Each student prepares an individual thesis project report and presents it orally.

FORMAT: Studio 6 hours

PREREQUISITE: PLAN 4001.06 or 4002.06 (limited to students in the Major), and PLAN 4050.03 (with a minimum grade of B)

## Provost of the College

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA  
(Canterbury), PhD (Toronto)  
Moore, C. L., BA, PhD (Cantab)

# College of Arts and Science

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## Introduction

The College of Arts and Science, established in 1988, consists of the Faculty of Arts and Social Sciences and the Faculty of Science. The College of Arts and Science meets to discuss matters of concern common to its units, in particular those relating to academic programs and regulations. The Dean of Arts and Social Sciences and the Dean of Science alternate, year by year, as Provost of the College. The Provost chairs College meetings and prepares the agenda for those meetings. Administrative responsibility for what is decided in College meetings remains in the two Faculties. There are fourteen Departments in the Faculty of Arts and Social Sciences, and ten Departments and two Programs in the Faculty of Science. There are several interdisciplinary programs of instruction in the College, the responsibility for which is shared among members from different Departments.

The College of Arts and Science is responsible for the curriculum of Bachelor of Arts, Bachelor of Science, and Bachelor of Music degree programs, and for diploma programs in Meteorology and Costume Studies. The College is also responsible for the establishment of academic regulations governing students registered in its programs.

The College of Arts and Science consists of several groups: some 6,500 undergraduate students who typically spend three or four years in the College, nearly 450 full-time teaching and research faculty and staff as well as a number of part-time teachers and teaching assistants, and a support staff of secretaries and technicians. The student's academic role is to learn from teachers, from laboratory experience, from books, from other students, and from solitary contemplation. Students learn not only facts but concepts, and what is most important, they learn how to learn.

Through intellectual interaction with other members of the academic community, undergraduate students should gain the background knowledge, the ability and the appetite for independent discovery. Their acquisition of these components of liberal education is marked formally by the award of a Bachelor's degree. The academic faculty has two equally important roles: to teach the facts, concepts, and methods that the student must learn, and to contribute to the advancement of human knowledge through research and through scholarly or artistic activity.

The goal of the Bachelor's degree is to produce educated persons with competence in one or more subjects. Such competence includes not only factual knowledge but, more importantly, the ability to think critically, to interpret evidence, to raise significant questions, and to solve problems. A BA or a BSc degree often plays a second role as a prerequisite to a professional program of study.

BA and BSc degree programs in the College are of three types: the four year or twenty credit degree with Honours; the four year or 20 credit degree with a Major; and the three year or 15 credit degree with an area of concentration.

The College is particularly proud of the Honours programs that it offers in most subjects to able and ambitious students. The BA or BSc with Honours is distinguished from the BA or BSc Major (20 credit) or the BA or BSc (15 credit) in that a higher standard of performance is expected, a greater degree of concentration of credits in one or two subjects is required, and at the conclusion of the program each student must receive a grade which is additional to those for the required twenty credits. Frequently, Honours students obtain this grade by successfully completing an original research project under the supervision of a faculty member. Completion of a BA or BSc with Honours is an excellent preparation for graduate study at major universities throughout the world. Dalhousie is distinguished among Canadian universities in offering BA programs with Honours in most subjects in which it also provides BSc Honours programs and in providing BA and BSc degree programs with Combined Honours in an Arts and a Science subject.

# College of Arts and Science Degree Requirements

Following is a list of the faculty requirements needed to satisfy degree programs in the College of Arts and Science. Details of these requirements can be found on the pages following these lists. Departmental requirements can be found in the appropriate department/faculty listing in this calendar. Please note that students must satisfy both department and faculty requirements. Before registering for the second year, each student in the College of Arts and Science must declare a subject of concentration and obtain program advice from a faculty advisor in the appropriate department.

**Requirements for degree programs other than College of Arts and Science can be found in the appropriate department/school/college/faculty listing.**

## I. General

The following information applies generally to all of the programs offered within the College of Arts and Science.

### A. Subject Groupings

The various subjects in which instruction is offered are placed in one or more of the groups below. In the BA degree, each program must include a full-credit in a single subject chosen from each of the three subject groups (1, 2, or 3 below), normally within the first ten credits of any BA degree. In the BSc degree, each program must include a credit in subjects chosen from each of two subject groups (1 and 2).

#### 1. Languages and Humanities

Arabic, Canadian studies, Chinese (Mandarin), classics, comparative religion, contemporary studies, creative writing, early modern studies, English, European studies, French, gender and women's studies, German, Greek, history, history of science and technology, Italian studies, King's Foundation Year, Latin, music, philosophy, religious studies, Russian, Spanish, and theatre.

#### 2. Social Sciences

Canadian studies, contemporary studies, early modern studies, European studies, economics, gender and women's studies, history, history of science and technology, international development studies, King's Foundation Year, political science, psychology, sociology and social anthropology, and sustainability (for BSc only).

#### 3. Life Sciences and Physical Sciences

Biochemistry & molecular biology, biology, chemistry, computer science, earth sciences, economics, engineering, environmental science, human physiology\* (for BA only), informatics, marine biology, mathematics, microbiology & immunology, neuroscience, oceanography, physics, psychology, science, statistics, and sustainability (for BA only).

\* Offered by the Faculty of Medicine. See section E, Electives, for limit on courses from other Faculties.

PLEASE NOTE:

- In cases where a subject is listed in more than one of the groupings, any credit taken in that subject may be used to satisfy only one of the grouping requirements. A second credit in the same subject cannot be used to satisfy another subject grouping requirement. The exceptions are the Dalhousie Integrated Science Program and King's Foundation Year Program. **King's Foundation Year Program** (KING 1000.24, 1100.18) satisfies the humanities-language and social science groupings and students must take one credit in a single life/physical sciences subject to complete the subject grouping requirements. All options of the **Dalhousie Integrated Science Program** (DISP) satisfy the life sciences and physical sciences subject grouping. All DISP options except DISP 1502 (environmental) satisfy the

social sciences subject grouping. DISP students are required to take another half-credit Languages and Humanities class in addition to PHIL 1050.03 to satisfy the Languages and Humanities requirement.

- The subject groupings requirement should normally be completed in the first ten credits.

## B. Writing Class

One of the first five classes chosen should be selected from a list of classes in which written work is considered frequently and in detail. These writing classes are approved by the Writing Across the Curriculum committee and are listed below:

- CLAS 1000X/Y.06; 1010X/Y.06, 1100X/Y.06
- Dalhousie Integrated Science Program
- ENGL 1000X/Y.06
- Any **two** of ENGL 1010.03, 1020.03, 1040.03, 1045.03, 1050.03, 1100.03
- GERM 1020X/Y.06; GERM 1080.06
- HIST 1005X/Y.06; HIST 1867X/Y.06
- HSTC 1800.03/1801.03 (**both** must be successfully completed in order to satisfy the Writing Requirement)
- JOUR 1001X/Y.06\*
- King's Foundation Year
- OCEA 1000X/Y.06
- PHIL 1010X/Y.06
- POLI 1103X/Y.06
- RELS 1200X/Y.06
- RUSN 1020.03/1070.03 (**both** must be successfully completed in order to satisfy the Writing Requirement)
- RUSN 2051.03/2052.03 (**both** must be successfully completed in order to satisfy the Writing Requirement)
- \* SCIE 1111.03 (satisfies the requirement for BSc students only)
- SOSA 1050X/Y.06
- SUST 1000.06
- THEA 1000X/Y.06, 1300X/Y.06

\* Offered by the School of Journalism. See section E, Electives, for limit on courses from other Faculties.

The Writing Class may also be used to satisfy one of the subject groupings.

Classes which satisfy the Writing Requirement are identified by the following symbol and notation in their formal description: ✍ Writing Requirement

\*The Faculty of Science recommends students satisfy their writing requirement by taking SCIE 1111 (Elements of Writing). Students should take SCIE 1111 in their first year or the first term of their second year.

## C. Mathematics Requirement (Bachelor of Science)

In order to qualify for a BSc degree candidates are required to complete successfully at least one full university credit in mathematics or statistics other than MATH 1001.03, 1002.03, 1003.03, 1110.03, 1120.03, or 1115.03. A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 3, page 131.

Students may also satisfy this requirement by completing the Dalhousie Integrated Science Program year or passing the test which is administered by the Department of Mathematics and Statistics. Such students must nevertheless complete 15 or 20 credits in order to graduate.

## D. Language Class (Bachelor of Arts)

Students should consider becoming fluent in French. BA students are required to obtain one credit from the following language classes:

- ARBC 1020X/Y.06 (Arabic)
- ASSC 1025X/Y.06 (Hebrew)
- CHIN 1030X/Y.06 (Mandarin)
- CLAS 1700X/Y.06 (Greek), 1800X/Y.06 (Latin); 1900X/Y.06 (Hebrew)
- FREN (any class taught in French)
- GERM 1001X/Y.06, 1010X/Y.06, 1060X/Y.06
- ITAL 1010X/Y.06, 1012X/Y.06
- RELS 2600.03/CLAS 2600.03 and RELS 1600.03/CLAS 1600.03 both must be completed
- RUSN 1000X/Y.06, RUSN 1002/RUSN 1003 (both must be successfully completed in order to satisfy the Language Requirement)
- SPAN 1020X/Y.06

For students with advanced language skills, upper-level language classes may be substituted. Consult the Registrar's Office if you require further information. **A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 1.**

Students may satisfy this requirement by passing one of the tests administered by the language departments. Such students must nevertheless complete 15 or 20 credits in order to graduate.

BA students who choose to major in economics, philosophy, political science, psychology or sociology and social anthropology may substitute for a language class at least one full class in mathematics or statistics taught by the Department of Mathematics and Statistics, other than MATH 1001.03, 1002.03, 1003.03, 1110.03, 1120.03, or 1115.03, to meet this requirement; or they may meet it by passing the test administered by the Department of Mathematics & Statistics.

**A class taken to satisfy this requirement cannot also satisfy the requirement of a class from section 3 page 131.**

## E. Electives

Students may choose electives from any of the classes offered by teaching units within the College of Arts and Science, College of Sustainability, and the Faculty of Computer Science. In addition, without prior permission, electives are permitted as follows provided prerequisites are met and the consent of the instructor(s) is obtained when necessary:

### Bachelor of Arts

- Two full credits from classes offered in other faculties OR
- Two full credits from classes offered in other faculties and two full credits in Commerce OR
- Four full credits in Commerce

Please note that BA students registered for minors in Business, Law and Society, Health Studies, Community Design or Journalism are permitted to take the classes necessary to satisfy the requirements for the minor. In addition, two credits from classes offered in other faculties are permitted.

### BA/BEng

Students may count as electives a total of six engineering credits. In addition two credits from classes offered in other faculties are permitted.

### Bachelor of Science

- Two full credits from classes offered in other faculties OR
- Two full credits from classes offered in other faculties and two full credits in Commerce OR
- Four full credits in Commerce OR
- Five full credits in Engineering or Food Science classes and two full credits from classes offered in other faculties

Please note that BSc students registered for minors in Business or Community Design are permitted to take the classes necessary to satisfy the requirements for the minor. In addition, two credits from classes offered in other faculties are permitted.

### BSc/BEng

Students may count as electives a total of six engineering credits and in addition two credits from classes offered in other faculties.

Any additional elective credits outside the College of Arts and Science will require explicit permission, to be obtained by application to the appropriate dean's office. Permission to count a requested class for degree credit will only be granted to students who demonstrate clearly, in a written submission, how a desired class will enhance the objectives of the BA or BSc program in progress. In this regard, a written statement of support from an academic advisor in the department of concentration is desirable.

Students seeking to enrol in classes beyond the above provisions as a means of preparing to transfer to a program of study outside the College of Arts and Science will be given approval to do so by the appropriate dean's office if admission to the class(es) has been granted by the instructor(s) concerned. In such cases, however, it will be explicitly stated that the classes will not count for credit towards a BA or BSc degree.

## F. Cross-listed Classes

Please note that cross-listed classes will count as one subject only for the purpose of satisfying degree requirements, e.g., ECON 2260.03 cross-listed with MATH 2060.03 may count either as a mathematics class or economics class but not both.

## II. Programs

### A. BA/BSc 20 Credit Programs

The 20 credit degree is the standard BA or BSc degree. There are a variety of programs within the 20 credit degree. Each is designed to develop some level of concentration of knowledge and expertise.

#### 1. Major Programs

A major program focuses a student's studies, but not to the extent that an honours program does. Unlike the honours degree, the major degree may not be adequate for admission to graduate programs. Students interested in a major program are advised to seek detailed information from the department in which they wish to concentrate their studies.

##### 1.a BA (20 Credit)

- First Year
  - No more than three full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 131)
- One credit in a **single** language/humanities subject (see 1, page 131)
- One credit in a **single** social science subject (see 2, page 131)
- One credit in a **single** life or physical science subject (see 3, page 131)
- One credit in a **single** language subject for (see page 131)
- A minimum of five, maximum of nine credits in the major subject beyond the 1000 level, including three credits beyond the 2000 level.
- Within the last 15 credits, complete one credit in each of two subjects other than the major
- Total credits required above 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 2.00
- Graduation with distinction - 3.70
- May be combined with minor(s)

Bachelor of Arts major subjects: classics, English, European studies, French, German, gender and women's studies, history, international development studies, music, philosophy, political science, religious studies, Russian studies, sociology and social anthropology, Spanish, theatre, or any of the BSc major subjects.

##### 1.b BSc (20 Credit)

- One writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subjects (see 2, page 131)
- One credit in math (see page 131)
- A minimum of five, maximum of 10 credits in the major subject beyond the 1000 level, including three credits beyond the 2000 level.
- Total credits required above 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 2.00
- Graduation with distinction - 3.70
- May be combined with minor(s)

Bachelor of Science major subjects: biochemistry & molecular biology, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, ocean sciences, physics, psychology, or statistics.

##### 1.c BSc Major (20 Credit) Science Co-operative Education

Requirements are as for the regular major program with the addition of the following:

- A minimum of three co-op work terms

### Co-operative Education in Science Programs

The aim of co-op degree programs is to enable students to combine their studies with work experience. The programs are thus year-round, including Summer School, and will normally require from 48 to 52 months for completion. Co-op degree programs conform to the requirements for the major degree.

The following departments currently offer co-op programs: Biochemistry and Molecular Biology, Biology, Chemistry, Earth Sciences, Economics, Marine Biology, Mathematics and Statistics, Microbiology and Immunology, and Physics and Atmospheric Science. For details on these programs, consult the calendar entries for the departments and the Cooperative Education in Science section, page 496.

### 1.d BA (15 or 20 Credit) Emphasis in Canadian Studies

The BA may be completed with an emphasis in Canadian studies. See the Canadian studies entry in this calendar for requirements.

## 2. Double Major programs

The double major program allows study in two disciplines of equal or comparable interest.

### 2.a BA Double Major (20 Credit)

- First Year
  - No more than three full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 131)
- One credit in a **single** language/humanities subject (see 1, page 131)
- One credit in a **single** social science subject (see 2, page 131)
- One credit in a **single** life or physical science subject (see 3, page 131)
- One credit in a **single** language (see page 131)
- Minimum of 10 and a maximum of 14 credits in the major subjects beyond the 1000 level are to be in the two allied subjects, with no more than eight credits and no fewer than five credits in either, including at least two credits beyond the 2000 level in each of the two major subjects. The major subject with the most advanced credits appears first on the record.
- Within the last 15 credits, complete one credit in a single subject other than the two major subjects.
- Total credits required above 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 2.00
- Graduation with distinction - 3.70

Bachelor of Arts double major subjects: Choose both subjects from the Bachelor of Arts major subjects or combine one of the BA major subjects with one of the BSc major subjects; Environment, Sustainability and Society, or computer science. In addition to the BA major subjects listed in section 1.a, Canadian studies, Italian studies, music and creative writing are also available as one of the subjects in a double major. European studies is not available in the double major program.

### 2.b BSc, Double Major (20 Credit)

- One writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subjects (see 2, page 131)
- One credit in math (see page 131)
- Minimum of 10 and a maximum of 14 credits in the major subjects beyond the 1000 level are to be in the two subjects, with no more than nine credits and no fewer than five credits in either, including at least two credits beyond the 2000 level in each of the two major subjects. The major subject with the most advanced credits appears first on the record.
- Total credits required above 1000 level - 12
- Total credits required for degree - 20
- Required GPA for graduation - 2.0
- Graduation with distinction - 3.70
- May be combined with minor(s)

BSc double major subjects: choose both subjects from the Bachelor of Science major subjects listed in 1.b (except environmental science) or combine one of the BSc major subjects with one of the BA major subjects except European Studies or Canadian Studies, Creative Writing, Italian Studies or Music or with Computer Science or Environment, Sustainability and Society.

### 2.c BSc Double Major (20 Credit) with Environmental Science

The Faculty of Science offers a BSc Double Major in Environmental Science and one of the BA Major subjects. Degree requirements are the same as those listed in the BSc Double Major program noted above with the exception that students cannot combine a Double major in Environmental Science with any other BSc Major subject.

### 2.d BSc Double Major (20 Credit) in Environmental Science & Community Design

Consult the Environmental Sciences section of this Calendar for details.

## 3. Honours Programs

Honours programs require a higher quality of work than is required by the other undergraduate programs of the college (such as the 15 credit degree and 20 credit major). Able and ambitious students are urged to enter these programs. There are two types of honours programs in the BA (concentrated and combined) and three types in the BSc (concentrated, combined, and multidisciplinary). Applications for admission to honours programs must be made to the departments concerned on forms available in departments, at the Registrar's Office or online at <http://www.dal.ca/honours>.

Students should apply in their second year. If application is made later, it may be necessary to make up some work not previously taken.

For each individual student the entire honours program, including elective credits, is subject to supervision and approval by the department or departments concerned, or in the case of multidisciplinary honours, by an interdisciplinary committee.

NOTE: The last day to apply to an honours program is September 22.

### 3.a BA Concentrated Honours (20 Credit)

- First Year
  - no more than three full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 131)
- One credit in a **single** language/humanities subject (see 1, page 131)
- One credit in a **single** social science subject (see 2, page 131)
- One credit in a **single** life or physical science subject (see 3, page 131)
- One credit in a **single** language (see page 131)
- Minimum of nine credits, maximum of 11 credits beyond the 1000-level in the honours subject - grade must be "C" or better, otherwise class will not count towards degree.
- Total credits required above the 1000 level - 12
- Within the last fifteen credits, two to four - depending on the number selected in the honours subject - elective credits.
- Total credits required for degree - 20
- Honours Qualifying Examination: At the conclusion of an honours program a student's record must show a grade which is additional to the grades for the classes taken to obtain the required twenty credits. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other method as may be determined by the committee or department supervising the student's program. The method by which this additional grade is obtained is referred to as the Honours Qualifying Examination. Departments may elect to use a pass-fail grading system for this examination. Unless pass/fail grading is employed, the grade must be "B-" or better for honours, and "A-" or better for first class honours.
- Required standing for graduation:
  - Arts and Social Sciences subjects require a GPA of 2.70 (3.70 for first class) on classes in the honours subject.
  - Science subjects (see below) require a GPA of 3.00 (3.70 for first class) in the honours subject.
- Note: If the student has a minor, classes in the honours subject and the minor are included in the GPA.
- May be combined with minor(s)

Bachelor of Arts concentrated honours subjects: classics, English, European studies, French, German, history, international development studies, music, philosophy, political science, religious studies, Russian studies, social anthropology, sociology, Spanish, and theatre or any of the BSc honours subjects.

### 3.b BSc Concentrated Honours (20 Credit)

- One writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subjects (see 2, page 131)
- One credit in a math (see page 131)
- Minimum of nine credits with a grade of C or better, maximum of 11 credits beyond the 1000-level in the honours subject



- Total credits required for degree - 20
- Total credits required above 1000 level - 12
- Honours Qualifying Examination: At the conclusion of an honours program a student's record must show a grade which is additional to the grades for the classes taken to obtain the required 20 credits. This grade may be obtained through a comprehensive examination, the presentation of a research paper (which may be an extension of one of the classes), or such other method as may be determined by the committee or department supervising the student's program. The method by which this additional grade is obtained is referred to as the Honours Qualifying Examination. Departments may elect to use a pass-fail grading system for this examination. Unless pass/fail grading is employed, the grade must be "B-" or better for honours, and "A-" or better for first class honours.
- Required standing for graduation:  
GPA 3.00 (3.70 for first class) on classes in the honours subject.
- May be combined with minor(s)

Bachelor of Science concentrated honours subjects: biochemistry & molecular biology, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, ocean sciences, physics, psychology and statistics.

### 3.c BA Combined Honours (20 Credit)

- First Year  
No more than three full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 131)
- One credit in a **single** language/humanities subject (see 1, page 131)
- One credit in a **single** social science subject (see 2, page 131)
- One credit in a **single** life or physical science subject (see 3, page 131)
- One credit in a **single** language (see page 131)
- Total credits required for degree - 20
- Total credits required above the 1000 level - 12
- Minimum of 11, maximum of 14 credits beyond the 1000-level in two allied subjects, not more than eight credits nor fewer than five credits being in either of them. Grade must be "C" or better, otherwise, class will not count toward degree.
- Within the last 15 credits, two to four - depending on the number selected in the honours subjects - elective credits.
- Honours Qualifying Examination: see concentrated honours program above for details.
- Required standing for graduation:  
Arts and Social Sciences subjects require a GPA of 2.70 (3.70 for first class) on classes in the honours subjects.  
Science subjects (see below) require a GPA of 3.00 (3.70 for first class) in classes in the honours subjects.
- May be combined with minor(s)

Note: If the student has a minor, classes in the honours subjects and the minor are included in the honours GPA.

Bachelor of Arts combined honours subjects: Canadian studies, classics, contemporary studies, creative writing, early modern studies, English, French, gender and women's studies, German, history, history of science & technology, international development studies, Italian studies, music, philosophy, political science, religious studies, Russian studies, social anthropology, sociology, Spanish, theatre and computer science, Environment, Sustainability, and Society or any of the BSc honours subjects.

### 3.d BSc Combined Honours (20 Credit)

- One writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subjects (see 2, page 131)
- One credit in math (see page 131)
- Minimum of 11, maximum of 14 credits beyond the 1000-level in two subjects, not more than nine credits nor fewer than five credits being in either of them with a grade of C or better.
- Total credits required above the 1000 level - 12
- Total credits required for degree - 20
- Honours Qualifying Examination: see concentrated honours program above for details.
- Required standing for graduation:  
GPA of 3.00 (3.70 for first class) on classes in the honours subjects.

- May be combined with minor(s)

Bachelor of Science combined honours subjects: biochemistry and molecular biology, biology, chemistry, earth sciences, economics, environmental science\*, marine biology, mathematics, microbiology & immunology, neuroscience, ocean sciences, oceanography\*\*, physics, psychology and statistics. Choose both subjects from the BSc honours subjects listed above or combine one of the BSc honours subjects with one of the BA combined honours subjects provided the larger number of honours credits is in a science subject or with computer science or Environmental Sustainability, and Society.

\* available only in combination with a BA combined honours subject or environmental, sustainability, and society.

\*\* available only in combination with one of chemistry, earth science, marine biology, mathematics, statistics, or physics.

### 3.e BSc Multidisciplinary Honours (20 Credit)

- One credit in a writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subject (see 2, page 131)
- One credit in math (see page 131)
- A total of 12 credits beyond the 1000 level in three or more subjects. A minimum of three and a maximum of five in each of three subjects. Grades must be "C" or better.
- Total credits required for degree - 20
- Three elective credits.
- Honours Qualifying Examination: See Concentrated Honours program above for details.
- Required standing for graduation:  
GPA of 3.00 (3.70 for First Class) on classes in the honours subjects.
- May be combined with minor(s)

Bachelor of Science multidisciplinary honours subjects - at least nine credits of the twenty selected must be from the following subjects: biochemistry, biology, chemistry, computer science, earth sciences, economics, environmental science, mathematics, microbiology & immunology, neuroscience, physics, psychology and statistics.

### 3.f BSc Honours Science Co-op (20 Credit)

Requirements are as for appropriate honours program (described above) with the addition of the following:

- A minimum of three co-op work terms

### 3.g Joint Honours: Dalhousie University - Mount Saint Vincent University

Special arrangements exist under which students may be permitted to pursue an honours program jointly at Dalhousie and Mount Saint Vincent universities. Interested applicants should consult the appropriate department of their own university at the beginning of the second year. Prospective joint honours students must be accepted by the honours departments concerned at both institutions. These departments supervise the entire program of study of accepted applicants. Students should be aware that not all classes available for credit at Mount Saint Vincent University can be given credit at Dalhousie and vice versa. In order for students to gain a joint honours degree they must satisfy all requirements of both institutions.

## 4. College of Sustainability Degree Programs

The College of Sustainability offers a Double Major and Combined Honours program with any subject in the College of Arts and Science. For complete details about the College, its programs, major/honours requirements and classes please see the College of Sustainability section on page 44 of the Calendar.

## 5. Minor Programs

Minor programs comprise a minimum of three and a maximum of four and a half credits in a defined subject area, above the 1000 level. Students minoring in a Faculty of Science subject may take up to six credits in the minor subject. Minors can be added to any 20 credit BA or BSc degree. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements.

For BA students, when a minor subject is taken in conjunction with an honours program, grades in the minor subject must be "C" or better. Please also note that a

class cannot be used to satisfy both the major or honours subject requirement and the minor requirement.

Please refer to the list below for minor options.

### 5.a Minor Options - College of Arts and Science

The following minor options are available in the Faculty of Arts and Social Sciences:

- Abrahamic Religions
- American Studies
- Ancient History
- Ancient Philosophy
- Applied Ethics
- Arabic Studies
- Bioethics
- Canadian Studies
- Chinese Studies
- Classical Literature
- Classics
- Classics: Medieval Philosophy
- Contemporary Studies
- Early Modern Studies
- English
- Environmental Studies (only available in a 20 credit degree)
- Film Studies
- French
- Gender and Women's Studies
- German
- German Philosophy
- German Studies
- Hispanic Cultures
- Hispanic Literature
- History of Science and Technology
- International Development Studies
- Italian Studies
- Latin American Studies
- Middle East Studies
- Philosophy
- Philosophy of Mind and Cognitive Science
- Philosophy of Science
- Political Science
- Popular Culture Studies
- Russian Studies
- Sociology and Social Anthropology of Critical Health Studies
- Sociology and Social Anthropology of Economy, Work and Development
- Sociology and Social Anthropology of Social Justice and Inequality
- Sociology and Social Anthropology
- Spanish Language
- Theatre

The following minor options are available in the Faculty of Science:

- Biochemistry and Molecular Biology
- Biology
- Chemistry
- Earth Science
- Economics
- Environmental Science
- Geography (only available in a 20 credit degree)
- Marine Biology
- Mathematics
- Microbiology and Immunology
- Neuroscience
- Oceanography
- Physics
- Psychology
- Statistics

### 5.b Minor Requirements

Consult specific departmental pages for minor requirements or the list below.

#### *Minor in Abrahamic Religions*

Students declaring a Minor in the Abrahamic Religions will complete a minimum of three credits to a maximum of four and a half credits, chosen from the lists

below. At least one-half class must be taken from each of the Judaism, Christianity and Islam lists; RELS 3019 and 3382 may each be used to satisfy parts of this requirement.

#### Judaism classes

- RELS 2001.03: Judaism
- RELS 2220.03: Ancient Israel
- RELS 3018.03: Meetings between Hellenism and the East to Philo the Jew
- ARBC 3050.03: Arabic Philosophical Texts: Maimonides

Or

- RELS 4011.03: Jewish Philosophy: Maimonides
- RELS 4019.03: Philo Judaeus

#### Christianity classes

- RELS 2281.03: Christian Beginnings: The Orthodox and Oriental Churches
- RELS 2282.03: Christian Beginnings: Catholicism
- RELS 3009.03: Christianity in the Lands of Islam
- RELS 3381.03: Medieval Philosophy from Anselm to Augustine
- RELS 3411.03: St. Augustine's Confessions I
- RELS 3412.03: St. Augustine's Confessions II
- RELS 3431.03: St. Augustine's On the Trinity Part I
- RELS 3432.03: St. Augustine's On the Trinity Part II
- CLAS 3841.03: Latin Philosophical Texts: Aquinas Texts
- CLAS 3842.03: Latin Philosophical Texts: Anselm and Bonaventure Texts
- CLAS 4070.03: The Confessions in Latin
- CLAS 4400.06: Philosophy of the Church Fathers
- CLAS 4018.03: Christian Theology in Islamic Lands: John of Damascus

#### Islam classes

- RELS 2003.03: Islam
- RELS 2052.03: Cultural Introduction to the Arab World
- ARBC 3040.03: Arabic Philosophical Texts: al-Ghazali

Or

- RELS 4010.03: Islamic Philosophy: al-Ghazali
- RELS 3003.03: Islam and the Others
- RELS 3012.03: Sufism
- RELS 2503.03: Classical and Medieval History of Islamic Civilization
- RELS 3510.03: Sultans and Shahs: Polity and Religion in the Islamic Gunpowder Age.
- CLAS 3602.03: Classical and Medieval History of the Persianate World

#### Bridging classes

- RELS 2203.03: Philosophy and God
- RELS 3000.03: Topics in Religious Studies
- RELS 3019.03: Meetings between Hellenism, Judaism, Christianity, and Islam until the Renaissance
- RELS 3382.03: Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- RELS 3910.06: Neoplatonism: Plato and Neoplatonism
- RELS 4450.06: Medieval Interpreters of Aristotle
- CLAS 4500.06: Seminar on Neoplatonism

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

#### *Minor in Business*

The minor in business is available to students registered in the BA, BSc 20 credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following credits:

- COMM 2202.03, COMM 2303.03, COMM 2401.03, COMM 3511.03
- one full credit in commerce at or above the 2000 level

Please note that at least half of the credits required for the minor must be completed at Dalhousie. Additionally, students are responsible for completing the following required prerequisite classes:

- COMM 1010.03, COMM 1101.03, COMM 1502.03
- ECON 1101.03, ECON 1102.03
- For BA: MATH 1115.03

For BSc: MATH 1000.03 or MATH 1010.03 or MATH 2030.03

#### *Minor in Community Design*

The minor in community design is available to students registered in the BA, BSc 20 credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:

- Required credits: PLAN 1001.03 and PLAN 1002.03

- Elective credits:  
Eight additional half-credits (24 credit hours) from among PLAN class (with exception of PLAN 4001, 4002, 4050, 4100 and 4500 which are restricted to Honours BCD students). Consult the university timetable and calendar for current PLAN offerings and pre-requisites.

**Note:** Space in community design class is limited. Students in the minor are admitted to classes only when space permits following registration of the BCD students, not all classes are offered every year. Students should plan for at least four more semesters after completing PLAN 1001 and 1002 to complete the requirements.

### **Minor in Computer Science**

The minor in computer science is available to students registered in the BSc 20 credit major and honours programs. The requirements are as for the appropriate program with the completion of the following classes:

- CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2132.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, CSCI 3136.03 and CSCI 3171.03
- One additional CSCI half-credit at or above the 3000 level
- One and one half additional CSCI credits at or above the 2000 level

The selection of CSCI classes for a minor in computer science excludes CSCI 2100.03 and CSCI 3101.03

### **Minor in Food Science**

The minor in food science is available to students registered in the BSc 20 credit major and honours programs. The requirements are as for the appropriate program with completion of:

- FOSC 1000
- four full credits (eight half credits) from approved list of electives for Food Science

### **Minor in Health Studies**

The minor in health studies is available to students registered in the BA, 20 credit major and honours programs. The requirements are as for appropriate degree program including four full credits as described in Health Studies (FASS). To count towards the minor, a minimum grade of B- is required.

### **Minor in Journalism Studies**

The minor in journalism studies is available to students registered in the BA or BSc 20 credit major and honours programs. The requirements are as for the appropriate program, with completion of the following classes:

- JOUR 1001.06
- JOUR 2000.03
- HSTC 2400.03 (BSc only)
- Journalism Electives:
  - BSc - 3.0 full credits
  - BA - 3.5 full credits.

See Journalism (FASS) for further details.

### **Minor in Law & Society**

The minor in law and society is available to students registered in the BA and BSc 20 credit major and honours programs. The requirements are as for the appropriate degree program with completion of the following classes:

- LAWS 2500X/Y.06 (with a minimum grade of B-)
- The equivalent of three full classes from the list of approved classes. See Law and Society (FASS) for further details. To count towards the minor, a minimum grade of B- is required.

### **Minor in Management**

The minor in Management is available to students registered in all BA, BSc 20 credit Major and Honours programs. The requirements are as for the appropriate degree program, with the following credits:

- MGMT 1000.03 and MGMT 1001.03 (Managing Organizational Issues 1 and 2)
- ECON 1101.03 and ECON 1102.03 (Microeconomics and Macroeconomics)
- MGMT 1501.03 (Statistics for Managers)
- Three half credits chosen from:
  - MGMT 2101.03 (Financial Accounting)
  - MGMT 2303.03 (People, Work and Organizations 1)
  - MGMT 2401.03 (Introduction to Marketing)

- MGMT 2801.03 (Government Structure)
- MGMT 2601.03 (Knowledge Management)
- MGMT 2702.03 (Resource and Environmental Management)
- Two full credits above the 2000 level in MGMT.

Please note that some MGMT classes have additional prerequisite requirements.

### **Minor in Middle East Studies**

Students minoring in Middle East Studies select three full credits from the list below. Student are required to take one of the following: HIST 2502, HIST 2503, HIST 2504, RELS 2001 or RELS 2003. At least one half credit must be at the 3000 or 4000 level. Please note that not all classes are offered each year.

#### **Second Year**

- ARBC 2020 X/Y: Intermediate Arabic
- ARBC 2100: A Cultural Introduction to the Arab World (HIST 2500, RELS 2053)
- CLAS 2100: Ancient Mythology
- CLAS 2216: Alexander the Great (HIST 2089)
- CLAS 2220: Ancient Israel (HIST 2520, RELS 2220)
- CLAS 2281: The Orthodox and Oriental Churches
- CLAS 2900 X/Y: Intermediate Hebrew
- HIST 2502: The Ottoman Empire
- HIST 2503: Classical and Medieval History of Islamic Civilization (RELS 2503)
- HIST 2504: History of the Modern Middle East
- HIST 2505: Modern History of Iraq
- RELS 2001: Judaism
- RELS 2003: Islam
- RELS 2008: Science and Medicine in Islamic Societies, 750-1500

#### **Third Year**

- ARBC 3030: Advanced Arabic
- ARBC 3031: Advanced Arabic II (Readings)
- ARBC 3040: Arabic Philosophical Texts (al-Ghazali)
- ARBC 3050: Arabic Philosophical Texts (Maimonides)
- ARBC 3100: Arabic Pre Islamic Poetry
- CLAS 3016: Meetings between Hellenism and the East to Philo the Jew (HIST 3016, RELS 3018)
- CLAS 3017: Meetings between Hellenism, Judaism, Christianity and Islam (HIST 3017, RELS 3019)
- CLAS 3021: Ancient Art and Architecture
- CLAS 3382: Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- CLAS 3501: Herodotus
- CLAS 3502: Thucydides and the Greek World at War (HIST 3502)
- HIST 3509: Arab Caliphs, Turkish Commanders, Persian Viziers, 750-1200 (CLAS 3601)
- HIST 3510: Sultans and Shahs, 1500-1800 (RELS 3510)
- HIST 3511: Ancient and Medieval History of the Persianate World (CLAS 3602)
- HIST 3512: Modern History of Iran
- HIST 3513: From Cairo to Capetown
- HIST 3515: Food for Thought
- RELS 3001: Islam and Others
- RELS 3009: Christianity in the Lands of Islam
- RELS 3012: Sufism

#### **Fourth Year**

- CLAS 4011: Jewish Philosophy: Maimonides (RELS 4011)
- CLAS 4018: John of Damascus (RELS 4018)
- CLAS 4019: Philo Judaeus
- CLAS 4110 X/Y: Rome and the East
- CLAS 4525 X/Y: The World of Herodotus
- HIST 4510: Topics in Middle Eastern and Islamic History
- HIST 4545: Scripture and Statecraft: History of Islamic Political Thought
- HIST 4550: Orientalism and Occidentalism
- HIST 4555: Arab Intellectuals and their Ideologies in the Modern Period
- RELS 4010: Islamic Philosophy: al-Ghazali

## B. BA (15 Credit) Programs

### 1. With Minor

- First Year  
No more than three full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 131)
- One credit in a **single** language/humanities subject (see 1, page 131)
- One credit in a **single** social science subject (see 2, page 131)
- One credit in a **single** life or physical science subject (see 3, page 131)
- One credit in a **single** language (see page 131)
- Minimum of three, maximum of four and a half credits in the minor subject at the 2000 level or higher.
- Within the last 10 credits, complete one credit in each of two subjects other than the subject of the minor.
- Total credits required above 1000 level - 7
- Total credits required for degree - 15
- Required GPA for graduation - 2.00
- Graduation with distinction - 3.70

Bachelor of Arts minor subjects: any of the approved minors in either the Faculty of Arts and Social Sciences or the Faculty of Science. See section 5.a.

## C. BSc (15 Credit) Programs

### 1. With Minor

- One writing class (see page 131)
- One credit in one or more language/humanities subjects (see 1, page 131)
- One credit in one or more social science subjects (see 2, page 131)
- One credit in math (see page 131)
- Minimum of three, maximum of six credits in the minor subject at the 2000 level or higher.
- Total credits required above 1000 level - 7
- Total credits required for degree - 15
- Required GPA for graduation - 2.00
- Graduation with distinction - 3.70

Bachelor of Science minor subjects: any of the approved minors in the Faculty of Science. See section 5.a.

### 2. Upgrading of a BA or BSc (15 Credit) to a BA or BSc Major (20 Credit)

A person who holds a Dalhousie BA or BSc (15 credit) degree may apply through the Registrar's Office for admission to a major program. On completion of the required work with proper standing, a conversion certificate will be awarded which has the effect of upgrading the degree to major status.

### 3. Upgrading of a BA or BSc (15 or 20 Credit) to a BA or BSc Honours (20 Credit)

A person who holds a Dalhousie BA or BSc (15 or 20 credit) degree may apply through the Registrar's Office with the appropriate department advisor(s) approval, to an Honours program. On completion of the required work with proper standing, a certificate will be awarded which has the effect of upgrading the degree to honours status.

## D. Concurrent Programs

### 1. BSc/BEng

Students who meet the admission requirements for the Bachelor of Science program and the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Assistant Dean, Faculty of Science and the Associate Dean, Faculty of Engineering. Students accepted will normally complete the 15 credit BSc and the first two years of engineering studies leading to the Diploma in Engineering (DipEng) concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. This opportunity should appeal to students with career objectives in multi-disciplinary fields such as biomedical engineering, environmental science, or materials science (among others). It is thus possible to complete the requirements for the Bachelor of Science and Bachelor of Engineering degrees concurrently in a time period of five years in total (or up to six years for co-op programs).

### 2. BA/BEng

Students wishing to do so may complete the 15 credit BA degree program and the first two years of engineering studies leading to the Diploma in Engineering (DipEng) concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. It is thus possible to complete the requirements for the Bachelor of Engineering and the Bachelor of Arts degrees concurrently in a time period of five years in total (or up to six years for co-op programs).

Students who meet the admission requirements for the Bachelor of Arts and Bachelor of Engineering programs are eligible to select this concurrent degree option. Students wishing specific advice should consult the Associate Dean, Faculty of Engineering and the department for the BA subject of concentration.

Classes in the fourth and fifth years are those required to finish the Bachelor of Engineering degree.

## E. Individual Programs

In cases where students feel their academic needs are not satisfied under the above requirements, individual programs may be submitted to the Student Affairs Committee of the Faculty of Arts and Social Sciences or to the curriculum committee of the Faculty of Science prior to or during the student's second academic year. The Dean shall act as advisor for such students.

## F. Other Degree and Diploma Programs

### 1. Bachelor of Music

For the requirements of this degree, see the entry for the Department of Music.

### 2. Diploma in Costume Studies

Study for this credential is entirely within the Department of Theatre. See the entry for that department for detailed information.

### 3. Diploma in Meteorology

Details of the requirements for this diploma may be found in the entry of the Department of Physics and Atmospheric Science.

## G. Certificate Programs

### 1. Certificate of Proficiency in French

For the requirements for this certificate, see the French Department entry, page 195.

### 2. Certificate of Proficiency in German

For the requirements for this certificate see the German Department entry, see page 212.

### 3. Certificate of Proficiency in Spanish

For the requirements for this certificate, see the Spanish and Latin American Studies Department entry, page 315.

### 4. Certificate of Proficiency in Russian

For the requirements for this certificate, see the Russian Studies Department entry, page 296.

### 5. Certificate in Forensic Psychology

Note: This certificate is not available in the 2013/2014 academic year.

### 6. Certificate in Information Technology

All BSc students will be provided with a basic level of competency in the use of current IT tools. Finding, retrieving, and preparing electronic documents and communicating electronically become second-nature to all science students. In many programs students work frequently with symbolic calculation packages such as mathematics and MAPLE, statistical packages such as S-Plus, and numerical packages. Others develop proficiency in a scientific type-setting environment such as LaTeX or produce Web documents in HTML format. Databases, CAD, GIS, and spreadsheets; a variety of hardware and operating systems experience further round out the set of skills of many science graduates.

The Faculty of Science Certificate in IT provides a discipline-based program to students majoring in earth sciences, mathematics, physics or statistics. Certificate in IT will be awarded if you complete:

1. The (20 credit) major or honours program in one of the following: earth sciences, mathematics, physics, statistics;
2. The classes identified by the major department which cover the following categories of IT.

#### **Presentations**

- Proficiency in developing online presentations, including object linking
- Ability to produce documents in HTML and/or XML format
- Creation of a personal website
- Data Collection
- Construct a relational database using multiple tables and data entry forms for textual, numeric, and graphical data
- Do the above with a spreadsheet
- Collect and process multivariate data sets, e.g., spatial coordinate data using GIS, and incorporate it into a database, CAD or GIS

#### **Data Manipulation**

- Editing, transformation, import-export to different data formats within and between spreadsheets, databases, and support programs

#### **Data Processing**

- Basic manipulation of multivariate data and analysis, e.g., GIS manipulation of spacial data sets
- Statistical evaluation of data sets using spreadsheet functions, stats programs, ex. SYSTAT, S-Plus
- Numeric modeling using spreadsheets, GIS etc.

#### **Data Visualization**

- Graphing in 2D and 3D, time series etc.
- Surface modeling
- Fundamentals of animation

#### **General Issues**

- Intellectual property in the digital world
- Ethics and privacy
- Security (viruses, firewalls, data encryption)

The IT skills will be covered within the regular discipline-based classes of the major. They are presently available for students registered in the major or honours programs of earth sciences, mathematics, physics or statistics. Consult each department's Web page for a listing of the appropriate classes which will meet the requirement of the IT Certificate.

### **7. Certificate in Actuarial and Financial Mathematics**

For the requirements for this certification, see the Mathematics and Statistics departmental entry.

### **8. Certification in Applied and Computational Mathematics**

For the requirements for this certification, see the Mathematics and Statistics departmental entry.

### **9. Certificate in Medicinal Chemistry**

For the requirements for this certification, see the Chemistry departmental entry.

### **10. Certificate in Materials Science**

For the requirements for this certificate, see the Chemistry departmental entry.

### **11. Certificate in Animal Behaviour**

For the requirement for this certificate see the Psychology and Biology departmental entries.

### **12. Certificate in Environmental Impact Assessment (EIA)**

For the requirement for this certificate, see the Biology departmental entry.

### **13. Certificate in Geographic Information Science**

For the requirement for this certificate, see the Biology departmental entry.

### **14. Certificate in Intercultural Communication**

The Certificate in Intercultural Communication is open to students from any Faculty at Dalhousie, and welcomes both Canadian and International students. It offers the globally-minded student an opportunity to combine academic and experiential learning in order to understand and communicate more effectively with people from cultures different from their own.

Contact Person: Professor Liliana De Antueno

Location: McCain 2012

Contact information: 494-6810 Liliana.De.Antueno@dal.ca

1. **Academic components** (graduate students may receive advance standing for these components)

- a) One full academic credit focusing on the understanding of culture, chosen from the list below.
- b) Foreign/second language at or beyond the 2000-level or equivalent  
N.B. This requirement is satisfied:
  - i) by taking foreign/second language classes at Dalhousie at the second-year level
  - ii) if the student is a native speaker of a language other than English and studying at Dal
  - iii) by non-credit community-based learning of such languages as Mi'kmaq or American Sign Language

N.B. Approval of the advisor is required for those students wishing to satisfy this requirement by options (b) or (c) above.

2. **Extended experiential component**

- a) Minimum one semester work or study abroad (or at Dalhousie for international students)

OR

- b) Minimum (75 hours) volunteering or working in an intercultural context within Canada

N.B. Students may satisfy this requirement by a blending of work/study abroad for less than one full semester and a local volunteer or work placement.

Students wishing to satisfy this requirement by a volunteer or work placement, or a blend of study abroad and work/volunteer placement, need the approval of the advisor.

3. **Theoretical and practical understanding of issues in intercultural communication (one-half credit required: ASSC 3150.03).**

**Classes satisfying the Academic credit for the Certificate in Intercultural Communication (one full credit, six credit hours, required):**

ENGL 2090.03: Literature, Migration, and Citizenship

ENGL 3070.03: 20<sup>th</sup> Century African-American Novel

ENGL 3086.03: Post-Colonial Literature

FREN 3125.03: The Francophone World

FREN 3150.03: Aspects de la francophonie

GWST 1015.03: Gender and Diversity

GWST 2053.03: Women and Islam

HIST 2384.03/SPAN 2109: Cuba from Colonial Times

HIST 2385.03/SPAN 2110: Cuban Cultural Revolution

HIST 2386.03: Colonial Latin America

HIST 2387.03: Latin America. Since Independence

HIST 2425.03: Africa Before 1900

HIST 2006.03: Atlantic World 1450-1650

HIST 2007.03: Atlantic World 1650-1800

HIST 2426.03: Africa Since 1900

HIST 2500.03: Cultural Introduction to Arab World

HIST 2504.03: A History of the Modern Middle East

HIST 3452.03: South Africa Since 1860

HIST 3471.03: Wars and Revolutions in Twentieth-Century Africa

HIST 4360.03: Slavery & US Political Culture

INTD 2001.03: Introduction to Development I

INTD 2002.03: Introduction to Development II

INTD 2045.03: Indian Society

INTD 2106.03: Africa: An Introduction

PHIL 2475.03: Justice in Global Perspective

POLI 3315.03: African Politics

POLI 3320.03: European Politics

POLI 3360.03: Politics in Latin America

NURS 2080.03: Social and Cultural Determinants of Health

SOSA 1000.06: Culture and Society

SOSA 1050.06: Explorations in Culture and Society

SOSA 1100.06: Introduction to Anthropology

SOSA 2001.06: Ethnography in a Global Context  
 SOSA 2190.06: Comparative Perspectives on Gender  
 SOSA 2200.06: The Family in Comparative Perspective  
 SOSA 2291.06: Goblins, Ghosts, Gods, Gurus  
 SOSA 2400.06: Health and Illness Across Cultures  
 SOSA 2401.06: Food and Eating Across Cultures  
 SOSA 3014.03: Rethinking Culture and Class  
 SOSA 3091.03: The Sociology of Culture  
 SOSA 3149.03: Childhood in Cross-Cultural Perspective  
 SOSA 3206.03: Ethnicity, Nationalism and Race  
 SOSA 3225.03: Culture, Rights and Power  
 SOSA 3228.03: Belief Systems: Symbol, Myth and Meaning  
 SOSA 3165.03: People and Cultures of the World: Selected Area Studies  
 SOSA 3168.03: Issues in Latin American Society  
 SOSA 3310.03: Indian Society: Change and Continuity  
 SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America  
 SOSA 3002.03: Native Peoples of Canada

SLWK 3220.03: Cross-Cultural Issues and Social Work Practice  
 SLWK 3160.03: Social Work with Aboriginal Populations  
 SLWK 3245.03: Queer Centred Social Work Practice  
 SLWK 3110.03: Africentric Perspectives in Social Work  
 SLWK 3120.03: International Social Work

## Interdisciplinary Studies

Students can choose among the interdisciplinary programs listed below. Students can major in a particular interdisciplinary area of study in their undergraduate program; they can combine an interdisciplinary program with another program, or they can combine two interdisciplinary areas of study. These programs draw on classes from several departments, and in some cases from different Faculties.

For more information regarding these programs students should consult the following calendar entries:

- Canadian Studies, see page 144
- College of Sustainability, see page 44
- Community Design, see page 160
- Contemporary Studies, see page 160
- Early Modern Studies, see page 169
- European Studies, see page 188
- Film Studies, see page 192
- Gender and Women's Studies, see page 202
- Geography, see page 521
- Health Studies, see page 216
- History of Science and Technology, see page 235
- Integrated Science Program (DISP), see page 526
- International Development Studies, see page 242
- Law and Society, see page 255
- Linguistics, see page 256
- Science, Interdisciplinary Classes, see page 583

# Faculty of Arts and Social Sciences

Location: 6135 University Avenue, Room 3030  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-1440  
Fax: (902) 494-1957  
Website: <http://arts.dal.ca/>

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)  
Telephone: (902) 494-1439

## Associate Dean Academic

Rogers, D. M., BA (Waterloo), MA (Western Ontario), PhD (Toronto)  
Telephone: (902) 494-1254

## Associate Dean Research

Harvey, F., BA, MA, PhD (McGill)  
Telephone: (902) 494-6605

## Assistant Dean (Students)

Matthias, D., BA, MA, PhD (Toronto)  
Telephone: (902) 494-6898

## Alumni and Donor Relations Officer

Armstrong, K., BA (McGill), BJ (King's)  
Telephone: (902) 494-6288

## Secretary

Evans, D., BA (Toronto), MA, PhD (Rutgers)  
Telephone: (902) 494-6925

## Administrator

Nielsen, S., BBA (MSVU), MBA (Dalhousie)  
Telephone: (902) 494-1441

## I. Introduction

The Faculty of Arts and Social Sciences includes humanities, social sciences, languages, and performing arts. Within the Faculty's departments and interdisciplinary programs, you can get involved in music and theatre at a professional level. Or you can find out how to do social surveys or archival research. Try out your language-learning abilities in French, German, Spanish, Italian, Russian, Arabic, Mandarin, or maybe Hebrew, Latin, or Greek. Study abroad for a term or a year, and you will develop your skills in cross-cultural interaction. Sharpen your reasoning powers and writing skills by taking literature and philosophy classes that teach advanced levels of reading and analysis.

By exploring various academic disciplines, you'll find that your curiosity about the world and your hopes of a career can be fulfilled in many different ways. You may find that a particular discipline exactly suits your needs. Or you may want to design a class of studies that engages you in a wider variety of departments and programs. You may find everything you need within the disciplines grouped in this Faculty. Or perhaps you will seek out the programs that combine this Faculty's offerings with ones from other Faculties. Professors and administrators, advisors and instructors, will all help to guide you as you choose classes and programs. Our goal is to help you to see differently, and to see your way to a bright future!

## II. Departments and Programs of the Faculty of Arts and Social Sciences

Arabic  
Business  
Canadian Studies  
Chinese (Mandarin)  
Classics  
Cognitive Science (Philosophy)  
Community Design  
Contemporary Studies  
Costume Studies (Theatre)  
Creative Writing  
Early Modern Studies  
English  
Environmental Science  
Environmental Studies  
Environment, Sustainability, and Society  
European Studies  
Film Studies  
Food Science  
French  
Gender and Women's Studies  
German  
Health Studies  
History  
History of Science and Technology  
International Development Studies  
Italian Studies  
Journalism Studies  
Law and Society  
Linguistics (admission suspended)  
Music  
Philosophy  
Political Science  
Religious Studies  
Russian Studies  
Sociology and Social Anthropology  
Spanish and Latin American Studies  
Theatre

## African Studies

Location: Henry Hicks Academic Administration Building, Room 339  
PO Box 15000  
Halifax, NS B3H 4R2  
Director: Theresa Ulicki  
Telephone: (902) 494-1377/3814  
Fax: (902) 494-2105

### Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA  
(Canterbury), PhD (Toronto)

Dalhousie University offers a set of classes in different disciplines which focus on Africa. NOTE: This is not a program leading to a degree in African Studies.

The Dalhousie Centre for African Studies, established in 1975, coordinates seminars and research programs in African Studies. Its faculty associates hold appointments in the social sciences, humanities and professional schools. Undergraduate classes on Africa are usually available in History, International Development Studies, Political Science and Sociology and Social Anthropology. Other classes with a broader Third World focus, which usually includes African content, are offered in Comparative Religion, Economics, English, Health, and Law.

Students interested in Africa are encouraged to select classes from these several disciplines which concentrate on the continent. These could be included in single or combined major or honours programs in Economics, History, International Development Studies, Political Science and/or Sociology and Social Anthropology.

## Arabic

Location: Marion McCain Arts and Social Sciences Building  
Department of Classics, Room 1172  
6135 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3468  
Fax: (902) 494-2467  
Email: claswww@dal.ca

Classes in Arabic are administered by the Classics Department, page 151.

### A. Minor in Arabic Studies

Students must take three full-credits from the following list:

Required:

- ARBC 2020.06

And two credits selected from the following:

- ARBC 2100.03 Cultural Introduction to the Arab World
- ARBC 3030.03 Advanced Arabic I
- ARBC 3031.03 Advanced Arabic II
- ARBC 3040.03 Arabic Philosophical Texts: al-Ghazali or RELS 4010.03 Islamic Philosophy: al-Ghazali
- ARBC 3050.03 Arabic Philosophical Texts: Maimonides or RELS 4011.03 Jewish Philosophy: Maimonides
- ARBC 3100.03 Arabic Pre-Islamic Poetry
- CLAS 2281.03 Christian Beginnings: The Orthodox and Oriental Churches
- CLAS 3017.03 Meetings between Hellenism, Judaism, Christianity, and Islam until the Renaissance
- CLAS 3382.03 Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- RELS 2003.03 Islam
- RELS 3003.03 Islam and the Others
- RELS 3009.03 Christianity in the Lands of Islam
- RELS 3012.03 Sufism
- RELS 4018.03 Christian Theology in Islamic Lands: John of Damascus

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

Please note:

Students wishing to take ARBC 1020X/Y.06 must take the Arabic Placement Test (APT). This test is administered by the instructor at the beginning of the regular academic session.

### B. Minor in Middle East Studies

See 5.b, page 136 for information about a Minor in Middle East Studies.

#### ARBC 1020X/Y.06: Introduction to Arabic.

Introduction to Arabic is a course which focuses on the acquisition of the elementary foundation in Arabic language. It also offers basic information regarding the Arab world: ancient and modern culture and civilization, daily life, religions, literature, etc. The variety of Arabic offered by this class is Modern Standard Arabic, which represents the Arabic language nowadays used in all Arab countries in formal communication. Modern Standard Arabic is used in writing, but it is also a spoken language used in many formal situations.

This class aims to cover: writing with Arabic characters, reading simple original texts in Arabic, the basic components of Arabic grammar and basic daily vocabulary. Some elements of spoken Arabic varieties (dialects) may be offered as well in the second term.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. This class fulfils the BA language requirement.

INSTRUCTOR(S): D.R. Firanescu

FORMAT: Lecture

EXCLUSION: ASSC 1020X/Y.06



**ARBC 2020X/Y.06: Intermediate Arabic.**

This class aims at consolidating the grammar and vocabulary acquired at the first level (Introduction to Arabic), and to improve reading and correct use of the syntactical structures in both oral and written communication. The course will also provide the student with the foundation necessary for reading standard forms of Arabic prose (especially newspapers) and for using Modern Standard Arabic in conversation. Written and oral translations from Arabic into English and vice-versa will be frequently proposed to the students in order to attain this purpose.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): D.R. Firanescu

FORMAT: Lecture

PREREQUISITE: ARBC 1020.06, or permission of the instructor

EXCLUSION: ASSC 2020.06

**ARBC 2100.03: A Cultural Introduction to the Arab World.**

This class, offered in English, aims at providing students with the basic tools for approaching the Arab world from a cultural perspective. It offers an overview of the Arabic Islamic and Christian cultural heritage from the Classical ages through the modern and contemporary periods, with accent on literature, myths, mentalities, arts, etc.

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 2052.03, HIST 2500.03

**ARBC 3030.03: Advanced Arabic I.**

This class is a continuation of Intermediate Arabic (ARBC 2020). The course is designed to: (1) consolidate the knowledge acquired in Modern Standard Arabic at the previous level(s); cursorily reading texts without vocalization, acquiring more complex notions of grammar and vocabulary, translating from Arabic into English; and (2) to add new morphological forms (especially verbal and nominal derived forms, passive of verbs, irregular forms, etc.) and more complex syntactical structures, extended vocabulary, developed conversation abilities, translation from English into Arabic and composition skills.

INSTRUCTOR(S): D.R. Firanescu

FORMAT: Lecture

PREREQUISITE: ARBC 2020 or permission of the instructor

**ARBC 3031.03: Advanced Arabic II: Literary Readings.**

This class is given in Arabic for native speakers of Arabic and non-native students with a high command of Modern Standard Arabic. It is primarily designed to develop, at a high level, the students command of Modern Standard Arabic through the reading and discussion of selected texts of Classical and modern Arabic literature (poetry and prose). The texts offer access to the highest linguistic level in Arabic, to elaborated syntactic structures and semantic issues, as well as to a rich and nuanced vocabulary.

INSTRUCTOR(S): D.R. Firanescu

FORMAT: Lecture

PREREQUISITE: ARBC 3030 or permission of the instructor.

**ARBC 3040.03: Arabic Philosophical Texts: al-Ghazali.**

Abu Hamid al-Ghazali (1058-1111) is one of the greatest Muslim thinkers of all time. This course is an introduction to his thought, based on a selection of passages in the original Arabic for advanced students of Arabic.

INSTRUCTOR(S): A. Treiger

FORMAT: Lecture/seminar

PREREQUISITE: ARBC 3030, and an introductory level class in Classics or Religious Studies, or permission of the instructor

**ARBC 3050.03: Arabic Philosophical Texts: Maimonides.**

Moses Maimonides (1135-1204) is one of the greatest Jewish thinkers of all time. Though he wrote some of his legal works in Hebrew, his major philosophical works were written in Arabic. This course is an introduction to his thought, based on a selection of passages from his The Guide of the Perplexed and other works in the original Arabic for advanced students of Arabic.

FORMAT: Lecture/seminar

PREREQUISITE: ARBC 3030, and introductory level class in Classics or Religious Studies, or permission of the instructor

EXCLUSION: RELS 4011.03; CLAS 4011.03

**ARBC 3100.03: Arabic Pre-Islamic Poetry.**

This course offers an overview of the best pieces of the earliest poetry composed in Arabic language, in the Arabian Peninsula, within a period which preceded Islam. It focuses on the so-called "Suspended Poems" (Al-Mu'allaqat), considered as the master-pieces of seven (or ten, according to different sources) Arabian poets such as Imru' al-Qays, Tarafa, Antara, Zuhayr, etc.

NOTE: This class will be offered in English and is based on English translations of the poems. The course does not require previous notions or knowledge of the Arabic language. The required bibliography will be in English as well.

FORMAT: Lecture/seminar

CROSS-LISTING: CLAS 3100

RESTRICTION: Students must be beyond the first year of study.

## Arts and Social Sciences

### ASSC 1000.03: Introduction to Computing for Non-Majors.

This is a class of technical computer literacy. Students can expect to learn about computers in a general way and how computers affect the way we live and work. Students will be given an opportunity to become familiar with typical applications of software such as word processors, spreadsheets and database applications.

Other topics will include the use of the internet, creation of web pages, and simple programming concepts. No previous computer experience is required. This class is open to Arts and Social Sciences and Health Education students only.

NOTE: This class cannot be taken by BMgmt and BScRBM students. This class cannot be counted towards the Bachelor of Commerce or a Minor in Business

FORMAT: Lecture/lab

CROSS-LISTING: CSCI 1200.03

EXCLUSION: COMP 1000.03, MGMT 1601.03, LIBS 1601.03, COMM 1501.03

### ASSC 1025X/Y.06: Introduction to Modern Hebrew.

The class is designed for beginners or for students with a weak Hebrew background. It provides training in reading, writing, listening and speaking. By the end of the class the student will be able to communicate in oral and written Hebrew within the range of his/her knowledge.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

### ASSC 1040.03: Culture, Society & International Students.

This class is designed for international students. It aims to discuss the basic elements of culture and society relative to the challenges of academic integration in a Canadian university. Students will reflect on various cultural contexts through a series of learning activities organized around two salient issues confronting international students: a.) the internationalization of Canadian education; and b.) the problems and prospects of immigrating to Canada. It will highlight cultural forms such as art, music & dance, literature, sports & film; and succinct discussions of major social institutions like the family, education, religion and state. This aims to enable students to examine critically the similarities and differences across societies and cultures where they face the challenges of social and academic adjustment to a successful learning experience.

FORMAT: Lecture/discussion & tutorial

### ASSC 1050.03: Foundations for Learning.

This class, open to all first year students at the university, introduces participants to university culture, and helps them to enhance academic performance.

Classroom experiences build a practical understanding of the learning process at the university level, enabling students to develop strategies to be more effective learners.

Topics include performance expectations, conventions of academic critical reading and writing, research methods, discipline-specific learning strategies, knowledge management, learning communities, self-evaluation methods, and effective use of university resources.

FORMAT: Lecture/seminar

PREREQUISITE: Students with 30 credit hours or less; or permission of Assistant Dean (Students) from the appropriate faculty.

### ASSC 1100.03: Interdisciplinary Issues in Career Development.

This class examines theoretical and practical issues in career development. Participating in the portfolio process, students will apply theoretical understandings to experientially based activities. Through assessing personal environmental factors that impact decision-making, students will create a purposeful context for viewing their careers. Class content will include principles, theories and practices relating to: the meaning and nature of work, self and identity, career choice and decision-making, issues and strategies in self-assessment, occupational research and the future of work. Special issues will also be considered, such as gender, culture, job loss and the management of a career

portfolio. This is a half credit class that is taken as part of a regular degree program.

NOTE: A related class in occupations (OCCU 2000.03) is offered by the School of Occupational Therapy. See Occupational Therapy section and see Section 5 of the Degree Requirements section of this Calendar regarding Arts and Science electives.

FORMAT: Lecture/discussion/tutorial

EXCLUSION: MGMT 1000.03

### ASSC 3100X/Y.06: Communication and Mentoring.

This class examines the fundamental principles of human communication, leadership, mentoring and group dynamics. Through the application of theory to practice, students will experientially reflect on their own communication, facilitation, leadership, coaching and mentoring skills. Opportunities for skill applications will occur in class as well as through a practicum component. This is a full credit class that is taken as part of a regular degree program.

NOTE: This is a limited enrolment class for which a signature is required. If you are interested in taking this class, please contact Learning Connections, Killam Library, 6225 University Avenue, Halifax, Nova Scotia B3H 4H8. Phone: (902) 494-3077.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion/ tutorial

EXCLUSION: MGMT 1002.03 plus MGMT 1003.03 if ASSC2100.03 plus

ASSC 3100.06 are taken. LIBS 1002.03 plus LIBS 1003.03 if ASSC 2100.03

plus ASSC 3100.06 are taken

### ASSC 3112.03: Writing Theory.

This class considers a range of approaches to writing. Students read widely in rhetoric and composition theory, participate in the ongoing conversation about writing, and heighten their understanding of the composition process. Writing intensive and writing centred, the class is ideal for anyone interested in writing and critical thinking.

INSTRUCTOR(S): Lyn Bennett

FORMAT: Lecture/discussion

PREREQUISITE: Instructor's permission required

CROSS-LISTING: ENGL 3112.03

EXCLUSION: ASSC 3110.06XY/ENGL 3111.06XY

### ASSC 3113.03: Writing Practice.

This class puts writing theory into practice. As part of their class work, students gain valuable experience working as writing tutors and/or assistant editors for an academic journal. The class is ideal preparation for careers in teaching or publishing, as well as for students going on to do graduate work.

PREREQUISITE: ASSC 3112.03 / ENGL 3112.03 or ENGL 2202.03 or instructor's permission

CROSS-LISTING: ENGL 3113.03

EXCLUSION: ASSC 3110.06X/Y / ENGL 3111.06X/Y

### ASSC 3150.03: Intercultural Communication.

In this highly interactive class, students will study and apply key concepts of intercultural communication with the goal of developing an empathic understanding of other cultures and an ability to communicate effectively across cultures. Topics include: Awareness of one's own culture (values, norms) and of variations within it; verbal and nonverbal elements of communication, hierarchy ("power distance"), collectivism vs individualism, direct/indirect communication styles, conflict management styles.

FORMAT: Lecture, discussion

PREREQUISITE: Open to undergraduate students with at least 45 credit hours, or to any graduate student

### ASSC 3311.03: Interdisciplinary Special Topics I.

This is an interdisciplinary class that investigates a subject in the arts or social science which does not emerge from a particular discipline. The topic will be announced in the year prior to the class being offered.

FORMAT: Lecture or Seminar

PREREQUISITE: At least 2 classes at the 2000 level in an arts or social science subject

### ASSC 3312.03: Interdisciplinary Special Topics II.

This is an interdisciplinary class that investigates a subject in the arts or social science which does not emerge from a particular discipline. The topic will be announced in the year prior to the class being offered.

FORMAT: Lecture or Seminar

PREREQUISITE: At least 2 Classes at the 2000 level in an arts or social sciences subject

## ASSC 4010X/Y.06: Teaching English as a Second Language.

Students must obtain a Letter of Permission from Dalhousie University to take this class. Students must then apply, register and pay fees for this class at the International Language Institute. In cooperation with the Royal Society of Arts (RSA), the University of Cambridge Local Examinations Syndicate (UCLES), and the International Language Institute (ILI), Dalhousie offers an intensive class leading to a Certificate of English Teaching to Adults (CELTA). The syllabus covers six major areas: (1) language awareness, (2) the learner, the teacher, and the teaching/learning context, (3) planning, (4) classroom management and teaching skills, (5) resources and materials, (6) professional development. The teacher-in-training conducts classes with actual adult learners. Critical feedback is provided on teaching practice, written assignments and evidence of professional development through the class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. A certificate (CELTA) will be awarded when both terms are completed successfully.

INSTRUCTOR(S): UCLES-approved staff of the International Language Institute  
FORMAT: Lab/tutorial/teaching practice

PREREQUISITE: Must be in good standing as third or fourth year university student

## ASSC 4020X/Y.06: Editing and Publishing.

This seminar will introduce students to theories and practices of editing and publishing in both print and digital media. As participants in this experiential-learning seminar, students will accumulate specific skills and develop a portfolio relevant to working in the field of academic publishing. By providing practical experience with print and web-based publishing projects, the seminar will allow students to work in collaboration with the professor on the production of edited texts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Seminar participants must have already completed 60 university credits or the equivalent of 10 full courses.

## ASSC 4311.03: Interdisciplinary Special Topics III.

This is an interdisciplinary class that investigates a subject in the arts or social science which does not emerge from a particular discipline. The topic will be announced in the year prior to the class being offered.

FORMAT: Lecture or Seminar

PREREQUISITE: At least 2 classes at the 2000 level in an arts or social sciences subject

# Canadian Studies

Location: Multidisciplinary Centre  
1376 LeMarchant Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2980  
Fax: (902) 494-1909  
Email: [cana@dal.ca](mailto:cana@dal.ca)  
Website: <http://www.dal.ca/cana>  
Administrator: Jessica Mailhiot

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA  
(Canterbury), PhD (Toronto)

## Coordinator

Wunker, Erin (494-6901)

## Faculty

Barker, R. (Theatre)  
Bannister, J. (History)  
Bednarski, B. (French)  
Binkley, M. (SOSA)  
Blais, J. (Music)  
Black, D. (Political Science)  
Buszard, D. (Environmental Programs)  
Campbell, C. (History)  
Carbert, L. (Political Science)  
Dawson, C. (English)  
Elson, C. (French)  
Girard, P. (Law)  
Good, K. (Political Science)  
Irvine, D. (English)  
Kierans, K. (University of King's College/Journalism)  
Lesser, B. (Economics)  
Mannell, S. (Architecture)  
Noble, B. (SOSA)  
Oore, I. (French)  
Overton, D. (Theatre)  
Radice, M. (SOSA)  
Ramos, H. (SOSA)  
Summerby-Murray, R. (History)  
Tillotson, S. (History)  
Turnbull, L. (Political Science)  
Wunker, E. (English)  
Zentilli, M. (Earth Sciences)

## The Canadian Studies Program

### I. Introduction

Why Canadian Studies at Dalhousie? In this era of globalized exchange, and a growing sense of international citizenship and responsibilities, Canadian Studies programs are enjoying something of a renaissance. Knowing ourselves and understanding our place in the world as Canadians remains an urgent task for students and scholars alike.

Canadian Studies at Dalhousie University has always been based upon a very strong tradition of research and teaching in a wide range of Faculty of Arts and Social Science and Faculty of Science departments and in other associated faculties and professional schools such as Health Professions, Law, and the King's School of Journalism. The Dalhousie Canadian Studies Program, with its various options, allows students to deepen their understanding of Canada in an exciting and coherent interdisciplinary context. As a second field of study leading to a

Minor, a Double Major or a Combined Honours BA or BSc, it provides the opportunity to enrich and enhance a student's work on Canadian topics beyond his or her primary departmental home. To this end, Canadian Studies provides both a group of core classes that study Canada from an interdisciplinary perspective, and a long list of electives cross-listed in other departments throughout the University.

Former students of Canadian Studies have found that this interdisciplinary study has been of benefit to them in a wide range of activities and careers including journalism, teaching at all levels, and graduate and professional studies.

## II. Requirements

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section of this calendar

### BA(15 credit) Minor in Canadian Studies

See requirements for minor below.

#### Minor in Canadian Studies

##### 1000 level

One full-credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

##### Required:

- CANA 2000X/Y.06: The Idea of Canada: An Introduction
- A minimum of two and a half and a maximum of three and a half credits from the list of electives. CANA 3000.03 and CANA 4000.03 may count towards this requirement.

### BA or BSc (20 credit) Double Major in Canadian Studies

##### 1000 level

One full credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

##### 2000 - 4000 level

A minimum of five and a maximum of eight credits of Canadian Studies classes, for a total of a minimum of 10 and a maximum of 14 credits in the two major subjects.

##### Required:

- CANA 2000X/Y.06: The Idea of Canada: An Introduction.
- CANA 3000.03: Interdisciplinary Approaches to Canadian Themes
- CANA 4000.03: Canadian Studies Senior Seminar
- Further Canadian Studies electives as required. CANA 4001.03: Research Topics in Canadian Studies may count toward this requirement.

### BA or BSc (20 credit) Combined Honours in Canadian Studies

##### 1000 level

One full credit class in French (a class in an aboriginal language may be substituted, as a transfer credit).

##### 2000 - 4000 level

A minimum of five and a maximum of eight credits of Canadian Studies classes, with a minimum of 11 and a maximum of 14 credits beyond the 1000-level in the two honours subjects.

##### Required:

- CANA 2000X/Y.06: The Idea of Canada: An Introduction.
- CANA 3000.03: Interdisciplinary Approaches to Canadian Themes
- CANA 4000.03: Canadian Studies Senior Seminar
- CANA 4001.03: Research Topics in Canadian Studies
- Further Canadian Studies electives as required.

## III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year's offerings.

### CANA 1101.03: Halifax in the World.

Walking across the Dalhousie campus while drinking a coffee and talking on your phone connects you to people around the world and to the history and literature of Halifax, Canada and the World in ways that you probably never imagined: your coffee connects you to the peasant farmers in Ethiopia or Guatemala who grew the beans. Your phone call connects you to child soldiers in Africa who fight over coltan – one of the key minerals in cell phones. Your footsteps across campus place you on what was once Mi'kmaq territory and when you walk through Halifax you re-trace the footsteps of key characters in the history and literature of the city and the world.

This half-credit summer class explores these and other similar connections as well as the ethical questions that they raise about our daily lives. The class will engage you in both hands on action and academic research to learn about and confront the many connections between our daily lives, our city and the rest of the world.

NOTE: To see the course outline, meet the professors and learn more about the course, see: [www.dal.ca/ids](http://www.dal.ca/ids)

FORMAT: Lectures/seminars/site visits

CROSS-LISTING: INTD 1101.03

EXCLUSION: INTD 1100.06, CANA 1100.06

### CANA 2000X/Y.06: The Idea of Canada: An Introduction.

This class employs an interdisciplinary approach to focus on selected themes in Canadian history and society. Beginning with the premise that a nation is, fundamentally, a "narration," it asks: "What sorts of stories do Canadians tell about themselves? Thus the class is centred on important texts - novels, poems, films, songs, and political documents - that relate formative events in Canadian history and that point to new, sometimes contested, directions for the future. Themes may include, but are not restricted to: First Nations; multiculturalism; wilderness; the north; regional identity; and foreign policy.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Team-taught by two cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.

FORMAT: Lecture/discussion

### CANA 2004.03: Canadian Literature.

From early exploration narratives to contemporary fiction, this class will survey a wide range of key texts in the development of Canadian literature in English. It will consider the literary and historical contexts that inform our readings, and identify and interrogate the various myths, images, icons and institutions that structure our ideas of what it means to be Canadian.

FORMAT: Lecture

PREREQUISITE: ENGL 1000.06 or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03 or THEA 1000.06 or Kings FYP

CROSS-LISTING: ENGL 2004.03

EXCLUSION: ENGL 2207.03

### CANA 2111.03: Is there an Atlantic Canada?

This class will examine the historical and contemporary social issues related to the Maritimes and Atlantic Provinces. The class will critically question what is meant by "Atlantic Canada" and look at its social, demographic, economic, and cultural trends in relation to the rest of the country. Attention will be given to the role of Acadians, Mi'kmaq, and African Nova Scotians as well as dominant power holders in the construction of Atlantic Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

CROSS-LISTING: SOSA 2111.03

### CANA 2115.03: African Canadian Society, Culture, and Resistance.

There has been a presence of African peoples in Canada for over 400 years; however, the rich histories of African-Canadian people have been often ignored. This class examines African Canadian society and culture from the historical to contemporary period. Topics will include historical analyses, slavery, patterns of immigration and settlement, family, continental African and diasporic

connections, identity, arts and culture, education, employment, justice and the law, the media, diasporic debates, Black struggles and resistance, and African Canadian achievements. The class will be taught from a critical race and gender perspective, and will include readings about the diverse Black communities across Canada. There has been a presence of African peoples in Canada for over 400 years; however, the rich histories of African-Canadian people have been often ignored. This class examines African Canadian society and culture from the historical to contemporary period. Topics will include historical analyses, slavery, patterns of immigration and settlement, family, continental African and diasporic connections, identity, arts and culture, education, employment, justice and the law, the media, diasporic debates, Black struggles and resistance, and African Canadian achievements. The class will be taught from a critical race and gender perspective, and will include readings about the diverse Black communities across Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000XY.06, SOSA 1050XY.06, or 1200XY.06

CROSS-LISTING: SOSA 2115.03

### **CANA 2207.03: Canada's origins to 1763.**

This class explores Canada's origins to 1763. It covers the history of First Nations peoples before and after the arrival of Europeans. It addresses themes such as the role of the physical environment; the fur, fish, and timber trades; and the imperial struggle for dominance in North America. While the lectures will narrate the major developments in the seventeenth and eighteenth centuries, the tutorials will focus on specific issues, such as the role of treaties in Canadian history. The class climaxes with the Conquest of Quebec and the end of the Seven Years War.

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2207.03

### **CANA 2208.03: Patriots, Rebels, Refugees: Canada's roots in the Age of Revolution, 1763 to 1860.**

As empires continued their international contest and Britain fought to maintain colonies within North America, old and new inhabitants of what would become Canada also wrestled with questions concerning who would exercise power within their communities and governing bodies. In the process they gave new and, at times, conflicting answers to old questions: what did it mean to be a patriot? who and what were they willing to defend? who and what were they prepared to resist? Immigrants, exiles and the refugees of European and North American wars shaped new homelands, even as the First Nations peoples became refugees within their own lands. In this class we explore the related questions of loyalty and conscience through the diaries and letters of men and women defining their place in a new order.

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2208.03

### **CANA 2210.03: Many Canadas: Canada, 1930 to the present.**

For class description please see HIST 2210 in the History section of the calendar.

FORMAT: Lecture / tutorial

CROSS-LISTING: HIST 2210

### **CANA 3000.03: Interdisciplinary Approaches to Canadian Themes.**

This multidisciplinary seminar provides students with the opportunity to consider the structure and content of Canadian society from a variety of academic viewpoints, including the philosophical, historical, political, sociological, geographical, legal and literary. Professors discuss the study of Canada seen from their different disciplinary perspectives, while the class coordinator leads a weekly tutorial. The theme for 2012-2013 was Interpreting Canadian Environments

INSTRUCTOR(S): Please consult the Canadian Studies website.

FORMAT: Seminar

### **CANA 3568.03: Canada and the World.**

This class examines post-World War II Canadian Foreign Policy in two parts: (1) an analysis of 'landmark' policy issues; and (2) an investigation of the general factors that help to "explain" the form and content of Canadian foreign policy, with particular reference to the institutions and processes through which policy decisions are made. Issues discussed are likely to include: the "invention" of

peacekeeping; the Mulroney government's involvement in the campaign to end apartheid in South Africa; the negotiation of the North American free trade; the politics of immigration and diasporas; and the place of the Arctic in Canada and international relations.

FORMAT: Seminar

PREREQUISITE: Class in international politics, Canadian politics, or Canadian history in the 20th century, or with the permission of the instructor.

CROSS-LISTING: POLI 3568.03

### **CANA 4000.03: Seminar in Canadian Studies.**

The class will explore in depth a single Canadian issue, topic or theme that crosses disciplinary borders. Along with the class instructor, cross-appointed faculty from different departments will share their view on the subject. Topics might include aboriginal issues, Canada as a maritime nation, or Canadian film. The topic for 2012-2013 was Urban Canada.

NOTE: CANA 4000.03 is also open, as an elective class, to Faculty of Arts and Social Sciences students with an interest in Canadian Studies who may not complete the Canadian-content requirements for the Emphasis, Minor or Joint Degrees

INSTRUCTOR(S): Please consult the Canadian Studies website.

FORMAT: Seminar/tutorial

### **CANA 4000.03: Seminar in Canadian Studies.**

The class will explore in depth a single Canadian issue, topic or theme that crosses disciplinary borders. Along with the class instructor, cross-appointed faculty from different departments will share their view on the subject. Topics might include aboriginal issues, Canada as a maritime nation, or Canadian film. The topic for 2012-2013 was Urban Canada.

NOTE: CANA 4000.03 is also open, as an elective class, to Faculty of Arts and Social Sciences students with an interest in Canadian Studies who may not complete the Canadian-content requirements for the Emphasis, Minor or Joint Degrees

INSTRUCTOR(S): Please consult the Canadian Studies website.

FORMAT: Seminar/tutorial

### **CANA 4001.03: Research Topics in Canadian Studies.**

This class will provide students with an opportunity to develop, in close consultation with a faculty member, a topic in Canadian Studies usually growing out of the work done in the seminar CANA 4000.03. Research will culminate in the writing of a major research paper. There will be regular one-to-one meetings with the chosen faculty member and progress meetings of the whole group. It is mandatory for those completing a Combined Honours in Canadian Studies and is highly recommended for those seeking the Emphasis or Double Major in Canadian Studies.

INSTRUCTOR(S): Canadian Studies Coordinator

FORMAT: Seminar/tutorial

PREREQUISITE: CANA 4000.03 or permission of the instructor

## **IV. Canadian Studies Electives**

NOTE: Some classes may not be offered every year. Please consult the current timetable to determine if these classes are offered. More detailed information can be obtained from the Canadian Studies office.

In addition to the classes listed below, appropriate classes in other departments may be taken as Canadian Studies credits, with the permission of the Instructor concerned and the Coordinator.

### **CANA 2004.03: Canadian Literature.**

From early exploration narratives to contemporary fiction, this class will survey a wide range of key texts in the development of Canadian literature in English. It will consider the literary and historical contexts that inform our readings, and identify and interrogate the various myths, images, icons and institutions that structure our ideas of what it means to be Canadian.

FORMAT: Lecture

PREREQUISITE: ENGL 1000.06 or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03 or THEA 1000.06 or Kings FYP

CROSS-LISTING: ENGL 2004.03

EXCLUSION: ENGL 2207.03

**CANA 2021.03: CANA 2022.03: Language and Culture.**

Normally follows FREN 1045X/Y.06 or 1050X/Y.06, and is taken in the second year of study. This class provides the opportunity to practice and improve language skills (vocabulary and grammar) already acquired. Each year sections offer topics from the options listed below. Each section focuses upon a broad cultural topic via which language skills are developed. No prior knowledge of the topic is supposed. Various readings lead to discussions and oral presentations. Descriptions for sections offered in a specific year may be obtained in April from the Department. All classes and assignments are entirely in French. A maximum of two sections may be taken under the class designation of FREN 2021.03 and 2022.03. Approved in part with Canadian Studies (topic 7) and IDS (topic 3).

Topic 01: Le Journalisme: I. Oore

Topic 02: La Société française à travers la littérature

Topic 03: La Civilisation francophone de l'Afrique occidentale et des Antilles: J.-C. Kasende

Topic 04: Etudes acadiennes

Topic 05: Monuments culturels de Paris

Topic 06: La France et ses photographes

Topic 07: Québécois et Québécoises célèbres:

Topic 08: Contes et légendes

Topic 09: Nature et culture: C. Elson

Topic 10: L'Art en France depuis la Révolution

Topic 11: Voyages culturels à travers la France

Topic 12: Le roman policier

Topic 13: Aspects du cinéma français et francophone: C. Elson

Topic 14: Faim et festin: I. Black

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level Placement

Test result, or instructor's permission

CROSS-LISTING: FREN 2021.03

**CANA 2110X/Y.06: Exploring Canadian Society.**

This is a class about the nature of Canadian society and how it came to be what it is. It explores the basis for several of the major agreements and conflicts among Canadians which have been central to our social and economic development since we became a nation. The themes for lectures will include: dilemmas in Canada's relationship with the United States; prospects for the future of English-French relations; centralization, disadvantage and the disunity; the role of the elites in social and economic development; understanding changes in the political power of Western Canada; aboriginal and nonaboriginal values versus claims and counter claims. These topics will be introduced in an approach which is designed to help students understand why sources of unity and disunity have been central to social life in Canada.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: SOSA 1100X/Y.06, SOSA 1050Z/Y.06, SOSA 1100X/Y.06

SOSA 1200X/Y. POLI 2210 recommended.

CROSS-LISTING: SOSA 2110.06

**CANA 2203.03: Approches du texte littéraire/ Approaches to Literary Texts.**

An introduction to the critical reading of a selection of literary texts (various genres and periods) with an emphasis on Québec literature. The close analysis of short texts will lead to discussions of the broader nature of recurring images and myths as well as central themes. Strongly recommended for French majors and Honours students. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06, or 2000-level

Placement Test result

CROSS-LISTING: FREN 2203.03

**CANA 2207.03: Canada's Origins to 1763.**

This class explores Canada's origins to 1763. It covers the history of First Nations peoples before and after the arrival of Europeans. It addresses themes such as the role of the physical environment; the fur, fish, and timber trades; and the imperial struggle for dominance in North America. While the lectures will narrate the major developments in the seventeenth and eighteenth centuries, the tutorials will

focus on specific issues, such as the role of treaties in Canadian history. The class climaxes with the Conquest of Quebec and the end of the Seven Years War.

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2207.03

**CANA 2208.03: Patriots, Rebels, Refugees: Canada's roots in the Age of Revolution, 1763 to 1860.**

As empires continued their international contest and Britain fought to maintain colonies within North America, old and new inhabitants of what would become Canada also wrestled with questions concerning who would exercise power within their communities and governing bodies. In the process they gave new and, at times, conflicting answers to old questions: what did it mean to be a patriot? who and what were they willing to defend? who and what were they prepared to resist? Immigrants, exiles and the refugees of European and North American wars shaped new homelands, even as the First Nations peoples became refugees within their own lands. In this class we explore the related questions of loyalty and conscience through the diaries and letters of men and women defining their place in a new order.

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2208.03

**CANA 2210.03: Many Canadas: Canada, 1930 to the present.**

For class description please see HIST 2210 in the History section of the calendar.

FORMAT: Lecture / tutorial

CROSS-LISTING: HIST 2210

**CANA 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates.**

Canada's economy today faces many problems: unemployment, productivity, income distribution, environmental protection, trade relations, federal-provincial fiscal relations, maintenance of social programs, etc. What are the most important economic policy issues that Canada now faces? What is the appropriate policy role for government?

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, 1102.03

CROSS-LISTING: ECON 2218.03

**CANA 3008.03: Canadian Society and Politics.**

This class about the nature of Canadian society has as its focus the study of structures and events which shape social and political organization in Canada. There is not only one way to understand Canadian society: generations of historians, political scientists and economists have provided valuable insights as to why Canadians have believed or acted or voted in one way or another. Sociology and Social Anthropology have helped to understand Canada in terms of contexts and conditions of life which have shaped the evolution of society as we know it. The class explores issues, events, discontents and groups which have produced the recurrent themes that underlie social life in Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

RECOMMENDED: SOSA 2110 or another course on Canadian society and/or politics.

CROSS-LISTING: SOSA 3008.03

**CANA 3009.03: Public Opinion in Canada.**

This class will introduce students to the study of public opinion in Canada and impact on informed decision making. In particular, the focus will be upon ideas and issues which have been held by groups and been influenced by the media. The lectures would explore the basis of our knowledge about the formation and change of public opinion relative to other forms of collective behaviour. We will present and analyze data relating to the role of public opinion in explaining and predicting political events.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, 1100X/Y.06, 1050X/Y.06 and 1200X/Y.06

CROSS-LISTING: SOSA 3009.03

**CANA 3020.03: Canadian Cultural Landscapes.**

This class explores the stories behind Canada's distinct regional landscapes. It begins with the idea that each province has a certain identity within the national framework - a 'signature' landscape - and this identity can be traced to a particular historical relationship with a particular place or environment. By examining the origins of these different landscapes, we can better understand how different geographies shaped both local and national histories, and also the regional tensions and differences with national borders. At the same time, we can appreciate how nature has been understood, used and transformed since the fifteenth century.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: CANA 2000 or other class approved with Canadian Studies, or Instructor/Coordinator approval

CROSS-LISTING: GEOG 3210.03, HIST 3210.03

**CANA 3026.03: Le français québécois/ Quebec French.**

Definition, origin and evolution of the French of Quebec. Study of its phonetic, lexical, morphosyntactic and semantic characteristics. Comparison with Canadian French outside of Quebec and with international French. Analysis of written and oral documents for the purpose of illustration. Approved with Linguistics.

FORMAT: Lecture

PREREQUISITE: FREN 2045X/Y.06 or instructor's permission

CROSS-LISTING: FREN 3026.03

**CANA 3108.03: Experiential Learning: Canada.**

See INTD 3108.03

CROSS-LISTING: INTD 3108.03

**CANA 3185.03: Issues in the Study of Indigenous Peoples of North America.**

This seminar is concerned with the historical background of the Native-European situation in North America and with issues arising from this background. Students will research issues which are significant to themselves and important to Native groups. Topics covered may vary from year to year, but will normally include a combination of historical issues such as culture change and contemporary issues such as land claims, self-determination and government policy, and social conditions of Natives. Approved with International Development Studies and Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3185.03

**CANA 3220.03: Coastal Communities in the North Atlantic.**

Coastal communities as a social/ecological type are examined as populations, and social structures (territorial, economic, occupational, political) as they have developed in response to particular ecological and social circumstances. Various perspectives which have been applied to coastal communities are examined with regard to the contribution they may make to understanding the dynamics of these communities. The focus is on North Atlantic communities.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: ENVI 5180.03, GEOG 3220.03, SOSA 3220.03

**CANA 3223.03: The Caring Society? - Welfare in Canada since 1900.**

This class examines changes over the twentieth century in the ways Canadians have dealt with people's needs, their own or others', whether for income, housing, personal care, or other matters of survival and well-being. Both private and government forms of welfare provision will be studied, with the overall purpose of understanding why Canada came to have the kind of welfare state it does. Among the topics that may be covered are: changing views on the origins and prevention

of dependency; definitions of need; religious and ethnic variations in welfare practices; connections between welfare and women's lives; charitable fund-raising; promoters and opponents of government social programs; financing the welfare state; gender, race, constitutional, and class issues in welfare.

FORMAT: Lecture/discussion or seminar

PREREQUISITE: HIST 1702.03 or HIST 1862X/Y.06, HIST 1867X/Y.06 or HIST 2212.03 or HIST 2230X/Y.06 or HIST 2231.03

CROSS-LISTING: HIST 3223.03, HIST 5223.03

**CANA 3245.03: French Canada.**

Given in English for English-speaking students, this class studies the development of French-Canadian nationalist politics in their social, cultural, philosophic and economic contexts. While the emphasis is on Quebec-Canada relations, French-Canadians in the Maritimes, Ontario and the West will also be studied.

FORMAT: Lecture/discussion

PREREQUISITE: One class in Canadian history, or instructor's consent

CROSS-LISTING: HIST 3245.03

EXCLUSION: HIST 2240.03

**CANA 3333.03: News Media and the Courts in Canada.**

See JOUR 3333.03

**CANA 3568.03: Canada and the World.**

This class examines post-World War II Canadian Foreign Policy in two parts: (1) an analysis of 'landmark' policy issues; and (2) an investigation of the general factors that help to "explain" the form and content of Canadian foreign policy, with particular reference to the institutions and processes through which policy decisions are made. Issues discussed are likely to include: the "invention" of peacekeeping; the Mulroney government's involvement in the campaign to end apartheid in South Africa; the negotiation of the North American free trade; the politics of immigration and diasporas; and the place of the Arctic in Canada and international relations.

FORMAT: Seminar

PREREQUISITE: Class in international politics, Canadian politics, or Canadian history in the 20th century, or with the permission of the instructor.

CROSS-LISTING: POLI 3568.03

**CANA 3900.03: CANA 3901.03: La littérature canadienne française/French-Canadian Literature.**

In-depth study of a few major works of French-Canadian literature with emphasis on the period from 1945 to the present day. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

CROSS-LISTING: CANA FREN.03/3901.03

**Other Electives**

CANA 2209.03: Making a Nation

Crosslisting: HIST 2209.03

CANA 2210.03: Many Canadas

Crosslisting: HIST 2210.03

CANA 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade

Crosslisting: ECON 2218.03

Crosslisting: INTD 3102.03

CANA 3008.03: Canadian Society and Politics

Crosslisting: SOSA 3008.03

CANA 3231.03: Modern Canadian Literature

Crosslisting: ENGL 3231.03

CANA 3270.03: Contemporary Canadian Literature

Crosslisting: ENGL 3270.03

Crosslisting: FREN 3900.03/FREN 3901.03

CANA 3900.03: French-Canadian Literature

CANA 3910.03: Études acadiennes/Acadian Studies

Crosslisting: FREN 3910.03

CANA 4300.03: Canadian Health Care Delivery System

Crosslisting: HESA 4000.03

CANA 4362.03: Topics in Canadian Music  
 Crosslisting: MUSC 4362.03  
 CANA 4500.03: Canadian Colonial Theatre  
 Crosslisting: THEA 4500.03  
 CANA 4501.03: Canadian Post-Colonial Theatre  
 Crosslisting: THEA 4501.03  
 MSVU CANA 1100X/Y.06: Canadian Culture and Society [as transfer credit]

## Chinese (Mandarin)

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### Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA  
 (Canterbury), PhD (Toronto)

### Coordinator

Luo, Shao-Pin (494-3197), PhD (UNB)

## I. Introduction

A minor in Chinese Studies is an excellent interdisciplinary complement to a course of studies at Dalhousie or King's in any area of arts, social sciences, sciences, or other programmes. Students will attain a solid foundation for further academic, professional, and/or personal explorations of this fascinating country, its history, its culture, and its complex relationship to other parts of Asia as well as to the West.

## II. Minor Degree Program Requirements

A minimum of three full credits (18 credit hours) in Chinese Studies above the 1000 level. Within those three credits, students must include CHIN 2030.06, and at least one full credit above the 2000 level.

**Note:** Minor degree program is available until 2015/2016 academic year.

### A. Interdisciplinary Minor in Popular Culture Studies

#### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

one full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture



- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

### III. Class Descriptions

#### CHIN 1030X/Y.06: Introduction to Chinese (Mandarin).

This class aims to provide basic competence in understanding and speaking Mandarin and reading Chinese characters. It is for students who have had no exposure to Mandarin or Cantonese. This class fulfills the BA language requirement.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture and lab

EXCLUSION: ASSC 2035.06X/Y; native speakers of Chinese (any dialect)

#### CHIN 2030X/Y.06: Intermediate Chinese (Mandarin).

For students with some background in Mandarin Chinese, this class is a continuation of CHIN 1030.06 Introduction to Mandarin. All four language skills—listening and speaking, reading and writing—will be further developed; as well, a broader range of Chinese cultural elements will be introduced.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): S. Luo

PREREQUISITE: CHIN 1030.06 or ASSC 1030.06 or equivalent (placement test required)

EXCLUSION: Native speakers of Chinese (any dialect)

#### CHIN 2050.03: Chinese Culture.

This class explores the historical and literary backgrounds to modern Chinese culture by looking into different cultural characteristics of Chinese values, customs, myths, fables, society and social roles, food, fashion, dance, language and religion. In order to understand what constitutes Chineseness and its transformation, the class also discusses the international contexts of Chinese diasporas (such as Chinese communities in North America, Taiwan, and Southeast Asia) and Western conceptualizations of Chinese culture in relation to other aspects of social life, i.e. economy and politics. No previous background in Chinese language or culture is required.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: None

#### CHIN 2052.03: East Meets West in Popular Culture.

This class is devoted to examining intersections between “West” and “East” through the study of cross-cultural influences in popular literature, cinema, music, and comics in Europe, North America, China, and Japan.

CROSS-LISTING: CTMP 2336.03

#### CHIN 2060.03: Chinese and Japanese Religions.

An introduction to the cultural, religious, and philosophical traditions of China and Japan. Topics to be covered include: Classical Confucianism, Neo-Confucianism, Philosophical and Religious Taoism, Shinto, Chinese and Japanese Buddhism. The class will also examine the interaction, competition, and overlap between these traditions.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture/seminar

CROSS-LISTING: RELS 2012.03

#### CHIN 2070.03: Buddhism.

This class introduces the student to the Buddhist religious tradition, beginning with its origins and early developments in India and followed by a treatment of key themes of later world Buddhism such as meditation, devotion, monasticism, and ritual. The class thus exposes students to both Buddhism's early Indian doctrinal and institutional dimensions, and to aspects of Buddhism as practiced subsequently in China, Japan, and Tibet.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture/seminar

CROSS-LISTING: RELS 2013.03

#### CHIN 2080.03: The East is Read: Early Modern Conceptions of Asian Thought.

This class will consider early modern European interpretations of key Asian texts. The reactions of Early Modern thinkers to the “Oriental World” as it is known, reflect the philosophical concerns of Europeans at different times in the Early Modern period. For example, Enlightenment thinkers sometimes used Asian ideas to criticize European traditions, whereas post-Enlightenment philosophers of history tended to depict the non-Western world as less free or progressive than Western European cultures. Not surprisingly, then, Early Modern conceptions of Asia were often crude or idealized. We will assess both the merits of early modern interpretations of Asian thought and what these interpretations reveal about the self-consciousness of European thinkers in the Early Modern period.

INSTRUCTOR(S): S. Kow

FORMAT: Seminar

CROSS-LISTING: EMPS 2450.03

#### CHIN 2290.03: Emerging Giants: The Economic Rise of China and India.

This class examines the economic history, current issues, and future trends of China and India, answering such questions as: What explains China's and India's growth? How is climate change affected by this growth? How are global labour markets affected? Must growth lead to rising inequality? Is democracy required for development?

INSTRUCTOR(S): T. Cyrus

FORMAT: Lecture

PREREQUISITE: ECON 1101.03 and ECON 1102.03

CROSS-LISTING: ECON 2213.03

#### CHIN 3030X/Y.06: Advanced Chinese (Mandarin).

For Students with intermediate-level background in Mandarin Chinese, this class is a continuation of CHIN 2030.06 Intermediate Chinese (Mandarin). The class aims to develop further the four language skills; listening, speaking, reading, and writing. It seeks to enlarge the students' vocabulary in commonly used characters and phrases and provide students with further understanding of Chinese grammar, abilities to read expository and narrative writings, speaking skills to cope with real life situations, writing skills of short essays, as well as further understanding of Chinese culture and society.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): S. Luo

FORMAT: Lecture and Lab

PREREQUISITE: CHIN 2030.06, or equivalent (placement test required)

EXCLUSION: Native speakers of Chinese (any dialect)

#### CHIN 3050.03: Topics in Asian Cinema.

Each year will focus on specific topics as explored in the cinema of various Asian countries. Particular attention will be paid to how Asian filmmakers employ different cinematic genres in their treatments of diverse aspects of Asian societies and cultures.

INSTRUCTOR(S): S. Kow

FORMAT: Film screening with lecture/discussion

CROSS-LISTING: THEA 3350.03

#### CHIN 3062.03: Modern Chinese Literature in Revolutionary Times.

A survey of representative works in modern Chinese literature, this class is designed to enhance students' understanding of modern Chinese society and culture through reading works by major Chinese authors from the Republican period, over three decades—1919 to 1949. It was a period of cultural clashes between traditional Chinese culture and Western influences, a time of wars, political and ideological struggles and changes. All readings are in English, as is the language of instruction. A background in Chinese language, culture, and/or literature is encouraged but not required.

FORMAT: Lecture and discussion

#### CHIN 3080.03: Literature of the Asian Diaspora.

Literature of the Asian Diaspora encompasses literature written in English by writers of Asian descent and heritage. Each year may have a specific focus, such as Asian Canadian and Asian American, Anglo-Asian, or Asian Australian literature. The class will concern itself with what constitutes Asian diasporic

literature, its various historical and social contexts, as well as its narrative traditions and innovations.  
INSTRUCTOR(S): S. Luo  
FORMAT: Lecture/discussion  
CROSS-LISTING: ENGL 3087.03

# Classics

Location: Marion McCain Arts and Social Sciences Building  
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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

Hankey, W. J. (494-3468)

## Undergraduate Advisor

Varto, E., BA (Queen's), MA (Dalhousie), PhD (UBC)

## Professors Emeriti

Friedrich, R., Dr. Phil. (Göttingen)  
Starnes, C. J., BA (Bishop's), STB (Harv), MA (McGill), PhD (Dalhousie)

## Professor

Hankey, W. J., BA (Vind), MA (Toronto), DPhil (Oxon)

## Associate Professor

Fournier, M., BA, MA (Dalhousie), PhD (BC)

## Assistant Professors

Diamond, E., BA (Vind), MA (Dalhousie), PhD (Northwestern)  
Firanescu, D. R., PhD (Bucharest)  
MacLeod, L. M., BA (Brock) MA, PhD (Dalhousie)  
Mitchell, J., BA (McGill), PhD (Stanford)  
O'Brien, P. H., BA (Vind), MA (Dalhousie), MA, PhD (BU)  
Varto, E., BA (Queen's), MA (Dalhousie), PhD (UBC)

# I. Introduction

Classics is the study of the ancient Greeks and Romans: their myths, mysteries, and games, their epics, comedies, and tragedies, their languages, arts, and architectures, their religions, philosophies, and sciences. We examine how they constructed their relations to nature, literally created "history", and discovered how terrible the human is. We learn their magic, blessings, and curses, their politics and laws, their social structures, and ways of making war. We look at their sex lives, how they died, and what they used for money. Classics tells the story of the rise and fall of their empires, and of what has indelibly lasted after imperial military and political forces collapsed. We investigate how what the Greeks and Romans became depended on encounters with the peoples, cultures, philosophies, technologies of war and peace, politics and religions of Egypt and North Africa, of Judea, Lebanon, and Syria, of Arabia and Persia, and of Tuscany and the Eurasian North. And Classics looks at how, out of those same meetings, new religions and philosophies evolved, giving us the literatures, arts, and politics of Greek, Latin, and Arabic Christianities, of Hebrew, Greek, and Arabic Judaisms, and of Islam. We start from the remotest origins of human history, make a long stop at the "Classical" period, become what some regard as decadent, and go up to the end of the Middle Ages. We are at home in Athens and Rome, in Constantinople and Istanbul, in Carthage, Alexandria and Jerusalem, in Antioch, Damascus, and Baghdad, in Cordoba and Palermo, in Paris, Oxford, Fribourg, and Cologne, and we encamp at Hadrian's Wall, once the boundary of "civilization". Languages, chiefly Greek and Latin, are both our pleasure and our necessity, but Classics is much more than the study of languages, its study lays the foundation of self-knowledge.

Classics at Dalhousie offers the full range of electives and degree programmes: minors, majors, and honours for Bachelor degrees, the Master of Arts, and the PhD. It has specialists in philosophy and religion, in languages and literature, and in history. Students of Classics must learn Greek and Latin, if they wish to take an honours degree or go on to graduate studies in the field. While we recommend that students begin Latin or Greek in their first year, it is quite feasible to start language studies subsequently.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section of this calendar.

### A. BA (20 credit) Honours in Classics

For purposes of meeting grouping requirements, some Ancient and Medieval Philosophy classes may be counted either as Classics credits, or Philosophy credits.

Students must complete between nine to 11 credits in Classics at the 2000 level or above. From these credits, students must take the following:

- five credits in Greek and Latin (two in one; three in the other). Students may choose from: Greek: 1700/2710; 2700; 3700 or any other upper level class offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level class offered in Latin.
- three credits at the 3000 level or higher
- completion of the Honours Examination (Classics 0400.00)

Candidates for Honours and Combined Honours degrees who anticipate continuing their studies at the Graduate level in Classics should consult the calendars of the Graduate Schools of their choice concerning requirements for entry into Graduate programs. It may be the case that additional preparation in the classical languages or in other aspects of ancient civilizations is required for entry into certain programs.

### B. BA (20 credit) Combined Honours in Classics

Classics may be taken as part of a combined honours program with other disciplines. Students interested in such programs should consult with the undergraduate advisors of the respective departments.

Students must complete between five to eight classes in Classics at the 2000 level or higher. From these credits, students must take the following:

- three credits in Greek and/or Latin. Students may choose from:
- Greek: 1700/2710; 2700; 3700 or any other upper level class offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level class offered in Latin.
- two credits at the 3000 level or higher
- completion of the Honours Examination (Classics 0400.00) if the major work is done in Classics

NOTE: Students are urged to apply for Honours as early as possible in their program (applications may be submitted after completion of one year of university). Please consult undergraduate advisor.

### C. BA (20 credit) Major in Classics

Students must complete the faculty requirements for a major. These requirements include six to nine credits in Classics at or above the 2000 level; and three credits at the 3000 level or higher. Students are encouraged to take two language classes in Greek and/or Latin.

### D. BA (20 credit) Double Major in Classics

Students must complete the faculty requirements for a double major. These include 10-14 credits in the Major subjects at the 2000 level or higher with no more than eight and no fewer than five in either. Students must include at least two credits at the 3000 level or higher in each subject.

### E. BA (15 credit) Minor in Classics

See requirements for minor below.

### F. Minor in Classics

Students declaring a Minor in Classics will complete three credits in Classics.

### G. Minor in Ancient History

Students must take three full credits from the following list, including the listed language classes.

- CLAS 2021.03 Ancient Art and Architecture from the Pyramids to the Forum
- CLAS 2027.03 Magic, Religion & Philosophy
- CLAS 2209.03 The Roman World from Constantine to Theodosius
- CLAS 2214.03 The Roots of Greek Civilization
- CLAS 2215.03 The Classical Greek World
- CLAS 2216.03 Alexander the Great and the Hellenistic Kings
- CLAS 2220.03 Ancient Israel
- CLAS 2231.03 The Rise of Rome
- CLAS 2232.03 The Fall of Rome
- CLAS 2233.03 Roman Legions and the Barbarians
- CLAS 2234.03 Death, Sex, and Gold in the Ancient World
- CLAS 2281.03 Christian Beginnings: The Orthodox and Oriental Churches
- CLAS 2282.03 Christian Beginnings: Catholicism
- CLAS 2365.03 Plato and the Case of Socrates: Philosophy on Trial
- CLAS 3016.03 Meetings between Hellenism and the East to Philo the Jew
- CLAS 3017.03 Meetings between Hellenism, Judaism, Christianity, and Islam until the Renaissance
- CLAS 3021.03 Ancient Art and Architecture from the Pyramids to the Forum
- CLAS 3205.03 Fall of the Roman Republic
- CLAS 3501.03 Herodotus: Father of History, Father of Lies
- CLAS 3502.03 Thucydides and the Greek World at War
- CLAS 3780.06 Greek Historians
- CLAS 3791.03 Greek Historians in Translation
- CLAS 3760.06 Reading and Research of Greek Texts (when appropriate)
- CLAS 3850.06 Reading and Research of Latin Texts (when appropriate)
- CLAS 4100.03 Reading and Research in Latin Texts (when appropriate)
- CLAS 4540.03 Ammianus Marcellinus and his World

Not more than one full-credit ancient language may be counted towards the Minor:

- CLAS 2710.06 Greek Prose
- CLAS 2700.06 Intermediate Greek
- CLAS 2810.06 Latin Prose
- CLAS 2800.06 A Study of Latin Prose and Poetry

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

### H. Minor in Classical Literature

Students must take a three full credits from the following list:

- CLAS 2100.06 Gods, Heroes, and Monsters: Ancient Mythology
- CLAS 2515.03 Myth into Film I: the Greek World
- CLAS 2700.06 Intermediate Greek
- CLAS 2710.06 Greek Prose
- CLAS 2800.06 A Study of Latin Prose and Poetry
- CLAS 2810.06 Latin Prose
- CLAS 3515.03 Greek Tragedy
- CLAS 3516.03 Ancient Comedy
- CLAS 3525.03 Ancient Greek Epic
- CLAS 3700.06 Advanced Greek
- CLAS 3760.06 Reading and Research of Greek Texts
- CLAS 3800.06 Roman Satire
- CLAS 3810.06 A Study of Virgil
- CLAS 3820.06 Advanced Latin Literature: Augustan Poetry and Prose
- CLAS 3850.06 Reading and Research of Latin Texts
- CLAS 4710.03 Special Topics
- CLAS 4820.03 Special Topics
- CLAS 4060.03 Boethius and Prosimetrum: Poetry and Prose in the Consolation of Philosophy
- CLAS 4070.03 The Confessions in Latin
- CLAS 4100.03 Reading and Research in Latin Texts
- CLAS 4540.03 Ammianus Marcellinus and his World
- CLAS 4580.03 Reading and Research

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

### I. Minor in Classics: Ancient Philosophy

Students must take three full credits from the following list, including the listed language classes.

The classes are to be chosen from the lists below and must include at least 1.5 credits chosen from:

- CLAS 2365.03 Plato and the Case of Socrates: Philosophy on Trial
- CLAS 2366.03 Gods, Beasts and the Political Animal: Plato, Aristotle, and their Legacy
- CLAS 3400.06 The Dialogues of Plato
- CLAS 3500.06 Aristotle

#### Philosophy classes

- CLAS 2024.03 Philosophy and God
- CLAS 2027.03 Magic, Religion and Philosophy
- CLAS 2365.03 Plato and the Case of Socrates: Philosophy on Trial
- CLAS 2366.03 Gods, Beasts and the Political Animal: Plato, Aristotle, and their Legacy
- CLAS 3016.03 Meetings between Hellenism and the East to Philo the Jew
- CLAS 3017.03 Meetings between Hellenism, Judaism, Christianity, and Islam until the Renaissance
- CLAS 3400.06 The Dialogues of Plato
- CLAS 3411.03 St. Augustine's Confessions I
- CLAS 3412.03 St. Augustine's Confessions II
- CLAS 3431.03 St. Augustine's On the Trinity Part I
- CLAS 3432.03 St. Augustine's On the Trinity Part II
- CLAS 3500.06 Aristotle
- CLAS 3900.06 The Philosophy of Aristotle
- CLAS 3910.06 Neoplatonism: Plato and Neoplatonism
- CLAS 4060.03 Boethius and Prosimetrum: Poetry and Prose in the Consolation of Philosophy
- CLAS 4019.03 Philo Judaeus
- CLAS 4400.06 Philosophy of the Church Fathers
- CLAS 4500.06 Seminar on Neoplatonism
- CLAS 4601.03 Hellenistic Philosophy - Stoics and Epicureans
- CLAS 4602.03 Hellenistic Philosophy - From Scepticism to Neoplatonism

Not more than one full language class may be counted towards the Minor:

- CLAS 2710.06 Greek Prose

OR

- CLAS 2700.06 Intermediate Greek
- CLAS 2810.06 Latin Prose

OR

- CLAS 2800.06 A Study of Latin Prose and Poetry

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

## J. Minor in Classics: Medieval Philosophy

Students must take three full credits from the following list, including the listed language classes.

- CLAS 3381.03 Medieval Philosophy from Anselm to Augustine
- CLAS 3382.03 Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- CLAS 4550.06 Medieval Interpreters of Aristotle
- ARBC 3040.03 Arabic Philosophical Texts: al-Ghazali (or CLAS 4010.03 Islamic Philosophy: al-Ghazali)
- ARBC 3050.03 Arabic Philosophical Texts: Maimonides (or CLAS 4011.03 Jewish Philosophy: Maimonides)
- CLAS 4018.03 Christian Theology in Islamic Lands: John of Damascus

#### Philosophy classes

- CLAS 2024.03 Philosophy and God
- CLAS 2027.03 Magic, Religion and Philosophy
- CLAS 3016.03 Meetings between Hellenism and the East to Philo the Jew
- CLAS 3017.03 Meetings between Hellenism, Judaism, Christianity, and Islam until the Renaissance
- CLAS 3381.03 Medieval Philosophy from Anselm to Augustine
- CLAS 3382.03 Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- CLAS 3411.03 St. Augustine's Confessions I
- CLAS 3412.03 St. Augustine's Confessions II
- CLAS 3431.03 St. Augustine's On the Trinity Part I
- CLAS 3432.03 St. Augustine's On the Trinity Part II
- CLAS 3841.03 Latin Philosophical Texts: Aquinas Texts
- CLAS 3842.03 Latin Philosophical Texts: Anselm and Bonaventure Texts
- CLAS 3910.06 Neoplatonism: Plato and Neoplatonism
- CLAS 4060.03 Boethius and Prosimetrum: Poetry and Prose in the Consolation of Philosophy

- CLAS 4070.03 The Confessions in Latin
- CLAS 4400.06 Philosophy of the Church Fathers
- CLAS 4450.06 Medieval Interpreters of Aristotle
- CLAS 4500.06 Seminar on Neoplatonism
- CLAS 4602.03 Hellenistic Philosophy - From Scepticism to Neoplatonism

Not more than one full-credit language class may be counted towards the Minor:

- ARBC 2020.06 Intermediate Arabic
- ARBC 3030.03 Advanced Arabic I
- ARBC 3031.03 Advanced Arabic II
- CLAS 2700.06 Intermediate Greek
- CLAS 2710.06 Greek Prose
- CLAS 2810.06 Latin Prose and Poetry
- CLAS 2810.06 Latin Prose
- CLAS 2900.06 Intermediate Hebrew

Note: Not all classes are offered each year. Please consult with the timetable for classes offered.

## K. Minor in Middle East Studies

See 5.b, page 136 for information about a Minor in Middle East Studies.

## III. Class Descriptions

### NOTES:

1. Not all classes are offered every year. Please consult the current timetable or the Classics Department (494-3468) to determine this year's offerings.
2. The Introductory classes, and the more elementary classes in Ancient History and Religions, and Classical Philosophy listed below do not require knowledge of the ancient languages. However, students who plan to do advanced work in any of these areas are advised to begin study of the appropriate languages as early as possible.
3. The Department of Classics offers classes at three levels in Arabic. Descriptions for these classes can be found on page 141 of the calendar.

### CLAS 0400.00: Honours Examination.

Details available from the department.

PREREQUISITE: CLAS 2700X/Y.06 or CLAS 2800X/Y.06

### CLAS 1010X/Y.06: Ancient History: God-Kings, Spartans and Caesars.

Consideration of the pre-classical Near Eastern civilizations (Mesopotamian, Egyptian, Hebrew etc.) in the first term is followed in the second by treatment of the civilizations of Greece and Rome. The class concludes with a consideration of the dissolution of Roman Imperial power and the development of the Christian and Islamic cultures. Particular attention will be paid to political, cultural and social history. As the class is intended as an introductory one, no special preparation is expected. There is no foreign language requirement. This class fulfills the first year writing requirement.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing Requirement, Lecture plus tutorials

### CLAS 1022.03: Ancient Art: Rome, Christianity, Europe.

This class will provide a broad introduction to the visual arts from the Etruscan antecedents of the Romans to mature Gothic art. Along the way, we will consider the private and public nature of art, the impact of political, social and cultural context of artistic production and the way in which art may serve as a vehicle for acculturation and the promotion of specific values, among other issues.

FORMAT: Lecture 3 hours

### CLAS 1100X/Y.06: Gods, Heroes, and Monsters: Ancient Mythology.

An introductory survey of the traditional religious narratives of ancient civilizations including Mesopotamia, Egypt, Israel, Greece, and Rome. Of special interest: the function of myth in shaping and expressing a culture's understanding of the divine, the institutions of human community (religion, the family, government), and the natural world; the interrelationships of the myths of those civilizations; the reception of those traditions in the origins of Christian and Islamic culture. The traditional narratives and their broader cultural contexts will be approached through study of primary sources including epic, tragic, and didactic poetry, hymnography, historiography, philosophy, the visual arts, and architecture. This class fulfills the first year writing requirement.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P. O'Brien

FORMAT: Writing requirement, lecture plus tutorials

CROSS-LISTING: RELS 1200X/Y.06, CLAS 2100X/Y.06

EXCLUSION: CLAS 1100, RELS 1200, CLAS 2100

### CLAS 1600.03: Sanskrit I.

This class provides students with all the basic tools required for the study of Sanskrit, with a particular emphasis on basic Sanskrit grammar. Students will learn the Devanagari script, several common nominal forms and the basics of the verbal system, as well as develop a competency in basic reading and recitation.

INSTRUCTOR(S): C. Austin

CROSS-LISTING: RELS 1600.03

### CLAS 1700X/Y.06: Introductory Ancient Greek.

Begin learning the language of ancient Greek poets and philosophers in this introduction to Ancient Greek, through the study of its basic grammar. The aim of the class is to bring the student by the end of the year to read basic passages of ancient Greek texts.

NOTE: Students contemplating honours or combined honours should register in 2710X/Y.06, not 1700X/Y.06.

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Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

### CLAS 1800X/Y.06: Introductory Latin.

Begin learning the language of the ancient Romans in this introduction to Latin, through the study of its basic grammar. The aim of the class is to enable students to read basic Latin texts. NOTE: Students beyond their first year of university study should register under the class code 2810X/Y.06, instead of 1800X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

EXCLUSION: CLAS 1801.03 and 1802.03

### CLAS 1900X/Y.06: Introductory Classical Hebrew.

An introduction to Classical Hebrew through the study of its basic grammar. The aim of the class is to read texts in Hebrew.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture

EXCLUSION: CLAS 1901.03 or 1902.03

### CLAS 2024.03: Philosophy and God.

Does god exist? Can God be known? Have a nature? Do evil? Beginning by occupying the same ground as religion, philosophy has asked these questions. Starting with Pythagoras, Empedocles, Plato, Aristotle, Epicurus, and continuing with their pagan Jewish, Christian, and Islamic followers, we shall learn to state the answers of sages and mystics with historical accuracy and to judge their persuasive power.

INSTRUCTOR(S): W. Hankey

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 2203

### CLAS 2025.03: Nature, the Human, Community and the Divine in the Pre-Modern West.

What is nature? What is the proper relationship between nature and the human being, political community, and divinity? This class will investigate ancient Greek, Roman, Jewish, Christian and Islamic answers to these questions through the study of literature, philosophy, art and architecture of the Pre-Modern West.

FORMAT: Lecture/team-taught

CROSS-LISTING: RELS 2025.03

### CLAS 2026.03: Paganism.

"Pagan" originated as a derogatory Christian designation for ignorant conservative rustics who kept to the pre-Christian religions. We shall look at those religions in their origins, nature, and development in antiquity, their continuations in the Middle Ages and modernity, and their persistence and revival in the contemporary world.

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 2026.03

### CLAS 2027.03: Magic, Religion, and Philosophy.

Reading the Greek Magical Papyri, as well as curse tablets and binding spells from ancient sources, we will explore the intersections of, and relations between, magic, religion, and philosophy in antiquity. The focus will be on both the practical and theoretical aspects of magic in the Greek and Roman worlds.

FORMAT: Lecture

CROSS-LISTING: RELS 2027.03

### CLAS 2100X/Y.06: Gods, Heroes, and Monsters: Ancient Mythology.

An introductory survey of the traditional religious narratives of ancient civilizations including Mesopotamia, Egypt, Israel, Greece, and Rome. Of special interest: the function of myth in shaping and expressing a culture's understanding of the divine, the institutions of human community (religion, the family, government), and the natural world; the interrelationships of the myths of those civilizations; the reception of those traditions in the origins of Christian and Islamic culture. The traditional narratives and their broader cultural contexts will be approached through study of primary sources including epic, tragic, and didactic poetry, hymnography, historiography, philosophy, the visual arts, and architecture.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): P. O'Brien

FORMAT: Lecture

PREREQUISITE: Students must be beyond the first year and have completed the writing requirement

EXCLUSION: CLAS 1100X/Y.06, RELS 1200X/Y.06

### CLAS 2209.03: The Roman World from Constantine to Theodosius (312-395).

This class covers one of the most important periods of Roman history in which Christianity became the dominant religion in the empire and foreign peoples threatened the existence of the empire itself. The class is open to first-year students. There is no foreign language requirement.

FORMAT: Seminar

CROSS-LISTING: HIST 2017.03, RELS 2209.03

EXCLUSION: CLAS 2210X/Y.06, HIST 2004X/Y.06

### CLAS 2214.03: The Roots of Greek Civilization: From Crete and Troy to the Rise of Athens.

A history of Archaic Greek culture from the Bronze Age palaces of Crete and Mycenae through the development of the Greek city-states. Topics to be discussed include prehistory, palaces and shipwrecks, art and archaeology, the world of Homeric poetry, archaic poetry and thought, colonization, and cultural interaction between the Greek world, the Near East, and Egypt. No knowledge of Greek is expected.

INSTRUCTOR(S): E. Varto

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.

CROSS-LISTING: HIST 2088.03

### CLAS 2215.03: The Classical Greek World: Athens, Sparta, and a Century of Conflict.

A history of Classical Greek culture from the rise of Athens and Sparta as the dominant Greek city-states to the fall of Athens in the Peloponnesian Wars and the death of Socrates. Topics to be discussed include the rise of democracy, the culture and society of the Athenian 'Golden Ages', drama, art and architecture, empire building, and the Greeks at war, first with the Persian Empire and then with each other. No knowledge of Greek is expected.

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.

CROSS-LISTING: HIST 2016.03

### CLAS 2216.03: Alexander the Great and the Hellenistic Kings: Transforming Ancient East and West.

A history of Late Classical and Hellenistic Greek culture from the end of the Peloponnesian Wars through the empire of Alexander the Great to the Hellenistic World. Topics to be discussed include relations between and among the Greek city-states and the Persian Empire, developments in art, religion, literature, and

philosophy, the career and legacy of Alexander, and the new world order of kings and kingdoms he ushered in. No knowledge of Greek is expected.

INSTRUCTOR(S): E. Varto

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond the first year and have completed the writing requirement.

CROSS-LISTING: HIST 2089.03

### **CLAS 2220.03: Ancient Israel.**

Students will become familiar with the broad outlines of ancient Israelite history with specific attention to Israel's relationship to her immediate neighbours and the major imperial powers from the 2nd millennium BCE to first century CE. This will entail an initial survey of biblical texts in order to lay an adequate understanding of ancient Israel's self-conception, followed by a detailed survey of Israel's interaction with other nations, including early Mesopotamia, Egypt, Assyria, Babylon, Persia, the Seleucid empire, and Rome.

FORMAT: Lecture and seminar presentations

CROSS-LISTING: HIST 2520.03/RELS 2220.03

### **CLAS 2231.03: The Rise of Rome: Consuls, Classes, and World Conquest.**

How did a little village conquer the world? This class follows Rome's gradual expansion across Latium, Italy, and finally the whole Mediterranean. Questionable myths, aggressive literature, fiery rhetoric, and political propaganda complement the archaeological record as we trace the development and decadence of Republican institutions and the Republic's descent into shattering civil war. Class tensions, continuous foreign conflict, and still famous figures like Brutus, Cato, Cicero, and Caesar feature prominently in this vigorous study of a paradigmatic political and social problem: the destiny of Republican Rome. Students will be expected to familiarise themselves with both primary and secondary materials, but no knowledge of Latin is required. The material covered in this class is continued in CLAS 2232 / HIST 2091.

FORMAT: Lecture and Discussion

PREREQUISITE: Prior fulfillment of the writing requirement

CROSS-LISTING: HIST 2090.03

### **CLAS 2232.03: The Fall of Rome: Caesars, Saints, and Warlords.**

Rome did not fall in a day, or even a century. If the period of Imperial power includes Rome's decadence, it also includes its greatest power and glory. In this chronological survey of the Roman Empire, we will trace the rise of autocracy, the causes of rare but ferocious civil wars, and the transformation of Roman political institutions from Augustus to Diocletian. A lively look at the growth of urban life in the West, at the limits of Roman identity throughout the empire, at the fearful economic and military crisis of the 3rd century, at the adoption of official Christianity, and at the challenges of foreign invasion will lead us to ponder whether the "Decline and Fall" model of Roman imperial history is still valid. Students will be expected to familiarise themselves with both primary and secondary materials, but no knowledge of Latin is required. This class is a continuation of the material covered in CLAS 2231 / HIST 2090 but that is not a prerequisite.

CROSS-LISTING: HIST 2091.03

### **CLAS 2233.03: Roman Legions and the Barbarians.**

This class examines the origins, refinement, and eventual collapse of the Roman military machine. Grand strategy, field tactics, and the analysis of specific battles complement our study of the changing relationship between the army and Roman society and the former's role in building and breaking the political order from 500 BC to 500 AD.

FORMAT: Lecture

CROSS-LISTING: HIST 2023.03

### **CLAS 2234.03: Death, Sex, and Gold in the Ancient Roman World**

We will explore ancient Roman beliefs and practices concerning the afterlife, sexuality, the social duties of men and women, marriage, family life, and slavery. Gladiatorial games, funerals, brothels, temples, and markets are just some of the places at which Romans defined, defended, and denounced each others' identities as mortal, sexual, and economic players. A journey into often alien, always elusive, sometimes alluring aspects of the pre-Christian Mediterranean.

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2092.03

### **CLAS 2281.03: Christian Beginnings: The Orthodox and Oriental Churches.**

This class traces the development of Christianity from its origin as a Jewish sect to its status as the dominant religion within the Byzantine Empire. The Christian religion as patronized by the Eastern Roman Emperors identified itself with the persecuted Christian sect of the first three centuries through the cult of the martyrs, articulated in the increasing importance of relic, icon, and pilgrimage to holy place. The seven ecumenical councils (325-787) progressively defined the Orthodox faith and resulted in the rise of Oriental churches, rejecting aspects of the definitions. Through to our end-date of 843 (when the icon was finally accepted) themes will be treated by attention to historical events (including the rise of Islam), art, architecture, liturgy, and various genres of literature (including hagiography).

FORMAT: Lecture

CROSS-LISTING: RELS 2281.03

EXCLUSION: CLAS 3280X/Y.06

### **CLAS 2282.03: Christian Beginnings: Catholicism.**

This class will consider the formation of Catholicism (Latin Christianity) up to the 12th century in relation to the Greco-Roman context and the barbarian invasions. Moving from North Africa to Western Europe, and using a combination of text, music and artistic, architectural, and archaeological evidence, it will examine the formation of doctrine and discipline in relation to schisms, heresies and Hellenic philosophy, the origin and developments of western monasticism, the papacy, church and state relations, and the construction of liturgy. A theme will be the interplay between the centrifugal and centripetal.

FORMAT: Lecture

CROSS-LISTING: RELS 2282.03

EXCLUSION: CLAS 3280X/Y.06

### **CLAS 2361.03: Ancient Philosophy: From Thales to Plato.**

This class covers the period in Ancient Philosophy from Thales to Plato: Pre-Socratics, Sophists, Minor Socratics, and selected Platonic dialogues. The period from Aristotle to Plotinus is covered in CLAS 2362.03.

INSTRUCTOR(S): E. Diamond

FORMAT: Lecture

CROSS-LISTING: PHIL 2361.03

### **CLAS 2362.03: Ancient Philosophy: From Aristotle to Plotinus.**

This class covers the period in Ancient Philosophy from Aristotle to Plotinus: selected texts of Aristotle, Stoicism, Epicureanism, Pyrrhonian and Academic Scepticism, Middle Platonism, Neoplatonism.

INSTRUCTOR(S): E. Diamond

FORMAT: Lecture

CROSS-LISTING: PHIL 2362.03

### **CLAS 2365.03: Plato and the Case of Socrates: Philosophy on Trial.**

Socrates (469-399 BCE) never wrote a single word, but posed such threat to Athens that a jury put him to death for the alleged ethical corruption and impiety of his thought. This class will explore the revolutionary life and thought of Socrates, and consider whether the jury's decision against him was justified.

FORMAT: Lecture

CROSS-LISTING: RELS 2365, PHIL 2365

### **CLAS 2366.03: Gods, Beasts and The Political Animal: Plato, Aristotle, and their Legacy.**

We will study some of the most important Platonic dialogues and Aristotelian treatises, to understand the supremely influential views of Plato and Aristotle on divinity, nature, the human, and political community. We will examine the rejection of Platonic-Aristotelian idealism by Stoic, Epicurean and Skeptical schools. Subjects treated include ethics, politics, metaphysics, logic, aesthetics, and psychology.

FORMAT: Lecture

CROSS-LISTING: RELS 2366, PHIL 2366

### **CLAS 2515.03: Myth into Film I: The Greek World.**

An introduction to classical myth and culture through the medium of film. Cinema has always drawn on different historical periods, yet its connection with the ancient world remains one of the most significant. This class explores cinema's reconstruction and interpretation of the ancient world, using both ancient and modern sources.

INSTRUCTOR(S): L. MacLeod  
 FORMAT: Lecture & discussion

### CLAS 2600.03: Sanskrit II.

This class develops further the basic grammar and vocabulary of Introductory Sanskrit I, emphasizing the basic past tense verbal systems, participial formations, and translation of simple Sanskrit texts.

INSTRUCTOR(S): C. Austin

PREREQUISITE: RELS 1600.03 or CLAS 1600.03

CROSS-LISTING: RELS 2600.03

### CLAS 2700X/Y.06: Intermediate Greek.

A continuation of CLAS 1700.06 and the normal second-year class in Greek. The work of the class is divided equally between formal grammar sessions and the reading of Greek texts from Xenophon, Lysias and Plato. In the grammar sessions a complete and systematic review of all Greek grammar is undertaken during which the student meets the more difficult forms and constructions which are omitted in CLAS 1700X/Y.06. The aim of the class is to prepare the student to read the philosophical and dramatic texts of the 5th century BC.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 1700X/Y.06 or 2710X/Y.06

### CLAS 2710X/Y.06: Greek Prose.

See description under CLAS 1700X/Y.06. Students beyond their first year of university study should register under this class code (2710X/Y), instead of 1700X/Y.06. For additional information, please consult the Classics undergraduate advisor.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

EXCLUSION: CLAS 1700X/Y.06

### CLAS 2800X/Y.06: A Study of Latin Prose and Poetry.

CLAS 2800X/Y.06 is a continuation of CLAS 1800X/Y.06 or CLAS 2810X/Y.06. A study of the poetry and prose literature of Rome through a selection of texts. Particular attention is paid to improving the students' command of the grammar and syntax of the Latin language.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 1800X/Y.06 or 2810X/Y.06

### CLAS 2810X/Y.06: Introductory Latin (Honours)

See description under CLAS 1800X/Y.06. Students beyond their first year of university study should register under this class code (2810X/Y.06), instead of 1800X/Y.06. For additional information please consult the Classics undergraduate advisor.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

EXCLUSION: CLAS 1800X/Y.06

### CLAS 2900X/Y.06: Intermediate Hebrew.

A continuation of grammar study and translation of selected texts from the Hebrew scriptures.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: CLAS 1901.03 and 1902.03 or equivalent

### CLAS 3016.03: Meetings Between Hellenism and the East to Philo the Jew.

We consider the constitution of Hellenism in relation to Eastern cultures as this emerges in Homer and Herodotus, the emergence of philosophy and the polis. With Alexander and the Hellenistic empires we look at the results and limits of military conquest especially in what is now Afghanistan. The class concludes with the constitution of Jewish religion and culture and its meeting with Hellenism with Philo Judaeus in Alexandria. In order to integrate the presentation of text and art the lectures are all in PowerPoint.

FORMAT: Lecture and Discussion

CROSS-LISTING: HIST 3016, RELS 3018

EXCLUSION: CLAS 2300, CLAS 3015, HIST 3015, RELS 2004

### CLAS 3017.03: Meetings Between Hellenism, Judaism, Christianity and Islam until the Renaissance.

We consider the constitution of Christianity in relation to Hellenism and Judaism during the first six centuries of the Christian era. After treating the constitution of Islam, we consider its meetings with Christianity and Judaism especially in Spain and Norman Sicily. We conclude with medieval Jewish, Christian and Islamic philosophical theologians. Integrating the presentation of text and art the lectures are all in PowerPoint.

FORMAT: Lecture and Discussion

CROSS-LISTING: HIST 3017, RELS 3019

EXCLUSION: CLAS 2300, CLAS 3015, HIST 3015, RELS 2004

### CLAS 3021.03: Ancient Art and Architecture from the Pyramids to the Forum.

This class offers an introduction to the art and architecture of the ancient Near Eastern and Classical worlds, with an emphasis on understanding cultures through their artistic and material remains. Various types and forms of artistic expression will be considered as they develop and change over time and space in their social, political, intellectual, and religious contexts.

FORMAT: Lecture/discussion

EXCLUSION: CLAS 2209.03, HIST 2017.03, CLAS 2021.03

### CLAS 3205.03: Fall of the Roman Republic.

This class covers the end of republican Rome and its metamorphosis into the Augustan Principate. Literary texts, read in English translation, as well as art and architecture, are considered as elements of a study of Roman political, cultural, and religious history. There is no foreign language requirement.

FORMAT: Lecture/discussion

PREREQUISITE: CLAS 1010.03, CLAS 2231.03/HIST 2090.03, CLAS 2232.03/HIST 2091.03 or permission of Instructor.

CROSS-LISTING: HIST 3020.03

### CLAS 3381.03: Medieval Philosophy from Augustine to Anselm.

A study of texts, primarily within the Latin tradition from Augustine to Anselm, but including selected writings of the Pseudo-Dionysius. Three works will normally be read in their entirety: Boethius, *Consolation of Philosophy*; Dionysius, *Mystical Theology*; Anselm, *Proslogion*. The main interest is the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.

FORMAT: Lecture

EXCLUSION: CLAS 3380X/Y.06, PHIL 2380X/Y.06, RELS 3381.06

### CLAS 3382.03: Medieval Philosophy from Arabic and Jewish thinkers to Aquinas.

A study of texts which reflect the transformation of the ancient philosophical tradition within the works of medieval Arabic and Jewish thinkers and of the Latin Christians to whom they mediated ancient philosophy. Selections from al-Farabi, Moses Maimonides, Averroes, and Aquinas, among others will be read. Bonaventure's *The Mind's Journey into God* will be read in its entirety.

FORMAT: Lecture

PREREQUISITE: CLAS 3381 or PHIL 2381 or permission of the instructor

EXCLUSION: CLAS 3380X/Y.06, PHIL 2380X/Y.06, RELS 3382.06

### CLAS 3400X/Y.06: The Dialogues of Plato.

This seminar involves the detailed study of a group of dialogues. The choice of dialogues varies from year to year.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): E. Diamond

FORMAT: Seminar

### CLAS 3401.03: Plato.

A careful reading of a selection of Platonic dialogues. The dialogues studied will vary from year to year.

FORMAT: Seminar

PREREQUISITE: CLAS/RELS/PHIL 2365 or CLAS/RELS/PHIL 2366 or

CLAS/PHIL 2361 or CLAS/RELS 3262 or permission from instructor.

CROSS-LISTING: CLAS 5613.03

EXCLUSION: CLAS 3400.03, CLAS 5603.03

**CLAS 3411.03: Augustine's *Confessions* I: Books 1-9.**

This class will examine the first nine books of Augustine's *Confessions*. These 'autobiographical' books contain Augustine's account of his intellectual progress, culminating in his encounter with Platonism in book 7, followed by an account of his conversion to Christianity and his life as a Christian in books 8 and 9.

FORMAT: Seminar

CROSS-LISTING: RELS 3411.03

EXCLUSION: CLAS/RELS 3410.06

**CLAS 3412.03: Augustine's *Confessions* II: Books 10-13.**

This class will examine the last four books of *Confessions*. Book 10 marks the transition from autobiography to Augustine's account of his present psychological life, undertaken in order to know himself as he is known by God. Books 11-13 are an exegesis of the beginning of the book of Genesis.

FORMAT: Seminar

CROSS-LISTING: RELS 3412.03

EXCLUSION: CLAS/RELS 3410.06

**CLAS 3431.03: St. Augustine's *On the Trinity* Part 1.**

A study of Books 1-7 of Augustine's *De Trinitate*, in which he establishes what is the orthodox teaching about God through scripture and a consideration of the categories of substance, relation and act.

FORMAT: Seminar

CROSS-LISTING: RELS 3431.03

**CLAS 3432.03: St. Augustine's *On the Trinity* Part 2.**

A study of Books 8-15 of Augustine's *De Trinitate*, in which he attempts to understand what has been shown in the first 7 books (the orthodox teaching about God through Scripture and a consideration of the categories of substance, relation and act) through the distinction of *scientia* and *sapientia*.

FORMAT: Seminar

CROSS-LISTING: RELS 3432.03

**CLAS 3500X/Y.06: Aristotle.**

This seminar involves the detailed study of either Aristotle's *Metaphysics* or *De Anima* or *Physics* or ethical and political treatises. The choice of texts varies from year to year.

RECOMMENDED: CLAS 2361.03/2362.03

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): E. Diamond

FORMAT: Lecture/seminar

**CLAS 3501.03: Herodotus: Father of History, Father of Lies.**

This class explores the conflict between Persia and the Greeks as narrated by the 'father of history/father of lies' as a story of exotic cultures, dramatic and bizarre events, and the actions of kings, despots, demagogues, warriors (with texts in English translation).

FORMAT: Seminar

**CLAS 3502.03: Thucydides and the Greek World at War.**

This class explores the world of warring Greek city-states, alliances and empire-building, meddling superpowers, and rival polities and politicians in the Mediterranean in the 5th Century BC as recounted by Thucydides (in English translation).

FORMAT: Seminar

CROSS-LISTING: HIST 3502.03

**CLAS 3515.03: Greek Tragedy.**

Greek tragedy was a product of the democratic society of fifth century Athens and played a vital role in the life of the community. This class explores the nature and development of the tragic genre through a study of the plays of Aeschylus, Sophocles, and Euripides in translation. The tragedies are examined as literary texts and in terms of their mythical background and cultural context. Topics to be studied include the conventions of the genre; the nature of tragic heroism; aspects of staging and performance; ancient & modern theories of tragedy.

INSTRUCTOR(S): L.M. MacLeod

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond first year.

EXCLUSION: CLAS 3510X/Y.06

**CLAS 3516.03: Ancient Comedy.**

Ancient Comedy ranges from the boisterous and bawdy plays of Old Comedy through the domestic and romantic 'tragicomedies' of Euripides to the boy-meets-girl stories of Greek and Roman New Comedy. This class examines the origins and development of the comic genre in the Greek and Roman world through a study of the plays of Aristophanes, Euripides, Menander, Plautus, and Terence in translation. It considers the nature of comedy and its function within society as well as the basic techniques and conventions of the genre itself. Topics to be studied include the 'comic hero'; comic stereotypes; types of humor; the relationship between actor & spectator.

INSTRUCTOR(S): L.M. MacLeod

FORMAT: Lecture/discussion

PREREQUISITE: Students must be beyond first year.

EXCLUSION: CLAS 3510X/Y.06

**CLAS 3525.03: Ancient Greek Epic.**

This class is designed to introduce students to the heroic epics of the Ancient Greek world. Texts are read in translation and will be selected from the works of Hesiod, Homer, and Apollonius of Rhodes. Topics to be discussed will include the cultural background of the Homeric world; the nature of oral poetry; oral vs. literate culture; conventions of the epic genre; the heroic code; the relationship between the human and divine world.

INSTRUCTOR(S): L. M. MacLeod

FORMAT: Lecture/seminar

PREREQUISITE: Students must be beyond first year.

**CLAS 3601.03: Arab Caliphs, Turkish Commanders, and Persian Viziers: Islamic History, 750-1200.**

Please see description for HIST 3509.03 in the History section of this calendar.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2502.03 or 2503.03 or permission of instructor

CROSS-LISTING: HIST 3509.03

**CLAS 3602.03: Ancient and Medieval History of the Persianate World.**

Please see description for HIST 3511.03 in the History section of this calendar.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2502.03 or 2503.03 or CLAS 1010X/Y.06 or permission of instructor

CROSS-LISTING: HIST 3511.03

**CLAS 3661.03: Hellenistic Philosophy: Stoics and Epicureans.**

A study of philosophy in the Hellenistic Age. We will investigate the development of Greek and Roman philosophy after Aristotle, focusing on Stoicism and Epicureanism. The class covers the logic, physics, and ethics of these philosophical schools, as well as their religious dimension.

FORMAT: Seminar

PREREQUISITE: CLAS 2361.03 and 2362.03 or permission of instructor

CROSS-LISTING: RELS 3661.03

**CLAS 3662.03: Hellenistic Philosophy – From Scepticism to Neoplatonism.**

A study of philosophy in the Hellenistic Age. We will investigate the development of Greek and Roman Philosophy, focusing on Pyrrhonian and Academic Scepticism, as well as Middle Platonism. The class covers the logic, physics, and ethics of these philosophical schools, as well as their religious dimension.

PREREQUISITE: CLAS 2361.03 and 2362.03 or permission from instructor

CROSS-LISTING: RELS 3662.03

EXCLUSION: CLAS 4602.03, RELS 4602.03

**CLAS 3700X/Y.06: Advanced Greek.**

This class, which reads both a prose and a poetic work, is the normal third year class in Greek.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 2700X/Y.06



**CLAS 3710X/Y.06: Greek Epic.**

A study of the Greek epic poetry of Homer and Hesiod in the original language.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06 or permission of the instructor

**CLAS 3720X/Y.06: Greek Lyric.**

A study of lyric poets such as Sappho, Archilochus, Simondides in the original language.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06 or permission of the instructor

**CLAS 3730X/Y.06: Greek Drama: Tragedy.**

A study of the Greek tragedians, Aeschylus, Sophocles, and Euripides in the original language.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06

**CLAS 3750X/Y.06: Greek Authors.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06

CROSS-LISTING: PHIL 3750X/Y.06

**CLAS 3760X/Y.06: Reading and Research of Greek Texts.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06

**CLAS 3780X/Y.06: Greek Historians.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 3700X/Y.06

**CLAS 3800X/Y.06: Roman Satire.**

This class covers the origins and development of Latin satire, the only literary genre native to the Romans. Authors to be studied will typically include Horace, Juvenal, Lucilius and Ennius.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

**CLAS 3810X/Y.06: A Study of Vergil.**

A study of the development and importance of Vergil's basic themes and ideas embodied in the Aeneid. In the first part of the class special attention is given to his early work the Bucolics, where his themes begin to appear, and their development is then followed through the relevant parts of the Georgics. The main part of the class is devoted to the reading and discussion of the chief themes of the Aeneid, especially as they illustrate Roman political, religious and social ideas which have greatly influenced our own beliefs and institutions.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P. O'Brien

FORMAT: Seminar

PREREQUISITE: CLAS 2800X/Y.06

**CLAS 3820X/Y.06: Advanced Latin Literature: Augustan Poetry and Prose.**

A study of selected texts of poetry and prose with an emphasis on the Augustan period. Authors studied may include Virgil, Ovid and Livy, among others. The class is primarily intended to strengthen students' command of Latin language, but attention is given to literary and historical matters as well.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P.O'Brien

FORMAT: Seminar

PREREQUISITE: CLAS 2800X/Y.06

**CLAS 3840X/Y.06: Latin Philosophical Texts.**

The purpose is to give students experience in reading philosophical Latin. The texts are normally chosen from medieval authors like Anselm, Aquinas, and Bonaventure.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

PREREQUISITE: First-year Latin or its equivalent

**CLAS 3841.03: Latin Philosophical Texts: Aquinas.**

The purpose of this class is to give students experience in reading philosophical Latin. The texts will be chosen from the works of Aquinas.

FORMAT: Seminar

PREREQUISITE: First year Latin or its equivalent

EXCLUSION: CLAS 3840X/Y.06

**CLAS 3842.03: Latin Philosophical Texts: Anselm and Bonaventure.**

The purpose of this class is to give students experience in reading philosophical Latin. The texts will be chosen from the works of Anselm and Bonaventure.

FORMAT: Seminar

PREREQUISITE: First year Latin or its equivalent.

EXCLUSION: CLAS 3840X/Y.06

**CLAS 3850X/Y.06: Reading and Research of Latin Texts.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: CLAS 2800.06

**CLAS 3900X/Y.06: Philosophy of Aristotle.**

The general scope of the Aristotelian Philosophy - the understanding of nature, the City, the aesthetic experience of humanity - is considered in relation to the argument of the Metaphysics or 'First Philosophy'.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

**CLAS 3910X/Y.06: Neoplatonism: Plato and Neoplatonism.**

The philosophy of Plotinus and later thinkers considered as the resume of Greek Philosophy; in particular the role of Plato and other older philosophers in the formation of Neoplatonism is a principal interest. Given alternately with CLAS 3900.06.

RECOMMENDED: CLAS 2361.03/2362.03

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

**CLAS 4011.03: Jewish Philosophy: Maimonides.**

Moses Maimonides (1135-1204) is one of the greatest Jewish thinkers of all time. This class is an introduction to his philosophical and legal writings, with special emphasis on his famous treatise The Guide of the Perplexed. Maimonides' stance on such issues as God's incorporeality, creation, and prophecy will be compared to that of other varieties of Judaism.

INSTRUCTOR(S): A. Treiger

FORMAT: Seminar/lecture

PREREQUISITE: Students must have completed 5 full credits of university study and RELS 2001.03 or RELS 3382.03/CLAS 3382.03/PHIL 2382.03, or permission of the instructor

CROSS-LISTING: RELS 4011.03

**CLAS 4018.03: Christian Theology in the Lands of Islam: John of Damascus.**

John of Damascus (d. 749) is one of the greatest Christian theologians of the Patristic age. Though he wrote in Greek, he was a Christian Arab (his Arabic name is Mansur ibn Sarjun), who lived under Muslim rule and was employed as a public official in the Umayyad administration in Damascus. The class will focus

on his theological works (especially his summa of Christian theology, entitled *On the Orthodox Faith*, and his three treatises in defence of the icons), their Christian sources, and their Islamic context.

PREREQUISITE: At least one of RELS 1002.03, RELS 2004.03, RELS 2281.03, RELS 2282.03 RELS 3009.03 Foundation Year Program or permission of instructor

CROSS-LISTING: RELS 4018.03

### **CLAS 4019.03: Philo Judaeus.**

Reconciling Jewish Scripture and Plato, Philo culminates Second Temple Jewish thought and founds the Christian treatment of Scripture. He is the most influential Jewish theologian and presents the High Priest as priest of the cosmos so he is crucial both to understand our past the to carry us into the future.

FORMAT: Seminar

PREREQUISITE: At least one class at the second year or above in CLAS or RELS

CROSS-LISTING: RELS 4019.03

### **CLAS 4100.03: Reading and Research in Latin Texts.**

Advanced reading of a Latin author or genre with attention to secondary literature and the critical reception of the works in question.

FORMAT: Seminar

PREREQUISITE: CLAS 3810X/Y.06 or CLAS 3820X/Y.06, or permission of the instructor.

### **CLAS 4400X/Y.06: Philosophy of the Church Fathers.**

This seminar involves the detailed study of a text, or group of texts, from one or more of the Greek or Latin Church Fathers. The choice of text varies from year to year, in relation to the needs and interests of students.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

### **CLAS 4450X/Y.06: Medieval Interpreters of Aristotle.**

The class considers Latin philosophical texts of the Middle Ages. Given alternately with CLAS 4500X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

CROSS-LISTING: RELS 4450.06

### **CLAS 4500X/Y.06: Seminar on Neoplatonism.**

The class considers the origin and nature of Greek Neoplatonism. Given alternatively with CLAS 4450X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): W.J. Hankey

FORMAT: Seminar

### **CLAS 4525X/Y.06: The World of Herodotus.**

This class will concentrate on Herodotus' *Histories* and examine the work from both a historical and a historiographical perspective. Consideration will therefore be given not only to sixth and fifth century B.C. Greece, but also to the wider world in which Herodotus travelled, as well as to other contemporary writers (such as Aeschylus and Thucydides).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: Any Greek class at the 3rd year level or permission of the instructor

CROSS-LISTING: HIST 4525X/Y.06

### **CLAS 4530X/Y.06: Seminar on Ancient Religion: Classical Antiquity to the Rise of Christianity.**

Selected topics from the transition from Classical to Christian culture are studied. Particular attention is paid to the connection between religious innovation and the effect of the new beliefs on literature, art and philosophy.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

CROSS-LISTING: CLAS 5530X/Y.06

### **CLAS 4540.03: Ammianus Marcellinus and his World.**

This class approaches the history and culture of the fourth century AD through its most important historian, Ammianus Marcellinus. The class will focus on (but not be limited to) a careful study of Books 14-25 of the *Res Gestae*, which span the reign of Ammianus' hero, Julian the Apostate.

INSTRUCTOR(S): P. O'Brien

FORMAT: Seminar

PREREQUISITE: CLAS 3810X/Y.06 or CLAS 3820X/Y.06 or permission of instructor.

CROSS-LISTING: CLAS 5540.03

# Community Design

Contact Person: Dr. D.M. Rogers  
 Location: Faculty of Arts and Social Sciences  
 PO Box 15000  
 Halifax, NS B3H 4R2  
 Telephone: (902) 494-1254

## I. Minor in Community Design

The Minor in Community Design is a five credit (30 credit hour) Minor. It may be taken in conjunction with a 20 credit Major or Honours program. The Minor may also be added to a Double Major or Combined Honours program. When the Minor is added to either of these two-subject degree programs, completing the requirements of Minor may entail taking slightly more than 20 credits for the whole of the degree program.

Community design pays attention to the shape, patterns, processes, and issues in human and natural communities. The program explores the world as a system of interconnected and mutually-embedded communities linked by cultural and natural processes. It examines interventions by which people can help to ensure healthy and sustainable communities. It offers practical skills and community-based experiential learning projects.

Note: Space in community design classes is limited. Students in the Minor are admitted to Community Design classes only when space permits following registration of the Bachelor of Community Design Program Students. Students should plan for at least four more semesters after completing PLAN 1001 & 1002 to complete the minor requirements.

## II. Curriculum

### A. Required Classes

Students must complete PLAN 1001.03 Introduction to Community Design and PLAN 1002.03 Introduction to Community Design.

### B. Elective Requirements

Select eight more half classes (24 credit hours) from among PLAN classes (with the exception of PLAN 4001, 4002, 4050, 4100, and 4500 which are restricted to Honours BCD students). Consult the university timetable and calendar for current offerings, class descriptions and class prerequisites.

**Note:** Space in community design classes is limited. Students in the Minor are admitted to community design classes only when space permits following registration of the Bachelor of Community Design program students. Not all community design elective classes are offered every year. Students declaring the minor should plan for at least four more semesters after completing PLAN 1001 and 1002 to complete the minor requirements.

For class descriptions, see the School of Planning pages in the Faculty of Architecture and Planning section in this calendar.

# Contemporary Studies

Location: University of King's College  
 Halifax, NS B3H 2A1  
 Telephone: (902) 422-1271  
 Fax: (902) 423-3357  
 Website: <http://arts.dal.ca/>

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Director

Boos, S., BA (Queen's), MA, PhD (York)

## Teaching Staff at the University of King's College

Bishop, M., BA, MEd (Manchester), MA (Manitoba), PhD (Kent, Canterbury)  
 Boos, S., BA (Queen's), MA, PhD (York)  
 Brandes, D., BA (Toronto), MA, PhD (Northwestern)  
 Burke, M., BA (Vind), MA (Concordia)  
 Burns, S., BA (Acadia), MA (Alta), PhD (London)  
 Clift, S., BA (UWO), MA (Trent), PhD (York)  
 Edwards, E., BA, MA (Dalhousie), PhD (Cantab)  
 Furlong, M., BA (Vind), MA (Concordia), PhD (Guelph)  
 Glowacka, D., MA (Wroclaw), MA, PhD (SUNY)  
 Kierans, K., BA (McGill), DPhil (PhD) (Oxon)  
 Kow, S., BA (Carl), MA, PhD (Toronto)  
 Levit, G., Dipl. (St. Petersburg), Dr.rer.nat. (Oldenburg)  
 McOuat, G., BA, MA, PhD (Toronto)  
 Morris, K., BA (Vind), PhD (McGill)  
 Penny, L., BA (Vind), MA (UWO), PhD (SUNY)  
 Robertson, N., BA (Vind), MA (Dalhousie), PhD (Cantab)

## I. The Contemporary Studies Program

The world is becoming more diverse and complex, and our assumptions about it are constantly challenged. The Contemporary Studies Program tries to make sense of today's world as a whole by considering the important writers, thinkers and artists of the 19th, 20th and 21st century, both on their own terms and in relation to some of the fundamental themes of our time. The three 'core' classes give students a framework for understanding political, scientific, and aesthetic phenomena in the twentieth century. The non-required classes focus on various aspects of these often contradictory contemporary phenomena.

## II. Degree Options

The contemporary Studies Program (CSP) is a Combined Honours BA program offered jointly by Dalhousie University and the University of King's College. The departmental offerings in the Contemporary Studies Program at Dalhousie include the other honours subject and a number of possible electives. The other honours subject must be selected from the following list of Dalhousie departments and programs: In Arts: Canadian Studies, Classics, Creative Writing, English, French, Gender and Women's Studies, German, History, International Development Studies, Italian, Music, Philosophy, Political Science, Religious Studies, Russian, Sociology and Social Anthropology, Spanish, and Theatre. In Science: Biochemistry, Biology, Chemistry, Computer Science, Earth Science, Economics, Environmental Science, Mathematics, Microbiology and Immunology, Neuroscience, Physics, Psychology, and Statistics. Contemporary Studies can also be taken in combination with Environment, Sustainability and Society and Bachelor of Journalism (Honours) at King's.

Electives may be taken in any of the above-mentioned departments and programs, as well as in the following subjects: Early Modern Studies, and History of Science and Technology. In addition, some professors in the Dalhousie Faculty of Arts and Social Sciences are members of the Contemporary Studies teaching staff and offer classes at King's.

## A. Combined Honours

All students must meet the general requirements of the Faculty of Arts and Social Sciences as detailed in the Degree Requirements section of this calendar. Students who are eligible to take an honours degree are urged to apply to the Contemporary Studies Program. Because it is an honours program, the quality of work required is higher than that required in a 15 credit minor or 20 credit major program.

Applications for admission must be made to the Dalhousie department concerned and to the Contemporary Studies Office at King's on forms available from the Registrar at either Dalhousie or King's. Students normally enroll in CTMP 2000X/Y.06 (the first "core" class) in their second year, and register for the Combined Honours program in either second or third year. For each individual student the entire degree program, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by the Director of Contemporary Studies.

All Contemporary Studies Program students are encouraged to acquire competence in languages through appropriate classes which are relevant to their degree, interests, and future plans.

The joint Dalhousie/King's Contemporary Studies program is based on the general requirement that the 20 credits required to graduate include:

1. Completion of either the King's Foundation Year Program (either the three or the four class version) or at least two appropriate first year full classes at Dalhousie:
  - Classics: CLAS 1010X/Y.06, CLAS 1100X/Y.06, CLAS 1800X/Y.06, CLAS 1700X/Y.06
  - English: ENGL 1000X/Y.06;
  - History: HIST 1004X/Y.06, HIST 1501.03, HIST 1502.03, HIST 1701.03, HIST 1702.03
  - Music: MUSC 1000X/Y.06, MUSC 1350.03 and MUSC 1351.03;
  - Philosophy: PHIL 1000X/Y.06, PHIL 1010X/Y.06;
  - Political Science: POLI 1010.03, POLI 1015.03, POLI 1020.03, POLI 1025.03, POLI 1030.03, POLI 1035.03, POLI 1100X/Y.06, POLI 1103X/Y.06;
  - Religious Studies: RELS 1001.03, RELS 1002.03;
  - Sociology and Social Anthropology: SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06;
  - Mathematics: MATH 1001.03 and MATH 1002.03.
2. A minimum of 11 and a maximum of 14 credits beyond the 1000-level in the two honours subjects, but not more than eight nor fewer than five credits being in either of them.
3. The three "core" classes in Contemporary Studies: CTMP 2000.06, CTMP 3000.06, CTMP 4000.06.
4. At the conclusion of an honours program a student's record must show a grade which is additional to the grades taken to complete the required 20 full classes. In a combined honours program, students may obtain this grade in either of the honours subjects. Students fulfilling this requirement in Contemporary Studies submit a research paper and defend it at an oral examination. They must enrol in the non-credit CTMP 0455.00, the Honours Thesis Seminar.

### Please Note:

Students may take an Independent Readings class only when they reach their third or fourth year. There are three options for this class, but only one full class or the equivalent may be taken in a year. No more than two full classes of this type may be taken during a CTMP degree. The permission of a member of the teaching staff and the director is necessary in order to take these classes, and their availability is strictly limited.

## B. Minor in Contemporary Studies

### Requirements

Students seeking a minor in Contemporary Studies must complete three full credits in CSP. Students are required to complete at least one of the three "core" classes in CTMP (CTMP 2000.06, CTMP 3000.06, CTMP 4000.06). Students must also complete at least one full credit at the 3000 or 4000 level (CTMP 3000.06 or CTMP 4000.06 will also fulfill this requirement), and one other full credit at the 2000 level or above.

## C. Interdisciplinary Minor in Popular Culture Studies

### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## III. Classes offered at the University of King's College

All classes offered in Contemporary Studies require that students have completed at least one year of university study (minimum five full credits) prior to enrolment.

NOTE: Many of these classes are not offered every year. Please consult the current timetable at [www.dal.ca/online](http://www.dal.ca/online) to determine whether a particular class is offered in the current year.

### CTMP 0455.00: Honours Thesis Seminar in Contemporary Studies.

Students intending to complete an honours thesis are required to register in the Honours Thesis Seminar. Seminars will be held four times during the year. Students will meet with the Director to discuss the expectations and requirements of the honours thesis in preparation for a thesis defence that takes place in March. Specific topics include: selecting a topic and supervisor, thesis format, discussion of thesis proposals and application to graduate school, and scholarships.

FORMAT: Seminar

PREREQUISITE: Approval of Director required.

### CTMP 2000X/Y.06: Modern Social and Political Thought: From Humanism to Anti-humanism and Back Again.

This course will examine some of the greatest works of modern political theory, literature and philosophy. We will follow the movement in Western culture over the last 200 years from humanism to anti-humanism, and highlight the seemingly endless struggle to realize a positive vision of human freedom and equality.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

### CTMP 2011.03/CTMP 3011.03/CTMP 4011.03: The Lecture Series.

In some years a lecture series class is offered. Students are allowed to take up to three such classes, one for each year of upper-level study. Each class will consist of six bi-weekly evening lectures given by specialists from Atlantic Canada and beyond, and a weekly two-hour seminar. The lecturers will offer students reflections on a number of contemporary issues and themes. Each year a different theme will be explored.

INSTRUCTOR(S): Staff

FORMAT: Seminar/evening lectures

EXCLUSION: CTMP 2010.06, CTMP 3010.06, CTMP 4010.06

### CTMP 2100.03: The Politics of Hope: From Romanticism to Anarchism and Beyond.

A look at the connection between revolutionary political thought and nihilism: the class focuses on the history of Romanticism and anarchism, from Fichte to some colourful literary characters (German and English) to the deadly serious Russian nihilists. Our central concern is the notion of an infinite, all-powerful human freedom.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

### CTMP 2101.03: Apocalypse: The Revolutionary Transformation of Politics and Culture.

This class highlights the movement from revolutionary nihilism to various forms of post-revolutionary unity and integration. Beginning with Nietzsche and Dostoyevsky, the class discusses how some of the greatest contemporary thinkers (German, French, British, American) have struggled to put modern evil in the context of a larger good.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

### CTMP 2115.03: The Idea of Race in Philosophy, Literature, and Art.

This class focuses on contemporary conceptions and representations of race, and on their relations to culture, history, ideology, science, and everyday lived experience. We will trace the development of the modern idea of race, in relation to European colonialism and to the development of science. We will examine contemporary debates on the concept of race in the works of philosophers, writers, artists, and social activists, considering the intersections of race, class, and gender.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

RESTRICTION: Restricted to students in their second year and above

### CTMP 2120.03: Wagner's Ring Cycle: Leitmotif of the Contemporary.

Richard Wagner's monumental, four-day "complete work of art", *The Ring of the Nibelung*, begun in 1848 and completed in 1876, serves as the centerpiece for an interdisciplinary investigation of music, theatre, literature, politics, history, psychology and philosophy from the mid-19th century to the present. A weekly "listening lab" is a required part of the class.

INSTRUCTOR(S): S. Burns

FORMAT: Lecture/tutorial/listening "laboratory"

EXCLUSION: CTMP 3120.03

### CTMP 2121.03: Structuralism and Poststructuralism.

We will begin by exploring the work of structuralist thinkers such as Ferdinand de Saussure, Claude Lévi-Strauss, Louis Althusser, and Jacques Lacan. Their work addresses the deep structures of signs, language, political economy, cultural production, and the psyche. Structuralism had some surprising effects, such as the French protests of May 1968, when the "students took to the streets." We will consider the way poststructuralist thinkers, such as Barthes, Foucault, Deleuze, and Derrida criticize and transform structuralist interpretations of subjectivity, language and the political.

INSTRUCTOR(S): M. Furlong

FORMAT: Seminar

### CTMP 2150.03: Society, Politics, and Literature.

The contemporary era has been one wholesale transformation in all aspects of existence, including politics, economics, social relations, gender roles and definitions of the self. During the nineteenth and twentieth centuries, the possibility of individual autonomy and freedom in the face of unprecedented social upheaval has been brought into question through the novel, a literary form which came to maturity in this time. The novels read in this class have been

selected for their insights into the dilemmas of an age formed by political and economic revolutions where new collective forces have been brought into play.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

### CTMP 2203.03: Bio-Politics: Human Nature in Contemporary Thought.

To what extent do biology and culture determine what it is to be human? Drawing on theorists ranging from Foucault to Steven Pinker, this course will examine the recent political, moral and existential issues raised by attempts to answer that question. Topics will include: evolutionary psychology, genetic screening, race, bio-engineering, and the spectre of determinism.

INSTRUCTOR(S): G. Levit

FORMAT: Lectures/Student Workshops

CROSS-LISTING: HSTC 2206.03

### CTMP 2205.03: Totalitarianism and Science.

The question of who has authority over funding, direction and priorities of modern science is a central political concern. This class considers the case of totalitarian states (USSR and Nazi Germany) and consists of two parts. Part I analyses the essential features of totalitarian regimes. Part II concentrates on the fortune of particular sciences (medicine, biology, physics) under them.

INSTRUCTOR(S): G. Levit

FORMAT: Lecture/tutorial

CROSS-LISTING: HSTC 2205.03

### CTMP 2301.03: Pain.

What does pain mean? This class will investigate the uses of pain in the contemporary world, and in doing so, it will approach various sites where pain matters, examining different discursive practices which attempt to speak of pain - or alternatively, claim that pain is what cannot be spoken. We will discuss the experience of the body in pain and the relation of pain to knowledge. In the interest of interdisciplinarity, it is anticipated that guest lecturers in neurophysiology will participate, as well as those from, for example, Amnesty International. Topics to be addressed will include pain in a medical context; torture and the political uses of pain; the relation between pain and privation; the expressibility of pain. Ultimately, the aim of the class is towards the question of the uses of pain in legitimizing art: we will examine two archetypes of "the tortured artist", Sylvia Plath and Jackson Pollock, and will inquire into recent theories of the sublime in art which stress the conjunction of pleasure and pain in the most heightened and extreme aesthetic experiences.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### CTMP 2302.03: From Zanzotto and Célán to Senghor, Soyinka and Paz: Fifteen Perspectives Upon Contemporary Culture.

Analysis and discussion of selected works of major poets, artists and film makers of the past fifty years from around the world, including Zanzotto, Tranströmer, Miłosz, Célán, Bonnefoy, Elytis, Senghor, Soyinka, Mahapatra, Ting, Paz, Juarroz, and Césaire. Written texts will provide the principal basis for debate, but artwork and film will be used to render more immediate and concrete the appreciation of divergent cultural, aesthetic and ethical models (North American and British work will not be directly considered).

INSTRUCTOR(S): M. Bishop

FORMAT: Seminar

### CTMP 2303.03: Narrative and Meta-Narrative.

This class will explore twentieth-century theories of the narrative and the increasingly broad claims made for the role of narrativity in politics, psychology and literature. Starting from Lyotard's characterization of the post-modern as an incredulity towards meta-narratives, the class will look at literary narratives (for example, Balzac, Borges, Thomas Pynchon and Alice Munroe) as well as theories of the narrative (Lévi-Strauss, Freud, Lacan, Lyotard, and Roland Barthes). Topics to be considered include the constitution of social narratives, possible grounds for the interpretation of narrative, the relation of narrative to ideology and the explanatory power of meta-narratives.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### CTMP 2304.03: Semiotics.

Semiotics is a methodological discipline that studies signs, significations, and signifying systems. Because of its interest in the production of meaning, semiotics is widely applicable and has exercised a major influence on virtually every epistemological development in the second half of the twentieth century, from

Lacanian psychoanalysis to deconstruction. Some of its fields of investigation include linguistics, culture, literature, mass media, theatre, and film. Through the reading of works by de Saussure, Peirce, Morris, Jakobson, Lévi-Strauss, Barthes, Eco, and other scholars, this course will introduce students to the essential terminology and typology of semiotics. Special attention will be paid to the practical use of semiotics as a critical and analytical tool, as well as to the variety of historical and cultural contexts in which semiotics appears.

INSTRUCTOR(S): J. Gantar

FORMAT: Lecture/seminar

### **CTMP 2311.03: From Symbolism and Surrealism to the New Novel and Beyond.**

This class will address questions of perception, image, and presence. We will analyze the interlocking perceptions of self and world, word and image, in the literature and art of modernity, from Rimbaud and Mallarmé, Gauguin and Van Gogh, through Surrealism and Cubism, to Camus and Sartre and beyond to the new novel and new wave film, Barthes, Bonnefoy, and contemporary French women writers.

INSTRUCTOR(S): M. Bishop

FORMAT: Seminar/lecture/tutorial

EXCLUSION: Former CTMP 4310.06 and former CTMP 2310.06

### **CTMP 2313.03: The Vampire: Modernity and the Undead.**

Since the emergence of vampire stories in the late sixteenth century, the vampire has served as a complex symbol for forces that defy or challenge modernity. This course will examine the figure of the vampire as it appear in folklore, philosophy, fiction, poetry, film, and television. Throughout the course we will consider the works in their historical and cultural context, considering what changing ideas of the vampire can tell us about early modern and contemporary views of death, morality, national identity, sexuality, and gender.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar

CROSS-LISTING: EMSP 2313.03

### **CTMP 2322.03: The Experience of Others in Philosophy, History and Literature.**

This class examines some of the contemporary theories that have addressed the issue of alterity and focuses on social mechanisms of marginalizing "the other". We will raise questions such as what it means to live with others and to act responsibly in relations with others. The readings include philosophy (Heidegger, Levinas, Kristeva) as well as literature, political theory, and film.

INSTRUCTOR(S): S. Clift

FORMAT: Seminar

### **CTMP 2325.03: From the Postmodern to the Extreme Contemporary: 25 years of French Culture in the World.**

This class considers the negotiation with post-modernity occurring within French culture and seeks to define what some now call the Extreme-Contemporary. A range of texts in English translation will be considered, from philosophy to the novel, from film to poetry, from the visual arts to theatre and the chanson française.

INSTRUCTOR(S): C. Elson

FORMAT: Lecture/seminar

### **CTMP 2330.03: Reflections on Death.**

The texts in this course consist of literary and philosophical reflections on death, the "permanent and irreversible cessation of life" (J.M. Fischer). With references to Plato and Hegel, we will consider the ways in which death has been understood as giving meaning and structure to life. The focus will be on contemporary confrontations with "pure negativity" and on different thinkers' attempts to articulate death as an ontological condition. We will also look at representations of death in contemporary art, literature, and film.

INSTRUCTOR(S): S. Clift

FORMAT: Lecture/seminar

### **CTMP 2335.03: The Artist and Society.**

A preoccupation of 20th century cultural life has been the relation between the creative artist and society. To what extent should the artist engage in the social and political currents of her/his time, or retreat into solitude? What responsibility does the artist have to society, or society to the artist? This class will examine various philosophical and artistic treatments of these themes in various social contexts.

First, we shall consider the question of the artist and society in terms of ancient, early modern, and 18th and 19th century aesthetic ideas. We then turn our attention to a number of 20th century reflections on this theme in such milieus as pre-war Europe, the Weimar Republic, Nazi Germany, post-war Japan, contemporary Canada, and 1970s Britain. The work of such thinkers and artists as Kant, Wilde, Mann, Natsume, Mishima, Gould and the Sex Pistols will be considered mainly through written texts, but also in art forms such as music and film.

INSTRUCTOR(S): S. Kow

FORMAT: Lecture/tutorial

### **CTMP 2336.03: East Meets West in Popular Culture.**

This class is devoted to examining intersections between "West" and "East" through the study of cross-cultural influences in popular literature, cinema, music, and comics in Europe, North America, China, and Japan.

INSTRUCTOR(S): S. Kow

CROSS-LISTING: CHIN 2052.03

RESTRICTION: Restricted to students in their 2nd year and above.

### **CTMP 2340.03: Theories of the Avant-Grade.**

This course investigates concepts of the Avant-Garde in early 20th century futurism, expressionism, dadaism, and surrealism. We will read representative texts, including prose, poetry, drama, and manifestos as well as examine selected works from the visual arts and film. Topics for discussion include the historical Avant-Garde, the reintegration of art and life, the relations of the Avant-Garde to romanticism and modernism, the institution of art, aesthetics, the autonomy of art, and political radicalism. We will also examine the implications of theories of the Avant-Garde for the debates about the relation between modernism and postmodernism. A key theoretical text in the course is Peter Burger's *Theory of the Avant-Garde* but we will also examine selected writings by Lukacs, Brecht, Benjamin, Kracauer, Poggioli, Adorno, Bataille, Habermas, Lyotard, and Agamben.

INSTRUCTOR(S): S. Boos

FORMAT: Lecture/seminar

### **CTMP 3000X/Y.06: Science and Culture.**

In the twentieth century, "Science" and "Culture" are often presented as a dichotomy. In this class we shall be examining that dichotomy, attempting to elude it by showing that science itself has a "culture" and that science is very much embedded in culture. We shall investigate disputes within sociology and philosophies of scientific method, debates around the public role of science, and the recent criticism of science and its place in society by the powerful critiques of feminism and post-modernism. A strong emphasis will be placed on case studies and seminar presentation.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): G. Levit/G. McQuat

FORMAT: Lecture/Tutorial

PREREQUISITE: CTMP 2000.06 or permission of instructor

### **CTMP 3103.03: Critiques of Modernity.**

What is the status of the modern world? It is a source of freedom and truth or rather of the deconstruction of religion, humanity and nature. The contemporary period has defined itself in many ways through the critique of modernity. These critiques have come from an array of perspectives: philosophic, aesthetic, religious, moral, political. This class will provide a survey of a number of such critiques seeking to grasp both points of commonality, disagreement and development.

INSTRUCTOR(S): N. Roberston

FORMAT: Seminar

CROSS-LISTING: EMSP 3203.03

### **CTMP 3104.03: The Rise of Nietzscheanism.**

This class will show the origins and growth of Nietzsche's fame and influence from the late nineteenth century to around the middle of the twentieth, and consider his impact on many different and conflicting trends of thought, including Nazism and avant-garde art, depth psychology, existentialist philosophy and anarchistic social theory.

FORMAT: Seminar

RESTRICTION: Restricted to students in their 2nd year and above.

### **CTMP 3105.03: The Nietzschean Legacy.**

This class surveys the influence of Friedrich Nietzsche on Western thought and culture, from the middle of the twentieth century to the present day. We will see Nietzscheanism at work in many different schools of thought, from French

existentialism and American liberalism to various forms of contemporary anti-humanism and post-humanism.

FORMAT: Seminar

RESTRICTION: Restricted to students in their 2nd year and above.

### CTMP 3110.03: The Dialectic of Enlightenment I.

In the course of criticizing tradition and integrating the experience of the Renaissance and the Reformation, in responding to the beginnings of modern natural science and modern political institutions, early modern Europeans sought in diverse - and often conflicting - ways to express the self-understanding of Enlightenment. By the end of the eighteenth century, science, morality and art were seen as different realms of activity in which questions of truth, justice and taste could be separately determined, that is, evaluated according to their own specific criteria of validity. This class will consider how these differences compelled European philosophers and theologians, artists and social theorists, to develop and expand their self-understanding to the point where enlightened reason could properly reflect the formal divisions of culture and make critical judgements in relation to them. Special attention will be paid to the relationship between faith and knowledge and the growing sense of conflict between religion and secular freedom.

INSTRUCTOR(S): K. Kierans

FORMAT: Seminar

CROSS-LISTING: EMSP 3210.03

### CTMP 3113.03: Kant and Radical Evil.

This course will examine the roots of the modern conception of radical evil in the late work of Immanuel Kant. Beginning with the traditional, pre-Kantian conception of evil as merely a negative phenomenon - as a lack or privation of being - we will trace the emergence of Kant's radical innovation, his positive conception of evil as the ineradicable "knot" at the very heart of human freedom. We will also consider at some length the subsequent career of Kant's doctrine in 19th and 20th Century thought.

INSTRUCTOR(S): D. Brandes

FORMAT: Seminar

CROSS-LISTING: EMSP 3213.03

EXCLUSION: EMSP 3630.03

### CTMP 3115.03: The Dialectic of Enlightenment II.

In enlightened European culture, religion, state and society as well as science, morality and art were gradually separated from one another under exclusively formal points of view, and subordinated to a critical reason that took on the role of a supreme judge. By the beginning of the nineteenth century, many Europeans began to question the self-understanding evoked by the principle of critical reason. This class will consider how enlightened freedom and reason moved European philosophers and theologians, artists and social theorists, to conceive of themselves historically, that is, to become conscious of the dissolution of tradition, and of the need to ground the divisions of culture in ideal forms of unity derived from the tradition. The class will pay particular attention to the relationship between religion and the demand that the unifying force in culture come from a dialectic residing in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Kierans

FORMAT: Seminar

CROSS-LISTING: EMSP 3220.03

### CTMP 3116.03: Heidegger: Science, Poetry, Thought.

In this course, we shall examine the complex relations that obtain in Heidegger's early and later work between science, poetry and thought. From his early identification of phenomenology as "philosophical science" to his mature insistence on the irreducibility of philosophy to science (and his new emphasis on the essential kinship of philosophy and poetry), we shall trace the contours of this powerful and inescapable path of thinking.

INSTRUCTOR(S): D. Brandes

FORMAT: Seminar

RESTRICTION: Restricted to students in their second year and above.

### CTMP 3125.03: The Concept of Memory in Late-Modernity: Commemoration, Representation, Trauma.

This course will involve an examination of the relations between memory, theory, and representation in the context of proliferating 'cultures of memory'. Differing theoretical approaches to memory from the philosophy and psychoanalysis of the 19th and 20 centuries will be explored, alongside various genres & practices of memory (political, memorial, artistic, and critical).

INSTRUCTOR(S): S. Clift

FORMAT: Seminar

EXCLUSION: CTMP3410.03 for the 2008/09, 2009/10, 2010/11 academic years only and CTMP3415.03 for the 2011/12 academic year only

RESTRICTION: Restricted to students in their second year and above

### CTMP 3130.03: The Thought of Michel Foucault.

Historian and philosopher Michel Foucault (1926-1984) was one of the most important and controversial thinkers of the twentieth century. He developed an anti-Hegelian historical method that was indebted both to Nietzsche's "genealogical" conception of history and to structuralist accounts of language and culture. With major works on madness, the human sciences, crime and punishment, and sexuality, Foucault has influenced a wide range of disciplines from history, philosophy, and literature, to sociology, political science, and law. His work has also profoundly shaped the fields of gender studies and queer theory. This class will examine the evolution of Foucault's approach to history, as well as his highly original ideas about the relationship between knowledge, power, and the constitution of subjectivity. Considerable attention will be devoted to his work on the history of sexuality. While our focus will be on Foucault's own writings, we will also read texts by some of his interlocutors, both critical and sympathetic.

INSTRUCTOR(S): M. Burke

FORMAT: Seminar

### CTMP 3135.03: Reconstructing Political Modernity.

This class will examine several interpretations of early modern philosophers by 20th century authors who are original political thinkers in their own right. These interpretations have involved as much reconstruction of early modern thought as faithful scholarly commentary. Indeed, they sometimes shed more light on the interpreter than the thinkers being interpreted. Thus, we shall critically analyze the radical transformations of early modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): S. Kow

FORMAT: Seminar

PREREQUISITE: One of: CTMP 2000.06, CTMP 2100.03, CTMP 2101.03, CTMP 3110.03, CTMP 3115.03, EMSP 2000.06, EMSP 2440.03, EMSP 3210.03, EMSP 3220.03, EMSP 3430.03, EMSP 4000.06, PHIL 2210.03, PHIL 2220.03, PHIL 2270.03, POLI 2400.03, POLI 2410.03, POLI 2420.03 or instructor's permission.

CROSS-LISTING: EMSP 3440.03

### CTMP 3145.03: Leo Strauss and his Intellectual Context.

Leo Strauss was during his own lifetime a figure of controversy and has grown more so in the thirty years since his death. In recent newspaper and academic articles, Strauss has been seen through the influence of his students ("Straussians") to be the secret intellectual source of much of the Neo-Conservative movement and in particular the policies and doctrines of the Bush White House. This class will endeavour to understand Strauss's thought in terms of his own intellectual development and in the context of the issues that were particularly formative for his thinking. The course will include the influence of Husserl upon his thought, his reflections on Zionism and the Jewish intellectual tradition during the 1920s and 30s when he was still living in Germany, his critique of Carl Schmitt, his response to the thought of Martin Heidegger, his debate with Alexandre Kojève. In short, the purpose of this course is to locate Strauss's thought in its intellectual context and thereby gain distance on the demonizing and sanctifying rhetoric that characterizes the contemporary debate about "Straussianism".

INSTRUCTOR(S): N. Robertson

FORMAT: Seminar

### CTMP 3155.03: The Question of the Animal.

In this course, we will examine theories about animality and the ontological and ethical status of nonhuman animals in philosophical and literary writings from Heidegger and Levinas to Derrida and Deleuze. We will begin with Heidegger's reflections on animality and his attempt to establish an ontological distinction between humans and animals. Next, we will consider Levinas's concept of radical otherness and the ideas of "the open" and "the anthropological machine" in Agamben. Derrida's critique of both Heidegger and Levinas will provide the transition to a discussion of recent literary and philosophical attempts to think about animals in non-anthropocentric posthumanist ways. Additional readings will include selections from Deleuze and Guattari, Haraway, Cavell, and Cary Wolfe, as well as J.M. Coetzee's novel *The Lives of Animals*.

INSTRUCTOR(S): S. Boos

FORMAT: Seminar

EXCLUSION: CTMP 2011.03/3011.03/4011.03 and HSTC 2011.03/3011.03/4011.03 for 2013/14 academic year only.

### CTMP 3190.03: The Thought of Simone Weil.

Simone Weil (1909-1943), a "genius" of the early 20th century, was a fellow student with Jean-Paul Sartre and Simone de Beauvoir. A political activist, she taught philosophy, then worked for a year on an industrial assembly-line. She wrote brilliantly on an extraordinary range of topics. She fled the Nazi occupation of France, but died in London aged 34. This class will read and discuss a selection of Weil's essays on history, politics, literature, religion, science and philosophy.  
INSTRUCTOR(S): S. Burns  
FORMAT: Seminar/tutorial

### CTMP 3192.03: The Thought of Ludwig Wittgenstein.

Ludwig Wittgenstein (1889-1951) is one of the most renowned philosophers of the twentieth century. His extraordinary influence is the result of his teaching small groups of dedicated students. Published for the most part posthumously, his writings, too, have made him a philosopher's philosopher. Nevertheless, his influence has extended well beyond the questions about the foundations of logic and language which preoccupied him. This class will explore some of the broader implications of his work, touching on music, art and architecture, on anthropology and psychology, and on ethics and religion, as well as on his central contributions to the philosophy of language and mind.  
INSTRUCTOR(S): S. Burns  
FORMAT: Seminar/tutorial  
EXCLUSION: CTMP 2190.03

### CTMP 3201.03: Science and Religion: Contemporary Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the rise of Darwinism in the early nineteenth century to the contemporary postmodern age. From an examination of nineteenth-century "Scriptural geology" and the religious impact of Darwin's *Origin of Species* (1859), this course moves on to such contemporary topics as the religious, interpretations of quantum mechanics, the Big Bang, the anthropic principle, medical science, bioethics, evolutionary psychology, chaos theory, aesthetics in nature, science fiction and extra-terrestrial life (including SETI). Case studies of "conflict" emanating from Darwinism, the Scopes Trial and the on-going Creation-Evolution debates are contrasted with examples of harmony and interdependence between science and religion in the careers nineteenth and twentieth century scientists, along with phenomena like the new Intelligent Design (ID) movement. The religious scope of the course in intentionally wide-ranging, and examinations of science-religion interaction within native American, African and the New Age spirituality are added to treatments of traditional eastern and western religion. Special features include a focus on primary texts, the use of film and guest lectures by scientists.  
INSTRUCTOR(S): S. Snobelen  
FORMAT: Seminar  
CROSS-LISTING: HIST 3076.03, HSTC 3201.03, RELS 3201.03

### CTMP 3210.03: Intersecting Bodies, Selves and Environments.

The traditional view of the relation between humans and nonhuman nature is regarded by many as dualistic insofar as it posits not only a distinction and separation between humans and nonhuman nature but regards humans as superior to nonhuman nature, on either religious, metaphysical, moral, or even evolutionary, grounds. In this course, we examine three different strategies for overcoming this view. We begin by examining phenomenological attempts to overcome dualistic accounts of the relations between perceiver and perceived, mind and body, and mind and world. In the next section, we discuss attempts by radical ecologists to establish a nondualist view of the relation between humans and nature. In the concluding section of the course, we examine some postmodern strategies for overcoming dualistic thinking about culture and nature.  
INSTRUCTOR(S): S. Boos  
FORMAT: Lecture/seminar  
EXCLUSION: CTMP 3411.03 for the 2005/06, 2003/04, 2001/02 academic years only

### CTMP 3215.03: Feminism and Science.

Science has been the subject of intense scrutiny by contemporary feminist theorists. The course will examine the various feminist critiques of natural science, as well as the positive proposals that feminism has brought to science and scientific culture. Questions that will be addressed include: Is the style of science gendered? Has feminism influenced the content of various sciences? How has science contributed to gendered constructions of nature? Is there such a thing as value-free scientific research? How do feminist theories of knowledge differ from traditional understandings of scientific knowledge and scientific objectivity? The

readings for this course will include work by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.  
INSTRUCTOR(S): K. Morris  
FORMAT: Seminar  
CROSS-LISTING: HSTC 3411.03, GWST 3215.03

### CTMP 3220.03: The Aesthetics of Environments.

In this course, we consider recent approaches to the aesthetic appreciation of both natural and human environments. In the first part, we will examine the role of science, perception, imagination, emotion, and ethics in the aesthetic appreciation of nature. In the second part of the course, we will discuss contemporary approaches to the aesthetics of such human environments as the city, the theme park, the garden, the shopping centre, the home and the countryside.  
INSTRUCTOR(S): S. Boos  
FORMAT: Lecture/seminar  
EXCLUSION: CTMP 3415.03 for the 2005/06 academic year only

### CTMP 3250.03: Nature and History.

In the nineteenth and twentieth centuries, the study of the natural world and historical thought have been closely linked. Participants in the seminar will read texts which helped to define ideas of history in the era after the Enlightenment and consider how these ideas influenced, and were influenced by, developments in scientific thought. The seminar will consider how nature and history are related in idealism, historical materialism and the thinking of the evolutionists, and how this connection is rejected by Nietzsche, Freud and Foucault.  
INSTRUCTOR(S): G. Levit  
FORMAT: Seminar  
CROSS-LISTING: HSTC 3150.03  
EXCLUSION: CTMP 3150.03

### CTMP 3304.03: Through Her Eyes: Women and the Documentary Tradition.

This course will explore the rarely examined historical and contemporary involvement of women in the field of documentary filmmaking. Women documentary makers have produced extensive bodies of engaging work that challenge many societal assumptions about gender, class, race, the function of political power, sexuality and peace-war. They have worked at every level within the process: as directors, cinematographers, editors, sound recordists, producers, writers and fund-raisers. A variety of documentaries made by women from diverse backgrounds will be screened and analyzed along with a close reading of selected critical texts. Students will identify the similarities and differences in subjects, themes, style, aesthetics, and approached to creation, production and distribution.  
INSTRUCTOR(S): S. Hamilton  
FORMAT: Film Screening and Seminar  
CROSS-LISTING: JOUR 3304.03, GWST 3304.03

### CTMP 3305.03: Modern Film and the Theory of the Gaze.

This class will develop certain aspects of the theory of the gaze in relation to a selection of films which themselves embody or express a thinking about looking. We all like to look; and we are all given over to being seen, and both these modalities have received historically unprecedented elaboration in the moving pictures. The films and theories will raise issues about visual desire, horror, paranoia, surveillance and fascination.  
INSTRUCTOR(S): E. Edwards  
FORMAT: Film Screening and Lecture/Discussion

### CTMP 3311.03: Culture, Politics and the Post Colonial Condition.

The term 'postcolonial' marks the historical passage of European colonial domination and national independence movements, and describes the contemporary condition of domination and struggle both in the new nations that emerged in the second half of the twentieth century and in Western metropolitan centres with their new populations. A mode of theorizing the aftermath and persistence of colonialism, it recently has been criticized for perpetuating the Eurocentric culture it intends to contest. This course will examine recent configurations of postcolonialism as political and cultural practice, focusing on debates over globalization, multiculturalism and the role of the intellectual.  
INSTRUCTOR(S): Staff  
FORMAT: Seminar



### CTMP 3321.03: Representations of the Holocaust: Bearing Witness.

At the time when the Holocaust recedes into history, the imperative to “never forget” acquires new urgency. In this class, we focus on various modes of talking about this traumatic historical event. Can horror be accommodated in language? Is there a privileged genre that would do justice to suffering? These and other questions will arise from the examination of eye-witness accounts by camp survivors, excerpts from Holocaust diaries written in the ghetto, perpetrator testimony, works by historians, and literary works. The class includes excerpts from films, documentaries, and other video-taped material. Guest speakers will be invited for lectures, recollection, and discussion.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

### CTMP 3322.03: Representations of the Holocaust : Remembrance.

Representations of the Holocaust: Bearing Witness is not required. Basic knowledge of Holocaust facts and some familiarity with Holocaust literature is recommended.

This class focuses on memoirs and literary accounts of the Holocaust written several decades after the war, as well as on contemporary debates about the nature of Holocaust memory. Of special interest is the struggle of survivors’ children to reckon with the burden of their parents’ past. We will evaluate the ideal of individual responsibility postulated by these texts and consider the way the Holocaust has been represented in literature, film, and museum exhibits. We look at the current phenomenon of Holocaust denial, with emphasis on anti-Semitism and white supremacy movements in Canada. Finally, we consider the politics of Holocaust memory in comparative perspectives. The class includes excerpts from films, documentaries, and other video-taped material, and illustrated lectures on Holocaust art.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

### CTMP 3340.03: Home and Homelessness.

This class takes the current social problem of homelessness as a starting place for an inquiry into the significance of figurations of home and homelessness in the contemporary world. Home is a place of comfort and belonging; it is a domestic setting, a language, a nationality and a series of identifications which ‘place’ and maintain individuals. Where I am at home, I feel coincident with myself. The notion of home is opposed to key diagnoses of the modern condition--as alienated, displaced, estranged and uncanny, for example. These diagnoses have been applied both to psychological conditions and to actual social phenomena of mass displacements, refugees, immigration and exile. The social imaginary of many historically displaced groups centres around the return to or establishment of a homeland.

This class will consider literary and artistic representations of ‘home’, the phenomenology of ‘homeliness’ and of its strange double, the uncanny (unheimlich), and the stakes that post-war philosophy has in the notions of rootedness, place and dwelling.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### CTMP 3345.03: The Theory of the Gift.

Is it possible to give, freely, without expectation of return? That is, can generosity ever really exist? Or are we trapped in restricted economies of exchange which find us always calculating some profit to ourselves, whether in this world or the next? The problem of the possibility of generosity and altruism is of central importance to current deliberations about ethics and economics. This seminar will read its way through the modern genealogy of the thinking of the gift, beginning with its foundation in anthropological studies of so-called ‘primitive’ economies. It is of some interest that the modern concern with the gift appears in the guise of anthropology rather than from its well-established place in the Christian theological tradition. This class will consider the debate over the gift among anthropologists such as Mary Douglas and Marshall Sahlins, in the extraordinary theses of Georges Bataille, and will place special emphasis on the importance of the gift in the work of Jacques Derrida.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### CTMP 3350.03: Rewriting Gender.

Recent literature by women, both fiction and critical theory, has widely adopted innovative strategies in order to advance feminist views. These explorations have allowed female authors to question the way in which women’s subjectivity has been constructed through male-oriented processes of signification. The works of fiction covered in this class, by Angela Carter, Jeanette Winterson, Leslie

Feinberg, Dionne Brand, and Marjane Satrapi and others, exemplify aesthetic subversions of phallogocentric discourses. Literary texts will be supplemented with theoretical works by leading feminist/post-structuralist thinkers such as Luce Irigaray, Judith Butler, and bell hooks. The class includes video-taped material and slide-shows of postmodern feminist art.

INSTRUCTOR(S): D. Glowacka

FORMAT: Lecture/seminar

CROSS-LISTING: GWST 3350.03

### CTMP 3410.03: Studies in Contemporary Social and Political Thought in the 20th Century.

Topics vary each year.

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 3410.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrollment.

### CTMP 3411.03: Studies in Contemporary Science and Technology.

Topics vary each year.

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Program. Students can enrol only once in CTMP 3411.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrollment.

### CTMP 3415.03: Studies in Contemporary Aesthetic and Critical Theories.

Topics vary each year.

NOTE: No more than two studies classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 3415.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least two years of university study (minimum 10 full credits) prior to enrollment

### CTMP 4000X/Y.06: The Deconstruction of the Tradition.

This class focuses on twentieth-century thinkers and writers who have questioned fundamental concepts of Western philosophy such as identity, selfhood, representation, truth, and origin. What they all have in common is abandoning totalizing models of thinking in favor of pluralistic discourses that can accommodate radical heterogeneity. The recurrent themes of the class are: relations between philosophy and literature, intersections between the philosophical domains of ethics and aesthetics, and viability of deconstruction for political and cultural praxis. The readings include theoretical texts (Benjamin, Heidegger, Derrida, Irigaray, bell hooks, Butler, Lyotard, Levinas, Agamben, Nancy) and some works of fiction (Kafka, Borges, Camus).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): D. Glowacka

FORMAT: Lecture/tutorial

PREREQUISITE: CTMP 2000X/Y.06 and CTMP 3000X/Y.06 or permission of the instructor

### CTMP 4105.03: European Nihilism.

In the latter half of the nineteenth-century a number of European thinkers and writers came to sense a profound loss of meaning and significance at work in their culture. The term that was coined to describe this experience was “nihilism.” The purpose of this course is to explore the thought of those who gave expression to this new phenomenon. We will begin with the literary explorations of Dostoyevsky and Baudelaire, and then turn to the thought of Nietzsche as the most complete explication of European nihilism. The course will conclude by considering the twentieth-century’s most important commentator on nihilism, Martin Heidegger. In particular, the class will consider Martin Heidegger’s set of lectures from the late 1930s that were published as Nietzsche. This set of lectures as reflections on Nietzsche’s account of European nihilism formed, according to Heidegger’s own recounting, a crucial transition in his own thought, the famous “turn” from the “early” to the “late” Heidegger. This course will examine the lecture series in the context of Heidegger’s other writings at this time and his much-debated involvement with Nazism to try to understand the exact nature and

import of his "turn." In all of this the class will be exploring the connections between a deep cultural experience - that of European nihilism and its social and political implications.

INSTRUCTOR(S): N. Robertson

FORMAT: Seminar

EXCLUSION: CTMP 4410 for the 2004/2005 academic year only

### **CTMP 4124.03: Walter Benjamin's Materials.**

Following the diversity of Benjamin's own interests: "literature, philosophy, architecture, journalism, photography, the city, film, children's toys, fashion, rubbish," we will read his essays on culture and the media alongside writings by Baudelaire, some artworks, and selections from The Arcades Project, Benjamin's collection of quotations and observations about mall life and modernity in Paris.

FORMAT: Seminar

EXCLUSION: CTMP4415.03 in the 2009/10 academic year only.

RESTRICTION: Restricted to students in their 2nd year and above.

### **CTMP 4125.03: Hannah Arendt: Terror, Politics, Thought.**

In this course we examine the trajectory of Hannah Arendt's long path of thinking: from her early political writings (on the state of Israel, on totalitarianism), to the more theoretically ambitious writings of the 1950's and 1960's (on action, power, and the creation of political spaces), to the late work on the life of the mind (on thinking, willing, and judging). We will attempt to understand how Arendt's overarching 'love of the world' informed her thought at every stage of its development, giving rise to a powerful critique of liberal democracy and preparing the groundwork for a new 'post-totalitarian' thinking of the political.

INSTRUCTOR(S): D. Brandes

FORMAT: Lecture/seminar

### **CTMP 4126.03: Kafka, Scholem, Benjamin: On Law and Crisis in 20th Century Jewish Thought.**

In this course, we will examine the illuminating disagreement between Gershom Scholem and Walter Benjamin - two of the giants of 20th Century Jewish thought - on the meaning of the Law in Franz Kafka's stories. We will see how their respective interpretive strategies have dramatically informed the theoretical landscape of contemporary Jewish and non-Jewish thought.

INSTRUCTOR(S): D. Brandes

FORMAT: Lecture/seminar

### **CTMP 4130.03: The Frankfurt School: Critical Theory from Horkheimer to Habermas.**

This course will focus on some of the most important and influential aspects of the critique of society developed by critical theorists from the 1930s to the 1960s.

Themes and topics will include the task and methods of critical theory, reason and freedom, the role of technology in monopoly capitalism, fascism, the decline of the individual, the critique of the culture industry, and psychoanalysis. We will read selections from the works of Max Horkheimer, Theodor W. Adorno, Erich Fromm, Walter Benjamin, Herbert Marcuse and Jurgen Habermas.

INSTRUCTOR(S): S. Boos

FORMAT: Lecture/seminar

EXCLUSION: CTMP 3410 for the 2005/2006 academic year only

### **CTMP 4140.03: Phenomenology and its Legacy: Back to the 'Things Themselves'.**

This course examines some of the major figures in the phenomenological movement. We begin with an examination of Edmund Husserl's attempt to establish a "radical" science of phenomenology. The method of phenomenology, the intentionality of consciousness, perception, and the *Lebenswelt* are among the topics we will consider. We then turn to various reformulations and critiques of Husserl's conception of phenomenology in selected works from Heidegger to Derrida. Topics and concepts for discussion will include Being-in-the-world, the nature of consciousness, the lived body, temporality, the priority of otherness and hermeneutics.

INSTRUCTOR(S): S. Boos

FORMAT: Lecture/seminar

### **CTMP 4150.03: Derrida and Deconstruction.**

The class studies Derrida's thought intensively - from the development of deconstruction, through his innovative exploration of works of art and literature, to his politically inflected late writings on the gift, forgiveness, and hospitality.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

### **CTMP 4200.03: Philosophies of Technology I: From Techne to Technology.**

What does it mean to live in a "technological society"? In a certain sense, technology forms the very ground of what it means to be "modern". We moderns are technological beings. This class will explore the history, structure and associated problems of our coming to be technological, beginning with technical arts and instrumental reasoning of Enlightenment and industrial ideology. Post-Enlightenment critiques polarizing around the place of "machine" and alienation in Karl Marx, and in the "question concerning technology" in Martin Heidegger will then be examined, leading up to the present state of technological discourse. In each case, we shall mark the importance of contextualising the debate by examining the actual historical evolution of technology. Weekly lectures will be devoted to presenting a social and historical background to the development of modern technologies. Student-led seminars will focus on the reading of primary texts in the field.

INSTRUCTOR(S): Staff

FORMAT: Seminar/lecture

CROSS-LISTING: HSTC 4200.03

### **CTMP 4201.03: Philosophies of Technology II: Questions Concerning Technology.**

This topical seminar class will explore in detail the implications of powerful contemporary debates concerning the meaning and place of technology. What do we mean by technology? Can there be a philosophy of technology? What are the political and cultural ramifications of going technological? Topics will include: technological determinism in history, feminist critiques, technology and development, the meaning of expertise, technology, art and the "lifeworld", social-construction vs. actor-network theory, Donna Haraway's concept of cyborg culture and the "modern technological sublime". The class will be conducted in seminar format with particular emphasis placed on the elucidation of historical and contemporary case-studies. Whenever possible, guest lecturers from the "real world" of technology will be invited to participate in class.

INSTRUCTOR(S): Staff

FORMAT: Seminar/lecture

CROSS-LISTING: HSTC 4201.03

### **CTMP 4301.03: Freud, Lacan and the Critique of Psychoanalysis.**

Is psychoanalysis a medical practice, a method of interpretation, or an account of the social symbolic? The modern skepticism about consciousness and conscious life is most thoroughly voiced in psychoanalytic thought as first developed by Freud and pursued in the work of Jacques Lacan. This class will consider the question of the modern psyche, the nature of symbolic practices in art and literature, and the construction of libidinal economies in society. The central question of the class will concern the way in which the individual subject is incorporated in symbolic practices. The recent attacks on Freud and Freudian methodologies will also be considered.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### **CTMP 4302.03: Recent French Feminist Theory.**

This class will concentrate on some of feminism's most challenging voices, those that have emerged from France at the end of the last century Kristeva, Cixous and Irigaray. The class will attempt to illuminate the intellectual background against which these women write, particularly in the areas of linguistic and anthropological structuralism, and in psychoanalytic theory. The class will be organized in part by the historical evolution of feminist thought, in part by the consideration of central feminist concerns.

INSTRUCTOR(S): E. Edwards

FORMAT: Lecture/tutorial

CROSS-LISTING: GWST 4402.03

EXCLUSION: Former CTMP 2030.06 and 4300.06

### **CTMP 4315.03: Psychoanalysis and Politics.**

Freudian psychoanalysis and its Lacanian successor have added new dimensions to the analysis of contemporary political issues. In the mid-twentieth century Sigmund Freud's theory of the unconscious was drawn upon to supplement liberal and Marxist analyses of fascism. Lacanian psychoanalysis has recently been employed in the understanding of nationalism, ethnic conflict and religious fundamentalism through such categories as identification, recognition and trauma. The course will begin with some key texts by Freud and Lacan, and then move to a consideration of recent examples of the conjunction of psychoanalytic and political theory.

INSTRUCTOR(S): Staff

FORMAT: Seminar

**CTMP 4330.03: Ethics after the Holocaust.**

Shortly after World War II ended, thinkers such as Arendt, Adorno, and Buber reflected on the causes of the Jewish genocide and its impact on humanity. It has taken decades, however, for others (such as Fackenheim, Habermas or Derrida) to confront "Auschwitz." In this course, we will inquire into the challenges the Holocaust poses to philosophy, to ethics in particular. The thinkers discussed reflect on the collapse of traditional ethical systems in the wake of national socialism. In various ways and in different religious and cultural contexts, they search for a possibility of an alternative moral foundation for life "after Auschwitz."

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

**CTMP 4410.03: Special Topics in Contemporary Social and Political Thought in the 20th Century.**

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context.

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 4410.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 full credits) prior to enrollment.

**CTMP 4411.03: Special Topics in Contemporary Science and Technology.**

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year.

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 4411.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 10 full credits) prior to enrollment.

**CTMP 4415.03: Special Topics in Contemporary Aesthetic and Critical Theories.**

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year.

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Programme. Students can enrol only once in CTMP 4415.03.

FORMAT: Seminar

PREREQUISITE: Students must complete at least 2 years of university study (minimum 6 full credits) prior to enrollment.

**CTMP 4510.03/4511.03/4515X/Y.06: Independent Readings in Contemporary Studies.**

In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction

PREREQUISITE: Honours registration in Contemporary Studies and permission of the instructor and director.

**Please note:** Students may take an Independent Reading class only when they reach their third or fourth year. Only one full class or the equivalent may be taken in a year. No more than two full classes of this type may be taken during the class of study.

## Costume Studies

Website: <http://www.theatre.dal.ca>

See Theatre, page 321

# Early Modern Studies Program

Location: University of King's College  
Halifax, NS B3H 2A1  
Telephone: (902) 422-1271  
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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Director

Robertson, N. G., BA (Vind), MA (Dalhousie), PhD (Cantab)

## Teaching Staff at the University of King's College

Curran, T., BA (Tor), MA (Dalhousie), MTS (AST), PhD (Durham)  
Dyck, D., BA, MA (Sask)  
Goddard, V., BHum (Carleton), MA, PhD (Toronto)  
Kow, S., BA (Carleton), MA, PhD (Toronto)  
Morris, K., BA (Vind), PhD (McGill)  
Robertson, N. G., BA (Vind), MA (Dalhousie), PhD (Cantab)  
Stankovic, BA (York), MA (Trent), PhD (Guelph)  
Vusich, J., BA (Toronto), MA, PhD (Johns Hopkins)

## Teaching Staff at Dalhousie University

Barker, R., BA (Vind), MA (Dalhousie), PhD (Birmingham)

## I. Early Modern Studies Program

What is the meaning of modernity? What are its origins? Is modernity to be embraced as a source of freedom or rejected as destructive of both nature and humanity? These provocative and challenging questions are addressed in the Early Modern Studies Program (EMSP), which explores the nature of modernity through a study of its origins and development in European culture from the 16th to early 19th centuries, a time of spectacular upheaval.

For centuries the concept of "modernity" has provoked challenging questions and heated controversies. Is modernity to be embraced as a source of freedom or to be rejected as destructive of both nature and humanity? Indeed, many now define themselves as "post-modern". But what is the actual nature of modernity? Why is western society configured as it is today? One way to gain clarity about the nature of modernity is to study its origins and development in European culture. This search for clarity motivates the Early Modern Studies Program.

The Early Modern Studies Program (EMSP) is offered jointly by Dalhousie University and the University of King's College. This program brings together established departmental offerings in the arts and social sciences at Dalhousie and joins these with Early Modern Studies classes - including a required 'core' class for each upper year of study - at King's. The King's portion of this intercampus degree program consists of interdisciplinary classes taught by specialists from a number of academic fields. The intention is to provide students with a many-sided yet unified introduction to the study of European culture from the sixteenth to the early nineteenth century.

The interdisciplinary offerings within the EMSP at King's count as one of two honours subjects or toward one of two minors. EMSP classes are designed so that important figures and developments of the period may be considered on their own terms and in relation to other important aspects of the period. This will often involve consideration of the differences between the Early Modern and other historical periods of the west, and the contrasts with non-European cultures in the Early Modern period. The three core classes together with the honours seminar are intended to give students a framework for understanding philosophical, scientific, moral, social, institutional, and aesthetic phenomena in the Early Modern period. The non-required classes focus on diverse aspects of and explanations for the

complex and interlocking developments in Early Modern culture. Many of them pursue at greater depth questions introduced in the core classes.

Aside from preparing undergraduates for future more specialized training at the graduate or professional level, the EMSP is intended to provide them with a broad overview of the Early Modern period. Students are encouraged to relate the various aspects of Early Modern thought and culture to one another and to develop independent insights into the nature of this historical period. It is also hoped that EMSP students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

## II. Degree Programs

### A. Combined Honours

The departmental offerings within EMSP at Dalhousie include the other honours subject and a number of possible electives. The other honours subject must be selected from the following list of Dalhousie departments and programs: Canadian Studies, Classics, Creative Writing, English, French, Gender and Women's Studies, German, History, International Development Studies, Italian Studies, Music, Philosophy, Political Science, Religious Studies, Russian Studies, Sociology and Social Anthropology, Spanish, Sustainability, Theatre or any of the BSc Honours subjects. Electives may be taken in any of the above-mentioned departments and programs as well as in the following: Contemporary Studies and History of Science and Technology. In addition, a number of classes in the Dalhousie Faculty of Arts and Social Sciences have been cross-listed with Early Modern Studies, and some Dalhousie faculty members participate in Early Modern Studies classes at King's.

Students who are eligible to take an honours degree should apply to the EMSP and the other department or program concerned as early as possible. All students must meet the requirements of the Faculty of Arts and Social Sciences as detailed in the Degree Requirements section of this calendar, page 131. Because it is an honours program, the quality of work required in it is higher than that required in a 15 credit minor or 20 credit major program.

Applications for admission must be made to the Dalhousie department concerned and to the Early Modern Studies office at King's on forms available from the Registrar at either Dalhousie or King's. Students should apply to the program and seek advice on class selection before registering for the second year. If this is not done, it may be necessary to make up some work not previously taken. For each individual student, the entire degree program, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by a member of the Early Modern Studies teaching staff.

All EMSP students are encouraged to acquire competence in languages through appropriate classes which are relevant to their degree, interests, and future plans.

The joint Dalhousie/King's Early Modern Studies Program is based on the general requirement that the 20 full credits needed to graduate include:

1. Completion of **either** the King's Foundation Year Program (either the three or the four credit version) **or** at least two appropriate first year full credits at Dalhousie which involve the study of pre-nineteenth century ideas or institutions (that is, Classics, CLAS 1010X/Y.06, CLAS 1100X/Y.06, CLAS 1700.06, CLAS 1800.06; English, ENGL 1000X/Y.06; History, HIST 1701.03, HIST 1702.03; Music, MUSC 1000X/Y.06, MUSC 1350.03, MUSC 1351.03; Philosophy, PHIL 1000X/Y.06, PHIL 1010X/Y.06; Political Science, POLI 1010.03, POLI 1015.03, POLI 1020.03, POLI 1025.03, POLI 1030.03, POLI 1035.03, POLI 1100X/Y.06, POLI 1103X/Y.06; Religious Studies, RELS 1001.03/1002.03; Sociology and Social Anthropology, SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06; Mathematics, MATH 1001.03 and MATH 1002.03).
2. A minimum of 11 and a maximum of 14 credits beyond the 1000 level in the two honours subjects, but not more than eight nor fewer than five full credits being in either of them.
3. Completion of one full credit at the 2000-level (or higher) in a single one of the following languages: French, German, Greek, Latin, Russian, or Spanish or another language with approval of the Director.
4. The three 'core' classes in Early Modern Studies: EMSP 2000.06, EMSP 3000.06, EMSP 4000.06.
5. An honours qualifying examination (see Degree Requirement: BA, BSc Combined Honours (4-year)). Early Modern Studies students may choose to acquire this additional grade in either honours subject. In the Early Modern Studies Program, completion of the Honours Seminar (EMSP 4500.06) fulfills

the requirement of the honours qualifying examination; or, with the approval of the director, an honours thesis (in conjunction with EMSP 4550.06) may also serve to fulfil the requirement of the honours qualifying examination.

Students will be eligible to take an 'Independent Reading' class only when they reach their third or fourth year. There will be six options for this class, but only one full credit or the equivalent may be taken in a year. No more than two full credits of this type may be taken during an EMSP degree. The permission of a member of the teaching staff and the Director of the program is necessary in order to take one of these classes, and their availability is strictly limited.

A class offered by the EMSP that is also cross-listed to another program or department must be taken as an EMSP class if it is to count towards the fulfillment of the normal requirements of no fewer than four credits in each of the two honours subjects in a combined honours degree in EMSP (see section 2 above).

## B. Minor in Early Modern Studies

### Requirements

Students seeking a minor in Early Modern Studies must complete three full credits in EMSP. Students are required to complete at least one of the three "core" classes in EMSP (EMSP 2000.06, EMSP 3000.06, EMSP 4000.06). Students must also complete at least one full credit at the 3000 or 4000 level (EMSP 3000.06 or EMSP 4000.06 will also fulfill this requirement).

## C. Minor in Popular Culture Studies

### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## III. Classes Offered at the University of King's College

All classes in the Early Modern Studies Program require students to have completed at least one year of university study (maximum five credits) prior to enrolment.

Note: Not all classes are offered every year. Please consult the current timetable.

### EMSP 2000X/Y.06: Structures of the Modern Self.

Central to what distinguishes modernity from the ages preceding it was the development of a new conception of the self. This class traces the history of the modern self in its cultural expressions from its beginnings in the Renaissance. The developing and often diverse explorations of the self in the Early Modern period will be considered through an examination of the philosophic and literary texts as well as other aesthetic phenomena. To help provide a sense of what the modern self implies, continual reference will be made to its relation to social and economic developments, to a changing perception of gender and to institutional authority, particularly governmental and ecclesial.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): N. Robertson

FORMAT: Lectures/tutorials

PREREQUISITE: Either King's Foundation Year Programme or two first-year credits at Dalhousie which involve the study of pre-19th century ideas or institutions

### EMSP 2011.03/EMSP 3011.03/EMSP 4011.03: The Lecture Series.

In some years a lecture series class is offered. Students are allowed to take up to three such classes, one for each year of upper-level study. Each class will consist of six bi-weekly evening lectures given by specialists from Atlantic Canada and beyond and a weekly two-hour seminar. The lecturers will offer students reflections on a number of contemporary issues and themes. Each year a different theme will be explored.

INSTRUCTOR(S): Staff

FORMAT: Seminar/evening lectures

EXCLUSION: CTMP 2010.06, CTMP 3010.06, CTMP 4010.06

### EMSP 2230.03: Picture and Poetry in Early Modern Culture.

Early modern artists and thinkers were fond of the Latin phrase, *ut pictura poesis*, which means, "as in painting, so in poetry." Ben Jonson for example argued that "poetry and picture are arts of a like nature, and both are busy about imitation." The objective here will be to test the validity of such claims with reference to early modern visual art and literature. Are poets and painters engaged in the same field of representation? Do they adopt parallel strategies of representation? Do they interpret and organize social energies in similar ways?

INSTRUCTOR(S): V. Goddard

FORMAT: Seminar

### EMSP 2240.03: Themes in Early Modern Science, Metaphysics and Epistemology.

This course covers the period from Descartes through Kant and is structured around a study of themes in science, epistemology and metaphysics as they evolved in this period. Although the themes to be covered may vary somewhat, on the philosophical side the main ones will be a selection from the following: theories of representation, theories of perception, theories of concepts and abstract ideas, theories of knowledge and the issue of scepticism (proofs of God and of the external world), metaphysics and ontology, causality, and doctrines of logic and method. What makes the Early Modern period so intellectually fascinating is that philosophy and science, empirical studies and a priori studies, are interwoven. We shall look at some parts of the tapestries that resulted, especially in the area of cognitive science, especially in Descartes, but also including physics and mathematics, and the contributions of other philosophers of the period.

The course starts from the premise that the ideas of these philosophers are to be taken seriously as contenders for philosophical truth. Accordingly we will use the methods of analytic philosophy, both conceptual analysis and argument reconstruction, to bring these theories into the most favourable light, then use whatever methods are available to us to critically assess them. The amount of reading material will not be large but what there is will be the subject of close study. Written assignments, papers, class participation and term tests will be the method of evaluation.

INSTRUCTOR(S): T. Vinci

FORMAT: Seminar

### EMSP 2250.03: The Myth of Modernity in Goethe's Faust.

The Faust myth can be described as the myth of modernity itself. The ideas of human self-realization and progress are under debate in the story of the German scholar Dr. Faustus who in his pact with the devil transgresses the boundaries that

nature, religion and society imposed on mankind. Unquestionably the most famous representation of this modern myth is Goethe's *Faust*. Written over a period of sixty years (1772–1832), Goethe's opus magnum broadens the focus of the original myth to portray the central ambiguities and controversies presented by the modern age. His *Faust* is the story of modern man at large, successful, egotistical, torn, alienated, driven, in search of truth and totality, a man who in the course of his life becomes spectacularly guilty, and in the end is spectacularly (and controversially) redeemed. *Faust's* journey through the world traces major developments of the Western world from the sixteenth to the early nineteenth century, developments that still shape today's world.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### **EMSP 2260.03: The Philosophes, the Encyclopédie and Enlightenment Movement.**

This course explores the range, depth and commitment of the work of several leading figures of the eighteenth-century intellectual movement that came to be known as Les Lumières in France, the Enlightenment in Scotland, Aufklärung in Germany, and Illuminismo in Italy. The course takes a primary interest in the French philosophes, writers, and thinkers who contributed directly to the *Encyclopédie*, but some consideration will also be given to the movement in these other European countries. Course readings will include a nucleus of articles from the *Encyclopédie*, ou *Dictionnaire Raisonné des Sciences, des Arts et des Metiers*, whose publication was overseen by Denis Diderot and Jean le Rond d'Alembert from 1751-1772, augmented by a host of other works of major philosophical, scientific, aesthetic, cultural, and historical importance.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: Students must complete 30 credit-hours before registering in this class

### **EMSP 2270.03: Endless Romance.**

The great medieval genre of romance both endured and metamorphosed in the Early Modern period. This class will consider the important transformation of romance in the period by concentrating on two main texts, Spenser's *The Fairy Queen*, and Cervantes' *Don Quixote*. The class will begin by looking at a few paradigmatic late medieval romances of the fifteenth century, including portions of Sir Thomas Malory's *Le Morte D'Arthur*, and the Spanish romance by Martorel, *Tirant lo blanc*. The main texts will then be considered as examples of the extraordinary reception of the genre, as continuation, elaboration and allegorization in the case of Spenser, and as the foundation of the novel in the case of Cervantes. Central themes such as quest, errancy, and desire will be considered; there will be a limited number of readings on the theory of romance (Frye, Bakhtin, Parker). In conclusion, we will briefly consider much later manifestations of romance, in the work of the romantic poets.

INSTRUCTOR(S): E. Edwards

FORMAT: Seminar

### **EMSP 2280.03: Friedrich Schiller's Historical Drama.**

Friedrich Schiller's five historical dramas range over Early Modern Europe from the Hundred Years War to the Thirty Years War, and find settings in medieval Switzerland and France, as well as Counter-Reformation Spain and Elizabethan England. These five plays will be analyzed according to lyrical, theatrical, historical and aesthetic criteria.

INSTRUCTOR(S): Th. Curran

FORMAT: Seminar

CROSS-LISTING: GERM 2280.03

### **EMSP 2290.03: German Romanticism: From Goethe to Hegel.**

Romanticism begins by overthrowing conventional literary rules and attitudes. It demands scepticism towards received religious doctrine and practice. Genuine feeling and political liberation are enhanced by attention to classical antiquity and modern folktale. Apparently a reaction against the modern, from Goethe to Hegel, Romanticism manages to eclipse almost everything else.

INSTRUCTOR(S): T. Curran

FORMAT: Seminar

CROSS-LISTING: GERM 2290.03

### **EMSP 2310.03: Women and Gender in Early Modern Science.**

This class will explore the roles of women, and questions about women's nature, in the development of Early Modern science. The class will consider several interrelated aspects of scientific culture in the sixteenth, seventeenth, and eighteenth centuries: first, we will look at the place of women in the scientific

institutions of the time. Although women were, for the most part, excluded from universities and scientific academies, some women were able to do scientific work through their participation in salons and craft guilds. The second part of the class will look at the contributions of some particular women to the fields of physics, astronomy, botany, and medicine. We will then examine how science interpreted sex and gender. We will pay special attention to the biological sciences and their treatments of sex differences, conception, and generation. We will consider how these biological theories were influenced by, and at the same time used to uphold, various political and social structures. Finally, the class will explore the ways in which gender and nature were portrayed in the broader cultural context. We will, for example, discuss the ways in which women were depicted as scientists and as symbols of science in art and literature.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar

CROSS-LISTING: GWST 2310.03, HSTC 2310.03

### **EMSP 2313.03: The Vampire: Modernity and the Undead.**

Since the emergence of vampire stories in the late sixteenth century, the vampire has served as a complex symbol for forces that defy or challenge modernity. This course will examine the figure of the vampire as it appear in folklore, philosophy, fiction, poetry, film, and television. Throughout the course we will consider the works in their historical and cultural context, considering what changing ideas of the vampire can tell us about early modern and contemporary views of death, morality, national identity, sexuality, and gender.

INSTRUCTOR(S): K. Morris

FORMAT: Seminar

CROSS-LISTING: CTMP 2313.03

### **EMSP 2320.03: Witchcraft in Early Modern Europe.**

The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious, and political contexts. Questions that will be addressed include: How did the Renaissance interest in magic influence the Early Modern understanding of witchcraft? What impact did concerns about popular religion have on the witch trials? What constituted evidence that someone was a witch? What did Early Modern scientists think about witchcraft? The class will pay special attention to Early Modern notions of gender and sexuality and their influence on the witch hunts and witch trials.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/tutorials

CROSS-LISTING: GWST 2320.03, RELS 2420.03

### **EMSP 2330.03: Nature Imagined: Literature and Science in Early Modern Europe.**

The Scientific Revolution of the sixteenth, seventeenth, and eighteenth centuries brought about massive changes in the scientific world view. These changes also had a great influence on the literature of the period. Some writers were entranced by the new natural science, and sought to disseminate its principles and lionize its most significant figures. Other writers were harshly critical of the emerging notions of scientific progress and domination of nature. This class will examine the ways in which science was portrayed in Early Modern poetry, prose, and drama, in an attempt to understand how the new science, and new conceptions of nature, were understood and received in the broader philosophical and cultural context.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar

EXCLUSION: EMSP 2340.03 and HSTC 2340.03

### **EMSP 2340.03: The Origins of Science Fiction in Early Modern Europe.**

In 1500, literate Europeans lived in a bounded, geocentric universe. By 1800, the sun had replaced the earth at the centre of a limited planetary system situated in infinite space. These changes prompted Early Modern philosophers, scientists and writers to consider the possibility that the universe might contain a plurality of worlds. This course will explore the ways in which the "plurality" theme was developed in some of the earliest works of science fiction. We will consider this theme as it appears in stories of intergalactic voyages, utopian societies, and encounters with extraterrestrial beings, paying special attention to the ways in which Early Modern writers used these tales to speculate on philosophical, political, and scientific issues.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar  
CROSS-LISTING: HSTC 2340.03  
EXCLUSION: EMSP 2330.03

### **EMSP 2350.03: The Body in Early Modern Europe.**

This course will explore how the emergence of the modern self intersected with changing conceptions of the body. We will explore such topics as the rise of Renaissance anatomy; Early Modern perceptions of gender, race, and sexual difference; new explanations of madness and melancholy; monstrous and demonic bodies; representations of the diseased body; and the emergence of the modern ideal of the disciplined body.

INSTRUCTOR(S): K. Morris  
FORMAT: Lecture/tutorial

### **EMSP 2360.03: Magic, Heresy and Hermeticism: Occult Mentalities in the Scientific Revolution.**

The "Scientific Revolution" is ordinarily construed as the triumph of reason over superstition, of science over sorcery. This course argues that the rhetoric of "Enlightenment" conceals a deep continuity between modern science and the occult traditions of the Middle Ages and the Renaissance. The prototype of the experimental scientist is the Faustian magus. We investigate the role of Hermeticism, magic, and the occult in the scientific revolution and the persistence of these esoteric currents in later movements, from German Naturphilosophie to Jungian psychology.

INSTRUCTOR(S): K. Fraser  
FORMAT: Lecture/tutorial  
CROSS-LISTING: HSTC 2120.03, HIST 2990.03

### **EMSP 2410.03: Imagining the Other: The Portrayal of the Non-European World in Early Modern Culture.**

Europeans' encounter with non-European cultures in the early modern period shaped national economies, political power, and European self-understanding. Confrontation with non-European societies reinforced hegemonic, reflective, and self-critical aspects of European culture. The class analyzes how writers and artists implicitly engaged in clarifying and criticizing European identity as they came to terms with non-Europeans. The texts and images derive from Portuguese, Italian, Spanish, English, French, and Dutch sources from the late middle ages to the end of the eighteenth century. The contexts include Southeast Asia, India, Africa, North and South America, Polynesia, and purely imaginary settings.

INSTRUCTOR(S): J. Crowley  
FORMAT: Colloquium

### **EMSP 2420.03: Virtue, Vice, and the Commercial Society in Early Modern Literature.**

An important development in Early Modern Europe is the emergence of the commercial society in the seventeenth and eighteenth centuries. The increasing power of the state, the rising middle class, and growing trade within and without Europe were accompanied by significant changes in religious, social, and political thought. The class will consider literary works by authors who grappled with the moral implications of the growth of commercial society in Europe, particularly in England at the beginning of the eighteenth century. The purpose of the class is to explore these complex changes in morality and society through the close examination of texts by authors such as Daniel Defoe, Bernard Mandeville, and Jonathan Swift. These authors sought to understand and to some extent criticize the notion of a society chiefly devoted to the acquisition of economic wealth. Furthermore, they employed literary genres such as travel literature and satire to explore the changing conceptions of virtue and vice in Europe, thus presenting often ambiguous treatments of commercial society. The theoretical justifications of commercial society in the thought of Hobbes and Locke will first be considered to provide a framework for discussion. As well, reference will be made throughout to other philosophical and artistic works of the period. Comparisons between the texts will be emphasized in written assignments and seminar presentations.

INSTRUCTOR(S): S. Kow  
FORMAT: Lecture/seminar

### **EMSP 2430.03: The Pursuit of Happiness in Early Modern Culture.**

A central preoccupation in early modern European culture, particularly in the eighteenth century, was that of the attainment of happiness in one's private life and in society in general. Happiness was seen as the highest good by some thinkers - as arguably reflected, on a political level, in the American constitution - while others argued against the identification of happiness with goodness. This class will examine various literary and philosophical texts in which the pursuit of happiness in its diverse senses is an important theme. Depictions of the happy life as well as

philosophical and literary critiques of the primacy given to happiness will be discussed.

INSTRUCTOR(S): S. Kow  
FORMAT: Lecture/seminar

### **EMSP 2440.03: Providence, Progress, Degeneration: Early Modern Ideas of Historical Transformation.**

Against the background of works of both Renaissance historians and seventeenth-century state-of-nature theorists, eighteenth-century authors developed new theories of multi-staged historical existence. Readings may include selections from authors such as Vico, Rousseau, Voltaire, Smith, Gibbon, Lessing, Kant, and Herder.

INSTRUCTOR(S): Staff  
FORMAT: Lecture/seminar

### **EMSP 2450.03: The East is Read: Early Modern Conceptions of Asian Thought.**

This class will consider Early Modern European interpretations of key Asian texts. The reactions of Early Modern thinkers to the "Oriental World," as it was known, reflect the philosophical concerns of Europeans at different times in the Early Modern period. For example, Enlightenment thinkers sometimes used Asian ideas to criticize European traditions, whereas post-Enlightenment philosophers of history tended to depict the non-Western world as less free or progressive than Western European cultures. Not surprisingly, then, Early Modern conceptions of Asia were often crude or idealized. We will assess both the merits of early modern interpretations of Asian thought and what these interpretations reveal about the self-consciousness of European thinkers in the Early Modern period.

INSTRUCTOR(S): S. Kow  
FORMAT: Seminar  
CROSS-LISTING: CHIN 2080.03

### **EMSP 2460.03: Images of Modernity in Cinema: Early Modern Stories on Film.**

This class is intended to introduce students to the history and culture of European and Asian societies from the sixteenth to early nineteenth centuries through the study of film. The motion pictures to be screened dramatize such events, themes, and/or stories as the Protestant Reformation, Shakespearean drama, the decline of chivalry in France and Japan, French Absolutism, the wild child phenomenon, and cross-cultural encounters in the Americas and South Pacific. Each week will include both a film screening and relevant lecture and discussion. The films may include such titles as *A Man for All Seasons* (1966), *Henry V* (1989), *Amadeus* (1988), *The New World* (2005), *Seven Samurai* (1954), *Cyrano de Bergerac* (1990), *Aguirre: The Wrath of God* (1972), *Black Robe* (1991), *The Wild Child* (1970), *The Bounty* (1984), and *Ridicule* (1996). Selected primary and secondary documents will be assigned to supplement the films. No prior knowledge of early modern history and culture is assumed.

INSTRUCTOR(S): S. Kow  
FORMAT: Lecture/discussion/film screening

### **EMSP 2470.03: Visions of Renaissance Political Thought in Film.**

Renaissance political thought has been successfully adapted to films set in various imagined contexts. This class will examine the creative intersections between the political ideas in Renaissance texts and film adaptations in such settings as Renaissance England, feudal Japan, and modern-day Britain and the United States. The films may include such titles as *The Godfather I and II*, *Edward II*, *Richard III*, *Ran*, *Throne of Blood*, and *the Revengers Tragedy*.

INSTRUCTOR(S): S. Kow  
FORMAT: Film Screening and Lecture/Discussion

### **EMSP 2480.03: The Pirate and Piracy.**

This class will examine early modern historical, philosophical, and literary accounts of pirates and piracy. It will also trace ancient and medieval precursors to these early modern treatments as well as consider later representations—literary and cinematic—of early modern piracy and implications for contemporary piracy.

FORMAT: Lecture/discussion  
CROSS-LISTING: HIST 2750.03  
RESTRICTION: Restricted to students in their 2nd year and above

### **EMSP 3000X/Y.06: The Study of Nature in Early Modern Europe.**

This class provides an overview of the major changes and continuities of representation of the natural world in the sixteenth, seventeenth and eighteenth centuries. It seeks to recover the Early Modern understanding that the study of

nature is incomprehensible if isolated from new techniques and technologies and from the philosophical and artistic disciplines. Because developments in the study of nature in this period are relative to institutional place and national location, the principal elements of the social, economic, political and cultural contexts within which scientists and philosophers of nature worked will be considered. As well, the aesthetic representations of nature and its study will be a theme throughout the class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): K. Morris  
FORMAT: Lectures/tutorials

### EMSP 3203.03: Critiques of Modernity.

What is the status of the modern world? Is it a source of freedom and truth or rather the deconstruction of religion, humanity and nature. The contemporary period has defined itself in many ways through the critique of modernity. These critiques have come from an array of perspectives: philosophic, aesthetic, religious, moral, political. This class will provide a survey of a number of such critiques seeking to grasp both points of commonality, disagreement and development.

INSTRUCTOR(S): N. Roberston  
FORMAT: Seminar  
CROSS-LISTING: CTMP 3103.03

### EMSP 3210.03: The Dialectic of Enlightenment I.

In the course of criticizing tradition and integrating the experience of Renaissance and the Reformation, in responding to the beginnings of modern natural science and modern political institutions, Early Modern Europeans sought in diverse – and often conflicting – ways to express the self-understanding of Enlightenment. By the end of the eighteenth century, science, morality, and art were seen as different realms of activity in which questions of truth, justice, and taste could be separately determined, that is, evaluated according to their specific criteria of validity. This class will consider how these differences compelled European philosophers and theologians, artists and social theorists, to develop and expand their self-understanding to the point where enlightened reason could properly reflect the formal divisions of culture and make critical judgements in relation to them. Special attention will be paid to the relationship between faith and knowledge and the growing sense of conflict between religion and secular freedom.

INSTRUCTOR(S): K. Kierans  
FORMAT: Seminar  
CROSS-LISTING: CTMP 3110.03

### EMSP 3213.03: Kant and Radical Evil.

This course will examine the roots of the modern conception of radical evil in the late work of Immanuel Kant. Beginning with the traditional, pre-Kantian conception of evil as a merely negative phenomenon – as a lack or privation of being – we will trace the emergence of Kant's radical innovation, his positive conception of evil as the ineradicable "knot" at the very heart of human freedom. We will also consider at some length the subsequent career of Kant's doctrine in 19th and 20th Century thought.

INSTRUCTOR(S): D. Brandes  
FORMAT: Seminar  
CROSS-LISTING: CTMP 3113.03  
EXCLUSION: EMSP 3630.03

### EMSP 3220.03: The Dialectic of Enlightenment II.

In enlightened European culture, religion, state, and society as well as science, morality, and art were gradually separated from one another under exclusively formal points of view, and subordinated to a critical reason that took on the role of a supreme judge. By the beginning of the nineteenth century, many Europeans began to question the self-understanding evoked by the principle of critical reason. This class will consider how enlightened freedom and reason moved European philosophers and theologians, artists and social theorists, to conceive of themselves historically, that is, to become conscious of the dissolution of tradition, and of the need to ground the divisions of culture in ideal forms of unity derived from the tradition. The class will pay particular attention to the relationship between religion and the demand that the unifying force in culture come from a dialectic residing in the principle of enlightened reason itself.

INSTRUCTOR(S): K. Kierans  
FORMAT: Seminar  
CROSS-LISTING: CTMP 3115.03

### EMSP 3230.03: Impersonations: Theatre, Performance and Identity in Early Modern England.

In his celebrated "Oration on the Dignity of Man," Pico della Mirandola glorified man's ability to "transform himself into what he most wills, taking like a chameleon the colour of all those things to which he is most nigh." For Pico as for many Early Modern thinkers, human subjects were distinguished less by preordained identities than by an actor-like ability to fashion and perform new selves. In Early Modern England, the burgeoning commercial theatre became a focal point for cultural debates about the social and ethical ramifications of this performative construction of the self. This course will explore these debates both as they relate to the growth of the professional theatre and in terms of their wider implications for Early Modern English society. We will begin by looking at the roles traditionally played by performance in the affirmation of identities both aristocratic and plebeian. We will then go on to examine a number of plays from the main genres performed in English public theatres between 1590 and 1640. By reading these plays alongside primary sources from conduct manuals to statutes for theatre governance, and from playwrights' celebrations of their art to Puritans' attacks on the theatre's degeneracy, we will consider the huge range of cultural responses to the relationship between performance and identity in a rapidly shifting social order. Special attention will be paid to the interrogations of class, gender, sexuality, and morality implied in these works, and to their far-reaching effect on English society before and after the closure of the public theatres in 1642.

INSTRUCTOR(S): R. Barker  
FORMAT: Seminar

### EMSP 3240.03: Opera and the Idea of Enlightenment.

This course explores opera's emergence and development as a dominant Western art form during and after the Early Modern period. Through close analysis of key works, we will strive to understand how opera's fusion of music, drama, poetry and visual spectacle reflected-and helped to shape-changing ideals of enlightenment.

INSTRUCTOR(S): R. Barker  
FORMAT: Screenings/Lecture/Discussion

### EMSP 3250.03: Atheism in Early Modern Europe.

Although atheism continues to be a source of controversy and debate, one of the most significant features of the modern world is the extent to which religious unbelief has become accepted as a morally and intellectually defensible position. This course will seek to understand the rise of modern atheism by examining its origins in the Early Modern world.

INSTRUCTOR(S): K. Morris  
FORMAT: Lecture/tutorial  
CROSS-LISTING: RELS 3250.03

### EMSP 3310.03: Hidden Worlds: Microscopy in Early Modern Europe.

Microscopes were introduced into Europe at the beginning of the seventeenth century. In the words of Robert Hooke, the microscope opened up a "new visible World" to the understanding -- a strange new landscape populated by vast numbers of new creatures. This class will explore the influence the microscope, and the micro - world that it opened up, in the development of Early Modern science. In the first part of the class, we will take a close look at early microscope technology and its evolution in the seventeenth, eighteenth, and early nineteenth centuries. The second part of the class will explore the role of the microscope in the evolution of Early Modern science. We will, for example, consider the role of microscopy in the emergence of the new mechanical philosophy and the new experimental science. We will also discuss the histories of some scientific theories (for example, of contagion and generation) that made particular use of observations made with microscopes. Finally, the microscope's revelation of "new worlds" raised conceptual difficulties that puzzled scientists and philosophers alike. In the final part of the class we will consider the challenges that new kinds of experience raised for Early Modern philosophy, as well as the possible influence of philosophical debates on the acceptance of the new technology.

INSTRUCTOR(S): K. Morris  
FORMAT: Seminar  
CROSS-LISTING: HSTC 3310.03

### EMSP 3321.03: In search of the Philosopher's Stone: The History of European Alchemy.

This course traces the development of alchemical theories and practices in the Medieval Latin West up to the emergence of early modern chemistry. It employs a multi-disciplinary approach which treats the scientific, technological, esoteric and iconographic dimensions of alchemy as interdependent. The entire development



of European alchemy is covered from the transmission of the Greek and Islamic alchemical traditions in the 12th century up to Newton, whose alchemical theories represent a point of transition to early modern chemistry in one direction, and to a more spiritualised occult philosophy in the other.

This course is independent of HSTC 3120.03. All students interested in the intersections of science, magic and mysticism are welcome.

INSTRUCTOR(S): K. Fraser

FORMAT: Lecture/seminar

CROSS-LISTING: HIST 3990.03, HSTC 3121.03

### EMSP 3330.03: Science and Religion: Historical Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the Early Modern period. From an examination of the biblical view of nature and ancient Babylonian astrology and divination, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo's controversy with the Church and instances where religious belief inspired scientists like Boyle and Newton. Claims that certain confessional traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion relations are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic, and witchcraft. This course employs examples from eastern and Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

INSTRUCTOR(S): G. Levit

FORMAT: Seminar

CROSS-LISTING: HSTC 3200.03, HIST 3075.03

### EMSP 3340.03: Knowledge is Power: Francis Bacon and the Birth of Modernity.

Modern western culture draws close connections between three facets of human experience: a) our knowledge of nature; b) our visions of what it is to be human; and c) power, or the political, social, and technological means by which we relate the first two: nature and human nature. The Renaissance period (roughly 1400-1630) was highly influential in laying the foundations for such modern connections, even as it seems to us to be a period rather different from our own. We will examine those connections in an exploration primarily of the work of Francis Bacon (1561 - 1626).

INSTRUCTOR(S): I. Stewart

FORMAT: Seminar/lecture

CROSS-LISTING: HSTC 3205.03

### EMSP 3420.03: Religious Warfare and Political Theology in the Early Modern Period.

The sixteenth and seventeenth centuries in Europe witnessed tremendous upheavals in society, in part caused by religiously based strife. Many thinkers responded to these events by formulating "political theologies", i.e., interpretations of religious teachings especially as contained in scripture with a view to assessing the political consequences of religion and to harmonizing religious interpretations with a particular conception of political life. We shall examine various Continental European and British texts of the Early Modern period which are both timely and thoughtful reflections on Christian teachings as they relate to and sometimes conflict with the philosophical underpinnings of the modern state and religious freedom.

INSTRUCTOR(S): S. Stankovic

FORMAT: Seminar

CROSS-LISTING: RELS 3010.03

### EMSP 3430.03: Theories of Punishment: Retribution and Social Control in Early Modern Thought.

Among the distinctive characteristics of Early Modern thought are new conceptions of retribution and social control. In this class, we shall examine a number of texts which reflect the diversity of philosophical and theological approaches to law and punishment, both human and divine. We begin with a consideration of pre-modern and/or non-Western approaches to these issues. We then explore the various Early Modern reactions to and departures from these approaches, including the writings of Protestant thinkers and political philosophers before, during, and after the Enlightenment. Finally, we shall

consider Foucault's "normalization thesis" to see if it illuminates our understanding of Early Modern thought on punishment.

INSTRUCTOR(S): S. Kow

FORMAT: Seminar

### EMSP 3440.03: Reconstructing Political Modernity.

This class will examine several interpretations of Early Modern philosophers by twentieth-century authors who are original political thinkers in their own right. These interpretations have involved as much reconstruction of Early Modern thought as faithful scholarly commentary. Indeed, they sometimes shed more light on the interpreter than the thinkers being interpreted. Thus, we shall critically analyze the radical transformations of Early Modern texts that were undertaken in order to make these works relevant to social and political questions centuries later.

INSTRUCTOR(S): S. Kow

FORMAT: Seminar

PREREQUISITE: One of: CTMP 2000.06, CTMP 2100.03, CTMP 2101.03, CTMP 3110.03, CTMP 3115.03, EMSP 2000.06, EMSP 2440.03, EMSP 3210.03, EMSP 3220.03, EMSP 3420.03, EMSP 3430.03, EMSP 4000.06, PHIL 2210.03, PHIL 2220.03, PHIL 2270.03, POLI 2400.03, POLI 2410.03, POLI 2420.03, or instructor's permission.

CROSS-LISTING: CTMP 3135.03

### EMSP 3450.03: Common Tragedy: Catastrophe, Loss and Ambition in Early Modern Europe.

Modern consciousness can be defined by new visions of death, loss and ambition. As modernity emerges and "matures", so do writings on catastrophe. Writings from the catastrophic fourteenth - century, the seventeenth - century plague, and the 1755 Lisbon earthquake provide insight into shifts and continuities between late medieval and modern senses of the self.

INSTRUCTOR(S): S. Dodd

FORMAT: Lecture

EXCLUSION: EMSP 3630.03 for the 2006/07 academic year only

### EMSP 3510X/Y.03/3511.03/3515X/Y.06/4510.03/4511.03/ 4515X/Y.06: Independent Readings in Early Modern Studies.

In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected. Only one full credit or the equivalent may be taken in a year. No more than two full credits of this type may be taken during the course of study.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Individual instruction

PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Programme. Restricted to students in 3rd year and above.

### EMSP 3610.03: Studies in Early Modern Subjectivities.

In this class, students will explore a focussed topic in an interdisciplinary context. Topics vary each year. Some of the topics are "Empirical Selves and Transcendental Selves in German Idealism", "Freedom and Necessity in Enlightenment Debates about the Self", "Self Portrait in Literature and the Visual Arts", and "Reformation and Subjectivity in Early Modern Thought".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### EMSP 3620.03: Studies in Early Modern Natural Philosophy.

In this class, students will explore a focussed topic in an interdisciplinary context. Topics vary each year. Some of the topics are "Teleology", "Exploration and Early Modern Natural Philosophy", and "Mathematics and Metaphysics in the Seventeenth Century".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### EMSP 3630.03: Studies in Early Modern Social and Political Thought.

In this class, students will explore a focussed topic in an interdisciplinary context. Topics vary each year. Some of the topics are "States of Nature in Early Modern

Political Thought", "The Seventeenth-Century Discovery of Sovereignty", "The Concept of the State", and "Apocalyptic Thought in the Early Modern Period".  
NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### EMSP 3640.03: Studies in Early Modern Aesthetics.

In this class, students will explore a focussed topic in an interdisciplinary context. Topics vary each year. Some of the topics are "The Quarrel of the Ancients and Moderns", "The Status of the Artist in Society", and "Storm and Stress".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### EMSP 4000X/Y.06: Conceptions of State, Society, and Revolution in the Early Modern Period.

This class involves close examination of works by important and influential political thinkers from the sixteenth to early nineteenth centuries. These thinkers reflected on historical changes and events in their day - including the disunity of Italy, the Protestant Reformation, the English civil war, the Glorious Revolution, the rise of bourgeois society, the French Revolution, and the Napoleonic wars - and formulated complex and sophisticated accounts of human society, sometimes to provide for social and political stability, sometimes to promote freedom and justice. We shall trace the development of their ideas, from investigation into human nature and contractual theories of society to considerations on political life in relation to philosophy of history. Assigned texts will include works by such authors as Machiavelli, Hobbes, Milton, Locke, Montesquieu, Rousseau, Kant, Burke, and Hegel.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): S. Kow.

FORMAT: Seminar

### EMSP 4300.03: Nature and Romanticism.

Kant's "Copernican Revolution" in philosophy, ironically, marked a resurrection of a full-blown "idealist" philosophy of nature. This class will investigate the attempts of Kant's followers to construct a natural philosophy and its engagement with the rival mechanical world picture. It explores the implications of this endeavour for the growth of romanticism, vitalism and our modern picture of "nature". It begins with an examination of the ambiguous heritage presented by Kant's writings on nature and proceeds through the attempts to develop a complete program of idealist Naturphilosophie and its spread throughout European thought by the medium of romanticist art and natural philosophy.

INSTRUCTOR(S): G. McQuat

FORMAT: Lecture/tutorial

CROSS-LISTING: HSTC 4300.03

### EMSP 4310.03: Newton and Newtonianism.

This seminar involves a close study of the work of Isaac Newton, along with that of his supporters and detractors. Beginning with an overview of pre-Newtonian science, topics range from Newton's rejection of Cartesianism through his contributions to mathematics, physics, astronomy and optics, along with his inductive scientific method, laws of motion, and calculus priority dispute with Leibniz. Also considered are lesser-known aspects of his career, such as his secretive pursuit of alchemy, his heretical theology, his attempts to unravel the Apocalypse, his role in British statecraft, and his autocratic rule of the Royal Society. A taxonomy of the forms of Newtonianism that emerged after Newton's death also allows an exploration of iconographical and apologetic uses of Newton, and his differing legacies in the Britain and France. This seminar concentrates on primary readings, including Newton's *Principia* (1687), *Opticks* (1740), alchemical treatises and unpublished theological papers, as well as the Leibniz-Clarke correspondence (1717), anti-Newtoniana and eighteenth-century popularizations of Newtonianism such as Voltaire's *Philosophical letters* (1733) and Maclaurin's *Account of Newton's discoveries* (1748). Attention is paid to the social, cultural, and political aspects of Newtonianism and no prior knowledge of science is required.

INSTRUCTOR(S): S. Snobelen

FORMAT: Seminar

CROSS-LISTING: HSTC 4400.03

### EMSP 4500X/Y.06: Honours Seminar in Early Modern Studies: The Development of Aesthetic Theory in the Early Modern Period.

While the arts have been a topic of theoretical concern since antiquity, it is only in the Early Modern period that aesthetics emerged as an independent field of inquiry. This seminar will consider how the various understandings of the arts with which the Early Modern period began developed into the independent field of aesthetics. Throughout the class, art and literature of the period will be studied in conjunction with theoretical texts.

This class may be designated as fulfilling the honours qualifying examination requirements for an EMSP Combined Honours BA (see section 6 of Degree Programme above). Students are also welcome to take this course as an elective with the permission of the instructor.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): N. Robertson

FORMAT: Seminar

PREREQUISITE: Honours registration in Early Modern Studies or permission of the instructor. Restricted to students in 3rd year and above.

### EMSP 4550X/Y.06: Honours Thesis in Early Modern Studies: Reading and Research.

In this class the student is assigned to a member of staff for regular meetings to discuss readings and present research for the purpose of completing an honours thesis in Early Modern Studies.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Individual instruction

PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor, and the Director of the Program

### EMSP 4610.03: Special Topics in Early Modern Subjectivities.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Montaigne", "Interiority in Shakespeare", and "Jansenism and the Self".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### EMSP 4620.03: Special Topics in Early Modern Natural Philosophy.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Leibniz", "Goethe's Natural Science", and "Experimentalism".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### EMSP 4630.03: Special Topics in Early Modern Social and Political Thought.

This Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Hobbes", "Machiavelli and Reason of State Theories", and "Milton and Early Modern Political Theory".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### EMSP 4640.03: Special Topics in Early Modern Aesthetics.

The Special Topics classes focus on one author or one particular school of thought in an interdisciplinary context. Topics vary each year. Some of the topics are "Sterne and British Empiricism", "Romanticism as a European Phenomenon", and "Hegel's Aesthetics".

NOTE: Not more than one of each course number can be taken for credit towards the Early Modern Studies Program.

INSTRUCTOR(S): Staff

FORMAT: Seminar

# English

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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

Ross, T. (494-6873)

## Undergraduate Advisor

Greenfield, B. (494-6968)

## Professors Emeriti

Fraser, J., MA (Oxon), PhD (Minn), FRSC  
Wainwright, J. A., BA (Toronto), MA, PhD (Dalhousie), McCullough Professor in English

## Professors

Barker, W. A. B. (Dartmouth), MA, BEd, PhD (Toronto)  
Baxter, J. R., BA, BEd, MA, PhD (Alta)  
Diepeveen, L. P., BA (Calvin Col), MA, PhD (Ill)  
Furrow, M. M., BA (Dalhousie), MA, MPhil, PhD (Yale)  
Huebert, R., BA (Sask), MA, PhD (Pitt)  
Luckyj, C., BA, MA, PhD (Toronto)  
Stewart, A. F., BA (Guelph), MA, PhD (Queen's)  
Stone, M. I., BA (Guelph), MA, MPhil (Waterloo), PhD (Toronto), McCulloch  
Chair in English  
Tetreault, R. R., BA (UBC), MA, PhD (Cornell)  
Thompson, J. A., BA (Western), MA, PhD (Toronto)

## Associate Professors

Bennett, E., BA, MA (Dalhousie), MA (Carleton), PhD (Dalhousie)  
Cawsey, K., BA (Wilfrid Laurier), MPhil (Oxford), PhD (Toronto)  
Dawson, C., BA (UBC), MA (Sussex), PhD (Queensland)  
Enns, A., BA (University of North Carolina), MA (Hollin University), MA, PhD (University of Iowa)  
Evans, D., BA (Toronto), MA, PhD (Rutgers)  
Greenfield, B., BA (York), MA (McGill), PhD (Columbia)  
Haslam, J., BA, MA (McGill), PhD (Waterloo)  
Irvine, D., BA (Victoria), MA (Calgary), PhD (McGill)  
Maitzen, R., BA (UBC), MA, PhD (Cornell)  
McNeil, D., BA (Concordia), MA (UNB), PhD (McMaster)  
Ross, T., BA, MA (Carleton), PhD (Toronto)  
White, J. BA (Oregon), MA, PhD (Alberta)  
Wright, J., BA, MA, PhD (Western) (Canada Research Chair in European Studies)

## Assistant Professors

Bhat, S., BA (Cornell), MFA (Johns Hopkins), Creative Writing  
Brittan, A., BA, MA (Toronto), PhD (Pennsylvania)  
Wunker, E., (University of North Carolina), MA (McGill), PhD (Calgary)

## Senior Instructor

Choyce, L., BA (Rutgers), MA (Montclair), MA (CUNY)

## I. Introduction

The study of English includes both analysis of texts and awareness of contexts. The texts proposed for analysis in various English classes will range from the traditional to the contemporary; English is a discipline which can and does adjust to include writings by Tomson Highway, Toni Morrison, and Chinua Achebe alongside works by Chaucer, Shakespeare, Milton, Austen, and the rest. The wide range of human experience represented in these texts can provide the student with what Kenneth Burke has called "equipment for living." In more practical terms, the discipline of English fosters the development of various human skills: it requires the student to think, and to use language with clarity, judgment, and imagination.

But individual works of literature are also related in various ways to their social, cultural, and political contexts. For this reason, curiosity about a particular text often leads to enquiries that touch upon history, philosophy, politics, religion, biography, and the fine arts as well. The written text turns out to be a link between an individual sensibility and the rest of the world. The value of English studies therefore, though difficult to measure, can be discovered both in the large semiologies of the cultures to which we belong, and in the smallest nuances of the language we use.

The calendar descriptions below describe all English classes. Not all are offered in any given year. **Students should consult the English Department website for updated information about which classes are offered this year, and to get detailed descriptions of classes (with booklists).** There is a variety of first-year (1000-level) English classes to suit all inclinations and needs, and all sections with a number ending in -0 can be used to fulfill the University Writing Requirement. Once the first year is complete, students may register in any class at the 2000 or 3000 level, but should ensure that they have the necessary prerequisites (most classes require a full credit in English at the 1000 level, or else Theatre 1000 or King's Foundation Year, but a few are open to anyone with a Writing Requirement class in any discipline). The wide-ranging 2000 level classes are well suited to those concentrating in English, or studying it as a complement to their main area, or taking it as an elective. The smaller and more historically-focussed 3000 classes are also open to both majors and non-majors. More intensive seminars at the 4000 level are mainly intended for students in their third and fourth years of an English Majors or Honours program. Two of the half-credit surveys (2001, 2002, 2003, 2004, 2005, 2006) and one of the half-credit theory classes (3000, 3001, 3002) are required of all English 15 credit minor, 20 credit Majors, and 20 Credit Honours students. All of these classes are described in detail at <http://www.dal.ca/english>.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA with Honours in English

Students must meet the faculty requirements for honours, which include nine to 11 credits (one credit = six credit hours) in English above the 1000 level; within these nine to 11 credits, students must take the following:

- at least one of 3000.03, 3001.03 or 3002.03
- at least two (one full credit) of the six 2000-level surveys (ENGL 2001.03, 2002.03, 2003.03, 2004.03, 2005.03, 2006.03)
- at least one full credit in each of the following two groups
  - Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.06, 3008.03, 3010.03, 3011.03, 3015.03)
  - Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3040.03, 3061.03, 3062.03)
- 4990.00 English Honours Capstone (non-credit class)
- five half credits at the 4000 level

To be considered for the Honours program, students must attain a 3.3 avg. GPA in upper-level English classes, and apply to the English Department Chair.

### B. BA with Combined Honours

Students must meet the faculty requirements for combined honours degrees, which include at least five and no more than eight credits in English above the 1000 level (at least 11 to a maximum of 14 in both subjects. Among the English classes, students must take:

- at least one of 3000.03, 3001.03 or 3002.03

- at least one (half credit) of the six 2000 level surveys (ENGL 2001.03, 2002.03, 2003.03, 2004.03, 2005.03, 2006.03)
- at least three credit hours (or one half credit) in each of the following two groups
  - Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.06, 3008.03, 3010.03, 3011.03, 3015.03)
  - Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3040.03, 3061.03, 3062.03)
- 4990.00 English Honours Capstone (for students weighting their programs towards English)
- nine credit hours (or three half credits) at the 4000 level

To be considered for the Honours program, students must attain a 3.3 average GPA in upper-level English classes, and apply to the English Department Chair.

### C. BA (20 credit) Major in English

Students must meet the faculty requirements, which include six to nine credits in English above the 1000 level, including three credits above the 2000 level; within these six to nine credits, they must take the following:

- at least one of 3000.03, 3001.03 or 3002.03
- at least two (full credit) of the six 2000 level surveys (ENGL 2001.03, 2002.03, 2003.03, 2004.03, 2005.03, 2006.03)
- at least one full credit in each of the following two groups:
  - Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.06, 3008.03, 3010.03, 3011.03, 3015.03)
  - Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3040.03, 3061.03, 3062.03)
- One half credit at the 4000 level

### D. Double Major

Students must meet the requirements for the double major, which include 10 - 14 credits in the Major subjects above the 1000 level (no more than eight and no fewer than five in either). Students must take at least two credits above the 2000 level in each subject. Among their English classes, students must take:

- at least one of 3000.03, 3001.03 or 3002.03
- at least one (one half credit) of the six 2000 level surveys (ENGL 2001.03, 2002.03, 2003.03, 2004.03, 2005.03, 2006.03)
- at least three credit hours (or one half credit) in each of the following two groups
  - Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.06, 3008.03, 3010.03, 3011.03, 3015.03)
  - Restoration, Eighteenth-Century, Romantic, Victorian, American (pre 1914) (ENGL 3017.03, 3019.03, 3020.03, 3022.03, 3025.06, 3029.03, 3031.03, 3032.03, 3040.03, 3061.03, 3062.03)
- three credit hours (or one half credit) at the 4000 level

### E. BA (15 credit) Minor in English

See requirements for minor below.

### F. Minor in English

Any four credits in English at or above the 2000 level. At least one .5 credit course must be 3000 level or above.

### G. Minor in American Studies

Three credits to be selected from the list below. Students minoring in American Studies must take at least one half credit from each of the three participating departments: ENGL, HIST, POLI. Please note that not all classes are offered each year.

- ENGL 2003: American Literature
- ENGL 2070: African American Literature
- ENGL 3061: American Literature to 1865
- ENGL 3062: American Literature 1865-1914
- ENGL 3070: 20th Century African American Novel
- ENGL 3220: American Literature of the Earlier Twentieth Century
- ENGL 3221: American Literature of the Later Twentieth Century
- ENGL 3245: Beat Generation
- ENGL 3820: Nabokov
- ENGL 4017: William Faulkner and Toni Morrison
- ENGL 4022: Ellison and Everett

- ENGL 4280: Hollywood Fiction
- ENGL 4400: Nature and American Culture
- ENGL 4405: American Gothic
- ENGL 4406: New York in Fiction and Poetry
- ENGL 4456: American Literature of the Great Depression
- ENGL 4609: Moby Dick in Context
- ENGL 4803: Race and Gender in American Speculative Fiction
- ENGL 4281: Literature and Television
- HIST 2331: Creation of the American Republic
- HIST 2332: The American Republic, 1840 to 1990
- HIST 2333: Political Reform in Twentieth Century America
- HIST 2335: Modern American Culture
- HIST 2336: The American Century
- HIST 2340: The Cold War
- HIST 3358: Slavery, Gender, and Power: Women in Nineteenth Century America
- HIST 3361: The American Civil War and Reconstruction
- HIST 3365: The Vietnam War
- HIST 3368: American in the 1950s
- HIST 3369: American in the 1960s
- HIST 3370: North American Landscapes
- HIST 3372: The Cuban Missile Crisis
- HIST 3373: Spying on the World: The CIA in American History
- HIST 3374: The Objectivity Question in American History
- HIST 3380: Slavery and Freedom in the Americas
- HIST 4360: Slavery and American Political Culture
- HIST 4988: The Historiography of American Foreign Relations, Post-1945
- POLI 2300: Comparative Politics
- POLI 2540: Canadian-American Relations
- POLI 3304: Comparative Federalism
- POLI 3378: US Constitution, Government and Politics
- POLI 3431: Politics Through Film and Literature
- POLI 3440: The Politics of Fear
- POLI 3525: Comparative Foreign Policy Simulation
- POLI 3574: American Foreign Policy
- POLI 4242: Politics of Reason, Passion, Biology
- POLI 4512: The Politics of North America

### H. Minor in Popular Culture Studies

#### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

- 2.5 credits from:
- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
  - EMSP 2313: The Vampire
  - EMSP 2320: Witchcraft in Early Modern Europe
  - EMSP 2480: The Pirate and Piracy
  - ENGL 2006: Cultural Studies
  - ENGL 2080: Cartoons & Comics
  - ENGL 2095: Narrative in the Cinema
  - ENGL 2231: Foundations of Science Fiction
  - ENGL 2232: Contemporary Science Fiction
  - ENGL 2235: Tolkien: Fantasy & Medievalism
  - MUSC 2016: Topics in Music and Cinema
  - MUSC 2018: Popular Music Until 1960
  - MUSC 2019: The Rock'n'Roll Era and Beyond
  - MUSC 2020: The History of Jazz
  - THEA 2360: Popular Cinema

one full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip

- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## I. Emphasis in Canadian Studies

English students interested in obtaining an emphasis in Canadian Studies along with their major in English should consult the Canadian Studies calendar entry for information on requirements and for a list of English classes approved with Canadian Studies.

## J. Creative Writing Program

The Creative Writing program in the Faculty of Arts and Social Sciences is not restricted to FASS students, and allows any Dalhousie student interested in writing fiction, poetry, dramatic narrative (playwriting), and narrative non-fiction to take four full credits in creative writing above the first-year level, thus combining these classes with his or her major or honours area of study. Therefore, the program would fulfill a BA (20 credit) Double Major program with creative writing as the secondary area, or a BA (20 credit) Combined Honours program with creative writing as a secondary area.

- **Program Prerequisite**
  - CRWR 2000.06 (The Creative Process)
- Equivalent of two full credits from:
  - CRWR 3000.03 (Poetry)—20 students (cap)
  - CRWR 3001.03 (Fiction)—20 students (cap)
  - ENGL 3098.03 (Creative Writing: Poetry I)—24 students (cap)
  - ENGL 3099.03 (Creative Writing: Fiction I)—24 students (cap)
  - Theatre 3600.06 (Playwriting)—15 students (cap)
  - Journalism 3440.03X/3441.03Y (Narrative Non-Fiction at University of King's College)—25 students (cap)
- One full credit from:
  - CRWR 4000.06 (Advanced Poetry)—20 students (cap)
  - CRWR 4001.06 (Advanced Fiction)—20 students (cap)
  - CRWR 4002.06 (Advanced Playwriting)—15 students (cap)
  - CRWR 4003.06 (Advanced Narrative Non-Fiction)—25 students (cap)
  - One additional full credit at or above the 2000 level.

**Note: If you are taking the Creative Writing Program, CRWR 2000 is a prerequisite for any of the third year seminars. Also, if you are taking the program, ENGL 3098.03 is a prerequisite for CRWR 3000.03 and ENGL 3099.03 is a prerequisite for CRWR 3001.03.**

**Writing portfolios are required for consideration of entry into English 3098 and 3099. Submission date is August 15 preceding the beginning of the academic year.**

Students interested in Creative Writing but not completing the program may enter individual third year CRWR seminars with the instructor's permission.

## III. English Class Descriptions

ENGL 1010.03, 1020.03, 3000.03, 3001.03, 3002.03, and 4990.00 are offered every year, as are most of the six 2000 level surveys (ENGL 2001-2006). Other classes may not be offered every year. **Please consult the department's website to determine this year's class offerings.**

### English Classes at the 1000 level

The study of English at the 1000 level is an occasion to read, discuss, and write about works of literature, as well as other forms of verbal and visual culture. All English classes at the 1000 level emphasize the variety and excitement of thinking in the verbal arts, and they all deploy techniques for analyzing and writing about texts.

In addition to these general goals, any full-credit class, or any two half-credit classes in English at the 1000 level with a number ending in -0 will fulfill the College of Arts and Sciences requirement for a Writing Class. The same class or classes will fulfill the College of Arts and Sciences Languages and Humanities requirement, as well as serving as the pre-requisite for upper-level classes in English (where these are required).

In addition to fulfilling the above mentioned requirements, students are free to take more classes in English at the 1000 level.

It is important to remember when you are choosing more than one 1000 level class how they relate to one another. English 1010.03 and English 1020.03 are complementary single term, half-credit classes, between them covering the genres of prose, poetry, and drama that the full-credit class English 1000.06 covers in fall and winter term. Each section of these three classes has a different instructor and a different variety of older and contemporary literary texts. English 1011.03 will be taught together with 1010.03, and English 1021.03 together with 1020.03: these smaller sections will be offered for those who want to take the subject matter of 1010 or 1020, but without taking them as Writing Requirement classes. Because of the overlap of subject matter (the study of genres), you cannot take 1000 and any of the set 1010, 1011, 1020, or 1021 in order to count more than one credit towards a degree.

English 1040.03 (Reading Popular Culture) and English 1050.03 (Pulp Fiction) differ from the genre classes just discussed in terms of their subject matter and critical approach. They also have non-writing requirement versions (English 1041 and English 1051), and they can be taken by themselves or together with English 1000 or English 1010, 1011, 1020, 1021.

In addition to these classes focusing on the analysis of literary texts, the English Department offers English 1100.03, Writing for University Students. This class prepares students to write analytic and research papers. The focus of this class is on the principles and practice of composition and not on the analysis of works of literature. In combination with any of the other 1000 level half-credit classes in English with a number ending in -0 (that is, 1010, 1020, 1040, or 1050), it fulfills the Writing Requirement.

As an aid to choosing classes at the 1000 level, students should consult the detailed description of each class available on the English Department's web site. Some examples of patterns of class choice that would allow fulfillment of the Writing Requirement and the humanities distribution requirement, and would allow all three half-credit classes to be counted for credit, would include 1010, 1020, and 1041; or 1100, 1020, and 1011; or 1050, 1100, 1021; and so on.

### ENGL 1000X/Y.06: Introduction to Literature.

This class has two broad but connected objectives: (a) to introduce students to the advanced study of literature in English; (b) further to develop students' literacy skills so that they will be more critical and responsive readers and more exact and imaginative writers. The texts to be studied will differ from section to section, but all sections will explore a variety of authors, genres, national literatures, and time periods. Students can expect to read writers from William Shakespeare to William Gibson, from George Eliot to George Eliot Clarke, and from Jane Austen to Jack Kerouac. Practice in writing is carried on throughout the year in regular essays. For a more complete description of all sections and of texts, students should consult the Departmental website.

ENGL 1000.06 will satisfy the University Writing Requirement and serve as prerequisite for entry into most upper-level classes.

**NOTE:** Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

**FORMAT:** Lecture/discussion. ✍️ Writing Requirement.

**EXCLUSION:** ENGL 1010.03, ENGL 1020.03

### ENGL 1010.03: Prose and Fiction: Writing Requirement.

This class shares with its complement, ENGL 1020.03, two broad but connected objectives: (a) to introduce students to the advanced study of literature; (b) to develop students' literacy skills further so that they will be more critical and responsive readers and more exact and imaginative writers. Terminology and concepts central to literary studies will be introduced. The class will consider the effect of genre, and it will focus on non-fictional prose (such as essays and autobiography) and fiction (such as short stories and novels). Both recent and early examples of various genres will be explored. Please consult the full description of each section on the departmental website to find the one best suited to your interests. Explicit instruction in clear and forceful writing is an important component of this class.

**NOTE:** Any two of ENGL 1010.03, ENGL 1020.03, ENGL 1040.03, ENGL 1050.03, or ENGL 1100.03 will satisfy the University Writing Requirement and serve as prerequisite for entry into most upper-level English classes.

**FORMAT:** Lecture/tutorial. ✍️ Writing Requirement.

**EXCLUSION:** ENGL 1000, ENGL 1011

### ENGL 1011.03: Prose and Fiction: non-Writing Requirement.

This class shares with its complement, ENGL 1021.03, two broad but connected objectives: (a) to introduce students to the advanced study of literature; (b) to develop students' literacy skills further so that they will be more critical and responsive readers and more exact and imaginative writers. Terminology and concepts central to literary studies will be introduced. The class will consider the effect of genre, and it will focus on non-fictional prose (such as essays and autobiography) and fiction (such as short stories and novels). Both recent and early examples of various genres will be explored. Please consult the full description of each section on the departmental website to find the one best suited to your interests. This is the non-Writing Requirement version of the class. For the WR version see ENGL 1010.

FORMAT: Lecture/discussion  
EXCLUSION: ENGL 1000, ENGL 1010

### ENGL 1020.03: Poetry and Drama: Writing Requirement.

This class shares with its complement, ENGL 1010.03, two broad but connected objectives: (a) to introduce students to the advanced study of literature; (b) to develop students' literacy skills further so that they will be more critical and responsive readers and more exact and imaginative writers. Terminology and concepts central to literary studies will be introduced. The class will consider the effect of genre, and focus on drama and various forms of poetry. Both recent and early examples of various genres will be explored. Please consult the full description of each section on the departmental website to find the one best suited to your interests. Explicit instruction in clear and forceful writing is an important component of this class.

FORMAT: Lecture/discussion. ✍ Writing Requirement.  
PREREQUISITE: Any two of ENGL 1010.03, ENGL 1020.03, ENGL 1040.03, ENGL 1050.03, or ENGL 1100.03 will satisfy the University Writing Requirement and serve as prerequisite for entry into most upper-level English classes.

EXCLUSION: ENGL 1000, ENGL 1021

### ENGL 1021.03: Poetry and Drama: non-Writing Requirement.

This class shares with its complement, ENGL 1011.03, two broad but connected objectives: (a) to introduce students to the advanced study of literature; (b) to develop students' literacy skills further so that they will be more critical and responsive readers and more exact and imaginative writers. Terminology and concepts central to literary studies will be introduced. The class will consider the effect of genre, and focus on drama and various forms of poetry. Both recent and early examples of various genres will be explored. Please consult the full description of each section on the departmental website to find the one best suited to your interests. This is the non-Writing Requirement version of the class. For the WR version see ENGL 1020.

FORMAT: Lecture/discussion  
EXCLUSION: ENGL 1000, ENGL 1020

### ENGL 1040.03: Reading Popular Culture: Writing Requirement.

This course introduces students to methods of analyzing forms of cultural expression. It engages students in the serious study of diverse creative media including film, television, literature, video games, electronic texts, jokes, advertising, graffiti, cartoons, song lyrics and consumer goods. Explicit instruction in clear and forceful writing is an important component of this class. For the non-WR version, see ENGL 1041.

FORMAT: Lecture/discussion/✍ Writing Requirement  
EXCLUSION: ENGL 1041.03

### ENGL 1041.03: Reading Popular Culture: non-Writing Requirement.

This course introduces students to methods of analyzing forms of cultural expression. It engages students in the serious study of diverse creative media including film, television, literature, video games, electronic texts, jokes, advertising, graffiti, cartoons, song lyrics and consumer goods. This is the non-Writing Requirement version of the class. For the WR version, see ENGL 1040.

FORMAT: Lecture/discussion  
EXCLUSION: ENGL 1040.03

### ENGL 1050.03: Pulp Fiction: Writing Requirement.

This course provides an entry point to the discussion of literature through 'pulp' genres such as romance, mystery/crime, the Western, sci-fi/fantasy, horror, sports

literature, and comic books. It is available in Writing-Requirement and non-Writing Requirement versions. Explicit instruction in clear and forceful writing is an important component of this class. For the non-Writing Requirement version, see ENGL 1051.

FORMAT: Lecture/discussion. ✍ Writing Requirement  
EXCLUSION: ENGL 1051.03

### ENGL 1051.03: Pulp Fiction: non-Writing Requirement.

This course provides an entry point to the discussion of literature through 'pulp' genres such as romance, mystery/crime, the Western, sci-fi/fantasy, horror, sports literature, and comic books. This is the non-Writing requirement version of the class. For the WR version see ENGL 1050.

FORMAT: Lecture/discussion.  
EXCLUSION: ENGL 1050.03

### ENGL 1100.03: Writing for University Students.

An introduction to rhetoric and composition, this class is designed to prepare students to write analytic and research papers. Grammatical and rhetorical terms are addressed, and the class includes a number of assignments to hone writing skills from outline to revision.

FORMAT: Lecture/discussion. ✍ Writing Requirement

### English Classes at the 2000 level.

Classes at the 2000 level are open to **any** student above the first year, with the necessary prerequisites. They include writing-intensive surveys of historical periods, national literatures, and major fields intended as an entrance into the discipline of literary studies, as well as a colorful selection of genre-, author- and topic-oriented classes. Any two of the six half-credit surveys (2001, 2002, 2003, 2004, 2005, 2006) will fulfill the 2000-level requirements for the English minor, major, or honours programs. The following classes will accept any university Writing Requirement credit as a prerequisite: ENGL 2018, 2030, 2040, 2060, 2080, 2088, 2090, 2095, 2110, 2202, 2218, 2221, 2231, 2232, 2233, 2236. As these classes are not offered every year, **students are strongly encouraged to consult the detailed description of this year's classes available on the English Department's web site.**

### ENGL 2001.03: British Literature to 1800.

This class traces the course of British Literature from its beginnings to the year 1800. Starting with Old English works such as *Beowulf* in their historical contexts, we will move on to Middle English, Renaissance, Restoration, and eighteenth-century literature, looking at writers such as Chaucer, Shakespeare, Donne, Milton, Behn, Swift, and Pope. This class puts special emphasis on developing skills in critical thinking, literary historical research, and scholarly argumentation.

FORMAT: Lecture/discussion with tutorial  
PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP  
EXCLUSION: ENGL 2205.06

### ENGL 2002.03: British Literature after 1800.

This course studies many of the traditions and influential writers in British Literature from 1800 to the present. Studying these writers will orient students to British literary history and introduce them to key issues and concepts. This class will also emphasize developing skills in critical thinking, scholarly argumentation, and documentation.

FORMAT: Lecture/discussion with tutorials  
PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP  
EXCLUSION: ENGL 2205.06

### ENGL 2003.03: American Literature.

This class is an introduction to some of the traditions and influential texts of American literature, from its colonial beginnings to the present, providing historical orientation and demonstrating the diversity of American literature. The class will also emphasize developing skills in critical thinking, scholarly argumentation, and documentation.

FORMAT: Lecture/discussion with tutorials  
PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP

### ENGL 2004.03: Canadian Literature.

From early exploration narratives to contemporary fiction, this course will survey a wide range of key texts in the development of Canadian literature in English. It will consider the literary and historical contexts that inform our readings, and identify and interrogate the various myths, images, icons and institutions that

structure our ideas of what it means to be Canadian. This class will also emphasize developing skills in critical thinking, scholarly argumentation, and documentation.  
 FORMAT: Lecture/discussion with tutorials  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP  
 CROSS-LISTING: CANA 2004.03  
 EXCLUSION: ENGL 2207.06

### ENGL 2005.03: World Literature.

This course will introduce students to some of the most influential writers from around the globe, with a focus on contemporary literature written in English or studied in translation. These writers raise pressing questions about the meaning of justice, the power of nations, and the value of human imagination in our global world. This class will also emphasize developing skills in critical thinking, scholarly argumentation, and documentation.  
 FORMAT: Lecture/discussion with tutorials  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP  
 EXCLUSION: ENGL 2212.03, ENGL 2213.03

### ENGL 2006.03: Cultural Studies.

This course surveys notions of “culture” from both historical and theoretical perspectives and introduces students to the critical study of the multiple forms and uses of popular culture. This class will also emphasize developing skills in critical thinking, scholarly argumentation, and documentation.  
 FORMAT: Lecture/discussion with tutorials  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP  
 EXCLUSION: ENGL 2240.06

### ENGL 2018.03: Arthur.

This class will explore the many stories of King Arthur and his Round Table including some of Sir Thomas Malory's *Morte D'arthur*; earlier texts will be read in translation  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Science Writing Requirement.  
 EXCLUSION: ENGL 3018.03

### ENGL 2020.03: Sampling Medieval Literature.

A properly medieval title for this class would be “Florilegium.” It considers works important to the medieval literary scene in England, whether written initially in Old English, Middle English, Anglo-Norman French, Welsh, Norse, or Latin; almost all will be read in translation. The works read may include sagas, riddles, lyrics, the Breton lais of Marie de France, romances, chronicles, plays, saints' lives, comic tales, beast fables.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
 EXCLUSION: ENGL 3218.06

### ENGL 2028.03: Short Poems in English.

Forms and themes in the short poem are studied by means of critical reading of poems written in English. Topics may include the following: the self in the short poem, other persons, public events, love, nature, the city, the machine, wit, myth, traditional forms, free verse, the haiku, lyric as song, spoken poetry, poetry in print, concrete poetry, and possibly other topics to suit the class.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2029.03: Framed Narratives.

This class studies framed narratives - stories within stories - focusing on the dramatic relationship between the frame and the stories within it, and what this form tells us about the nature of storytelling itself.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2030.03: Literature, Health and Healing.

This class explores selected literary texts dealing with various issues of health and healing. The texts include works by writers in different historical periods and cultural contexts. Topics addressed vary, depending upon the instructor, but possible subjects for investigation might include narratives, poems and essays on aging, death or dying; the experience of illness; trauma and recovery; representations of the body; mental illness or neurological disorders; addiction;

pregnancy, birth and the ethical dilemmas associated with abortion; the history of disease; chronic pain or disability; and indigenous healing practices.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2034.03: The Short Story.

This class will examine the form and evolution of the short story.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2040.03: Mystery and Detective Fiction.

In this course, we will study the development of mystery and detective fiction, from Victorian classics by Charles Dickens, Wilkie Collins, and Arthur Conan Doyle to contemporary classics by Agatha Christie and Raymond Chandler and recent works by authors such as Sue Grafton, Sara Paretsky, and Ian Rankin.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2050.03: Literature and Propaganda.

This class explores the relation of literary art to propaganda through the study of selected writings in different genres. Among the terms and concepts that may be considered are didacticism, rhetoric, ideology, pornography, and censorship.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2060.03: Sports Literature.

While material may range from Homer and Pindar to contemporary works, this class will typically focus on a specific sport, period, or subject (e.g., race, the lesbian/gay athlete) or genre. Students will explore the unique features of writing that deals with athletic or sporting activities and recognize how the literature of sport is connected to the broader literary canon. Commercialism, nationalism, authenticity, and aesthetics are possible topics. Consult the current class description.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2070.03: African American Literature.

An introduction to some major modes of writing in the African American community. Subjects of enquiry may include the “escaped-slave” narratives of the nineteenth century, or works produced by members of the Harlem Renaissance, or poetry and fiction by contemporary African American women writers.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2080.03: Cartoons and Comics.

A study of cartoons and comics from the eighteenth century to the present, addressing such issues as the history and formal conventions of the genre as well as its various cultural roles, from the political to the popular and from consumer culture to cultural capital.  
 FORMAT: Lecture  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2085.03: Video Games: Story, World and Play.

This course introduces students to the critical study of video games and gaming culture, with a particular emphasis on how video games combine interactive gameplay, worldmaking, and storytelling.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2088.03: Images and Texts.

This course will examine the rich interrelations of art and literature, from visual and verbal treatments of the same theme (jealousy, for example), to similarities in style (such as impressionism or Dadaism), to specific topics such as humour or scandal.  
 FORMAT: Lecture  
 PREREQUISITE: Any class or combination of classes that satisfies the college of Arts and Sciences Writing Requirement

### ENGL 2090.03: Literature, Multiculturalism, and Identity.

Literature provides a powerful means of developing the cross-cultural understanding essential for living and working in increasingly multicultural societies and differing global contexts. This course examines literature (chiefly novels) that explore the complexities of identities shaped by globalization and multicultural contexts. Topics might include the shifting boundaries of "home"; generational conflicts and connections; cross-cultural romantic relationships; challenges in adapting to a foreign language and/or customs; global cultural networks; and emerging forms of cosmopolitan identity or "fusion" cultures.

FORMAT: Lecture

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement.

### ENGL 2095.03: Narrative in the Cinema.

This class will provide a brief introduction to the study of film narrative. Through an examination of select films from throughout the history of the medium, this class will consider various forms and conventions of cinematic fiction-making. Although social, political, psychological, and other non-formal aspects of film will be discussed, the class will be primarily concerned with the aesthetics and visual styles at work in the films under consideration.

FORMAT: Lecture/discussion/screening

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2110.03: Introduction to Professional Writing.

In this introduction to professional writing, students learn to analyze rhetorical situations, adapt to generic conventions, and adopt the languages of distinct discourse communities. They learn how to determine what constitutes "good writing" and to improve the structure and style of their prose to fit a given professional context. This course gives students the opportunity to research and produce specialized forms of writing. Examples might include case studies, white papers, press releases, business plans, web sites, and user manuals.

FORMAT: Lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Science Writing Requirement.

EXCLUSION: COMM 1701.03, 1702.03, 2701.03

### ENGL 2201X/Y.06: The English Language.

This class, concerning the English language of today, begins with some general questions about the nature of language, and goes on to investigate the syntax, semantics, phonology, and dialects of modern English, with an ultimate interest in the stylistic analysis and comparison of short literary texts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2202.03: Academic Writing.

Focusing on academic discourse, this class is designed for students interested in university writing as an object of study and practice. Students will enhance their understanding of the conventions of scholarly writing, develop their command of English grammar, and hone their skills in the art of using language to persuade.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or King's FYP

EXCLUSION: ENGL 2200.06

### ENGL 2214X/Y.06: Shakespeare.

An introduction to Shakespeare's career as a playwright, through discussion and interpretation of a dozen or more of his plays.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

CROSS-LISTING: THEA 2214.06

### ENGL 2218.03: Gothic Fiction.

This class examines a selection of gothic fiction from Horace Walpole onwards. Attention is paid to the Romantic novelists (Radcliffe, Lewis, Brontë and Maturin) as well as their Victorian and twentieth-century successors (e.g. Bram Stoker and

Patrick McCabe). Among the many subjects that may be considered are Jekyll/Hyde schizophrenic doubles, the popularity of vampirism, and urban fascination with the "serial" killer (e.g. the Ripper murders).

FORMAT: Lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

EXCLUSION: ENGL 2216.06, ENGL 3216.06

### ENGL 2221X/Y.06: Fictions of Development.

A study of a variety of literary works (chiefly novels) which portray the crises and conflicts involved in growing up, finding a vocation, and finding oneself. Works from the nineteenth century to the present by Canadian, English, and American authors are included, and special attention is given to the connections between art and autobiography, and between literature and psychology, as well as to the influence of gender differences in patterns of human development, and ways of writing about them. Class approved with International Development Studies.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

CROSS-LISTING: GWST 2200X/Y.06

### ENGL 2229.03: Tragedy.

This class studies a representative selection of texts from various historical periods in order to arrive at an understanding of the meaning of tragedy. Various definitions of tragedy will be examined along with such possible questions as how has tragedy changed over time, and what is tragicomedy.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, or THEA 1000.06; or the King's FYP

CROSS-LISTING: THEA 2229.03

EXCLUSION: ENGL 2226.06

### ENGL 2230.03: Satire.

A survey of traditional satire from early invective to contemporary caricature. This class chiefly examines conventional forms of verse and prose satires but attention is also paid to the visual and dramatic. Students are introduced to a wide range of specific modes (e.g., the character sketch, mock encomium, travesty, parody, lampoon) and satire's many uses within various national contexts (e.g., Roman, English, American, Canadian).

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 2227.06

### ENGL 2231.03: Foundations of Science Fiction.

Various origins have been offered for science fiction: from classical Greek texts, to *Gulliver's Travels*, to *Frankenstein*, to twentieth-century pulp publications. This course will read science fiction from these various origins through to the so-called Golden Age of Science Fiction in the 1950s. Authors could include Mary Shelley, H.G. Wells, and Hugo Gernsback.

FORMAT: Lecture

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

EXCLUSION: ENGL 2233.06

### ENGL 2232.03: Contemporary Science Fiction.

This course will study science fiction from the Golden Age of the 1940s and 50s to the most recent developments. Such schools and areas as the New Wave, cyberpunk, and postcolonial SF are among the topics that could be explored, as are developments in film, television, and new media.

FORMAT: Lecture

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

EXCLUSION: ENGL 2233.06

### ENGL 2233X/Y.06: Science Fiction.

This course will focus on a selection of science fiction texts, and will discuss the history and definitions of this genre. Authors studied may include such writers as Samuel R. Delany, Philip K. Dick, William Gibson, Nalo Hopkinson, and Mary Shelley. Film and television works may also be discussed.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion



PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement  
EXCLUSION: ENGL 2231.03, ENGL 2232.03

### ENGL 2235.03: Tolkien: Fantasy and Medievalism.

This course will examine the fantasy writings of J. R. R. Tolkien. Topics could include the development of high fantasy, the question of escapism, alternate worlds, heroes and anti-heroes, Norse and medieval mythology, language-creation, Tolkien's medieval scholarship, the Inklings, Tolkien and Christianity, and Tolkien's work in the context of twentieth-century wars and politics.

FORMAT: Lecture

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2236.03: Fantasy after Tolkien.

This course will examine writings in the fantasy genre of the later twentieth century. Authors could include Ursula LeGuin, Guy Gavriel Kay, Charles de Lint, Susan Cooper, R. Scott Bakker, J. K. Rowling, and Philip Pullman.

FORMAT: Lecture

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### ENGL 2250X/Y.06: Bob Dylan and the Literature of the Sixties.

Dylan is certainly one of the most important figures to have participated in and emerged from a remarkable era of political and social upheaval in North America and Western Europe. A considerable amount of this upheaval was centered in the United States in the form of the Civil Rights Movement, protests against the war in Vietnam, and the development of a counter culture. This class will study a selection of texts that contextualize Dylan's song writing and will consider his major lyrics from the sixties.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 2313.03: Shakespeare and his Contemporaries on Film.

This course will study the adaptation of Shakespeare and his contemporaries to the medium of cinema, focusing on the differences between theatre and cinema, the process of textual adaptation, the updating of classic stories to modern settings, and the close analysis of the performer's choices.

FORMAT: Lecture/seminar

PREREQUISITE: Experience in Shakespeare at any level OR experience in Film Studies at any level.

CROSS-LISTING: THEA 2313.03

### English Classes at the 3000 Level

Classes at the 3000 level are usually smaller than 2000-level classes, and are likewise open to **any** student above the first year, with the necessary prerequisites. They include a group of literary methods classes as well as a sequence of classes covering the chronological sweep of English literary history. Any one of the three methods classes offered each year (3000.03, 3001.03, 3002.03) will fulfill the requirement for the English minor, major, or honours programs. Most 3000-level classes require a first-year English credit as prerequisite, but ENGL 3112.03, ENGL 3203.03, and 3310.03 will accept any university Writing Requirement credit. As these classes are not offered every year, **students should consult the English department website for detailed descriptions of this year's classes.**

### ENGL 3000.03: Close Reading.

This half-credit class is intended to give students the tools and vocabulary for the close reading of literary texts, both prose and poetry.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 3001.03: History of Literary Criticism.

A survey of major statements in literary theory from Antiquity to the twentieth century. Topics to be considered may include the value of literature, the relation of fiction to reality, the nature of creativity, the function of genres and conventions, and the role of the critic.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3244.06

### ENGL 3002.03: Contemporary Critical Theory.

A survey of major issues and schools in recent literary theory. This class will debate the merits of various critical approaches to literature, including formalism, Marxism, feminism, psychoanalysis, structuralism, deconstruction, new historicism, and cultural studies.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 3244.06

### ENGL 3005.03: Canterbury Tales.

An introduction to the study of Middle English literature in Middle English by way of Geoffrey Chaucer's collection of tales told by a mixed crowd of people on pilgrimage, from idealistic knight and pious nun to bawdy wife and drunken cook.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 3219.06

### ENGL 3007X/Y.06: Old English.

An introduction to the Old English language and literature in Old English from the seventh to the eleventh centuries. Literary works will include the heroic, the sacred, the bawdy, and the historical; the question of who got to enjoy this literature will lead to such topics as orality and literacy, manuscript production and circulation, palaeography, and multilingual culture.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 4253.06

### ENGL 3008.03: Introduction to Nordic Saga.

Students in this class will study classic Icelandic sagas in modern English translation. They will also explore the mythology, fantasy, and history which inform these heroic medieval tales.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 4360.03

### ENGL 3010.03: Renaissance Poetry and Culture I: More to Jonson.

This class explores the flourishing of English literary culture from the Tudor humanists (such as Sir Thomas More) and courtly makers (Sir Thomas Wyatt) to the Elizabethan sonnet writers (Sir Philip Sidney) and plain style poets (Ben Jonson). Shakespeare's poetry, Spenser's Faerie Queene, and selected works by women authors (including Queen Elizabeth herself) will be represented in the syllabus.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 3224.06

### ENGL 3011.03: Renaissance Poetry and Culture II: Donne to Milton.

This class offers students the chance to interpret poems by one of the most enigmatic English writers (John Donne) and to argue about the view of human nature encoded in one of the most contested English texts (Paradise Lost). In addition, there will be opportunities to study devotional poetry (George Herbert), life-writing (Sir Thomas Browne), women's writing (Lady Mary Wroth), political writing (Andrew Marvell), or even prison writing (by Suckling or Bunyan, for example).

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP  
EXCLUSION: ENGL 3224.06

### ENGL 3015.03: Renaissance Drama.

This class will explore the richness and strangeness of some of the playwrights too often obscured by Shakespeare's shadow. Between the opening of the first professional playhouse in London (1576) and the closing of the theatres by Parliament (1641), the Globe was only one of many venues catering to an avid

theatre-going public, and the first English play by a woman was circulated in manuscript. Playwrights to be studied include Christopher Marlowe, Ben Jonson, Thomas Middleton, John Webster, Elizabeth Cary, and John Ford.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03 or THEA 1000.06; or the King's FYP

CROSS-LISTING: THEA 3015.03

### **ENGL 3017.03: English Poetry and Prose, 1660-1740.**

The poetry and prose from the Restoration and early eighteenth-century contain much in the way of sex and jokes. The class studies works by authors such as Dryden, Rochester, Behn, Finch, Swift, and Pope. Students are introduced to popular forms (heroic couplet, satire, conversational poems, essay, epistle, political allegory) and to the many changes that shaped the literature of the period, notably the decline of the court, the emergence of modern capitalism, and the rise of professional authorship.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3225.06

### **ENGL 3019.03: Poetry and Prose, 1740-1789.**

A survey of poetry and prose from the mid- to late-eighteenth century. This class studies the works of Samuel Johnson and his circle, the poets of sensibility, the Bluestockings, and sundry other authors. It covers a wide range of genres and movements (odes, imitation, poems, aesthetic treatises, fables) in light of contemporary social and political events, from the growth of democracy at home to historic revolutions abroad.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3225.06

### **ENGL 3020.03: English Drama, 1660-1800.**

A survey of plays produced during the Restoration and eighteenth century. Concentrating on the London scene from the first appearance of actresses on the stage to the burning of the Haymarket theatre in 1789, this class introduces students to the period's various dramatic forms, the literary influences and controversies, and the many women and men who penned for the stage.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03 or THEA 1000.06; or the King's FYP

CROSS-LISTING: THEA 3913.03

EXCLUSION: ENGL 3225.06

### **ENGL 3022.03: English Fiction to 1820.**

A survey of the rise of the English novel from Behn to Austen. This class will consider works by several early novelists, some well-known and some not so well-known, and introduce students to a wide range of early prose narratives, such as amatory fiction, the fictional memoir, the roman à clef, the epistolary novel, and various comic and sentimental works.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 2208.06

### **ENGL 3025X/Y.06: Literature of the Romantic Era 1789-1832.**

This course focuses on a selection of writings by men and women from this Age of Revolutions. Students will get a sense of the spirit of the age through reading poetry, novels, and the prose of political controversy. The creative development of canonical writers like Blake, Wordsworth, Keats, and Shelley will be studied in the context of works by female authors and other representative but neglected writers.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3215.06

### **ENGL 3029.03: Victorian Poetry.**

This class explores Victorian poetry in the context of the cultural, social, political, artistic and religious transformations that occurred between the 1830s and 1900. Authors studied will include Tennyson, Robert and Elizabeth Barrett Browning,

Matthew Arnold, and the Pre-Raphaelite poets. Specific emphases will vary, but recurrent themes will include the poet's role in an increasingly technological and scientific culture, the challenges faced by women poets, experimentation with new poetic forms like the dramatic monologue, and the crisis of faith caused by new modes of intellectual inquiry.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3031.03: The Nineteenth-Century British Novel from Austen to Dickens.**

In this course we will study British novels from the first half of the nineteenth century. Specific reading will vary from year to year but will usually include works by Jane Austen, Walter Scott, Charles Dickens, W. M. Thackeray, and the Brontës. We will examine these authors' experimentation and innovation with both the form and the subject matter of fiction as they transformed the novel from a generic upstart into the century's dominant literary form.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 2208.06

### **ENGL 3032.03: The Nineteenth-Century British Novel from Dickens to Hardy.**

In this course we will study British novels of the second half of the nineteenth century. Specific reading will vary from year to year but will usually include works by Charles Dickens, George Eliot, Anthony Trollope, Wilkie Collins, and Thomas Hardy, all writers who drew on the now-established tradition and prominence of the British novel and found their own ways to extend and challenge its conventions.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 2208.06

### **ENGL 3040.03: Irish Literature. 1700-1900: Satire, Sentiment, and the Gothic.**

This course will survey Irish writing in English from 1700 to 1900 and emphasize three literary modes significant to this body of work—satire, sentiment, and the gothic—across the genres of poetry, drama, and prose fiction. Possible authors include Swift, the Sheridans, Moore, Mangan, LeFanu, the Wildes, and Stoker.

FORMAT: Lecture/discussion

PREREQUISITE: English 1000.06; or any two of English 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or Theatre 1000.06; or the King's FYP

### **ENGL 3061.03: American Literature to 1865.**

A survey of the major writers of the United States up to the end of the Civil War. This period includes the earliest practitioners of the modern short story, radically inventive poets, early "nature writers," experimental novelists, and various forms of autobiography.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3062.03: American Literature, 1865-1914.**

A survey of the major writers of the United States from the Civil War to the beginning of the First World War, with an emphasis on the realist novel. Major figures include Mark Twain, Henry James, Edith Wharton, Stephen Crane.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03,

1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3070.03: Twentieth-Century African American Novel.**

While it is obvious that several of the novelists on this reading list might well appear in other classes, it is a worthwhile exercise for students to engage in a conversation about these and other texts by African American novelists in the context of African American novelists. That context will be the focus of this class. Such a comparatively restricted focus brings with it such questions as does it matter that these novels were written by African Americans? What do we gain/lose by considering these texts in this specific national and ethno-cultural context? Are the texts representative, and if so, of what and in what ways? Do these texts reinforce or complicate (or both) notions such as the African American experience?

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### ENGL 3086.03: Post-Colonial Literatures.

This class will allow you to read literature from the former British colonies, as well as some of the influential theorists who are helping to shape the evolving field of postcolonial studies. Our purpose will be to gain familiarity with a selection of the seminal texts, arguments, and debates that characterize this diverse and vibrant area of research and study.

FORMAT: Lecture

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3085.06

### ENGL 3087.03: Literature of the Asian Diaspora.

Literature of the Asian Diaspora encompasses literature written in English by writers of Asian descent and heritage. Each year may have a specific focus, such as Asian Canadian and Asian American, Anglo-Asian, or Asian Australian literature. The course will concern itself with what constitutes Asian diasporic literature, its various historical and social contexts, as well as its narrative traditions and innovations.

CROSS-LISTING: CHIN 3080.03

### ENGL 3098.03: Creative Writing: Poetry I.

This course is for students interested in writing poetry. Various skills will be developed through the sharing of individual and collaborative expression and the understanding of the movement from first draft to finished version of the poem.

FORMAT: Writing Workshop

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or CRWR 2000.06; or King's FYP; and by permission of the instructor, on the basis of submission and

assessment of a portfolio of work.

### ENGL 3099.03: Creative Writing: Fiction I.

This course is for students interested in writing short fiction and novels. It will include the study of literature as a basis for learning skills necessary for the craft. Some aspects of the course will involve theory but the primary focus will be on the process of writing – everything from the basics of getting started to the process of publishing. Students will be expected to participate fully in the course through reading, writing, and discussion.

FORMAT: Writing workshop

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or CRWR 2000.06; or King's

FYP; and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.

### ENGL 3112.03: Writing Theory.

This class considers a range of approaches to writing. Students read widely in rhetoric and composition theory, participate in the ongoing conversation about writing, and heighten their understanding of the composition process. Writing intensive and writing centered, the class is ideal for anyone interested in writing and critical thinking.

FORMAT: Lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

CROSS-LISTING: ASSC 3112.03

EXCLUSION: ASSC 3110.06 / ENGL 3111.06

### ENGL 3113.03: Writing Practice.

This class puts writing theory into practice. As part of their course work, students gain valuable experience working as writing tutors and/or assistant editors for an academic journal. The class is ideal preparation for careers in teaching or publishing, as well as for students going on to do graduate work.

PREREQUISITE: ENGL 3112.03 / ASSC 3112.03 or ENGL 2202.03 or instructor's permission

CROSS-LISTING: ASSC 3113.03

EXCLUSION: ASSC 3110.06 / ENGL 3111.06

### ENGL 3203.03: History of the English Language.

This class introduces students to the study of the history of English, tracing the story from the origins of the language in proto-Germanic to its current abundance of varieties around the globe. Most emphasis will be placed on the development of English in our earlier literature from Old English to Early Modern English, and then its current manifestations in Canada.

FORMAT: lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing  
EXCLUSION: ENGL 3202.03

### ENGL 3220.03: American Literature of the Earlier Twentieth Century.

An introduction to American literature from the beginning of the twentieth century until the end of the second world war.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3213.06

### ENGL 3221.03: American Literature of the Later Twentieth Century.

An introduction to American literature from the middle of the twentieth century until the end.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3213.06

### ENGL 3231.03: Modern Canadian Literature.

The historical period covered in this course extends from the end of World War I through the decade following World War II, a period during which Canada witnessed the formation of a modern literature in English. Varied aesthetic responses to ideas of the modern, the processes and technologies of modernization, and the conditions of social, cultural, economic, and political modernity will be addressed.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

CROSS-LISTING: CANA 3231.03

### ENGL 3234.03: British Literature of the Earlier Twentieth Century.

An introduction to British literature from the beginning of the twentieth century roughly to the end of the second world war.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3212.06

### ENGL 3235.03: British Literature of the Later Twentieth Century.

An introduction to British literature from the middle of the twentieth century until the end.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3212.06

### ENGL 3238.03: Fiction of the Earlier Twentieth Century.

A selection of fiction from the beginning of the twentieth century to approximately the end of the second world war. Texts will be subject to the instructor's preferences.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3209.06

### ENGL 3239.03: Fiction of the Later Twentieth Century.

An introduction to fiction in English from the middle of the twentieth century to the end. Texts will be subject to the instructor's preferences.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

EXCLUSION: ENGL 3209.06

### **ENGL 3240.03: Drama of the Earlier Twentieth Century.**

An introduction to major developments in drama from Ibsen to Brecht. The course will explore the diversity of dramatic styles and theatrical movements, as playwrights respond to and react against the nineteenth century's traditions and their own changing times. In addition to Ibsen and Brecht, authors may include Strindberg, Chekhov, Shaw, Synge, Pirandello, and O'Neill.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3241.03: Drama of the Later Twentieth Century.**

This class focuses on a selection of plays ranging from Absurdist works to present-day texts, including scripts by Canadian dramatists. The focus will be the growth of contemporary theatrical movements, such as the kitchen-sink drama of the 1950s and the "In-Yer-Face" theatre of the 1990s. Playwrights may include Beckett, Ionesco, Osborne, Albee, Stoppard, Churchill, Kane, and Tremblay.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3242.03: Poetry of the Earlier Twentieth Century.**

An introduction to poetry in English from the beginning to the middle of the twentieth century.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3243.03: Poetry of the Later Twentieth Century.**

An introduction to poetry in English from the middle of the twentieth century to the end.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3245.03: The Beat Generation.**

This course will examine the writing of the Beat Generation. Authors to be considered could include Jack Kerouac, Allen Ginsberg, William S. Burroughs, and Denise Levertov, among others.

FORMAT: Lecture and Discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3250.03: Contemporary Women Poets.**

During the last few decades, an extraordinary number of powerful new women poets have appeared on the literary scene. This class focuses on selected works written by these poets, and explores the ways in which monolithic ideas of "woman" have been challenged by individual poets who are positioned differently by race, sexual orientation, and national identity.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

CROSS-LISTING: GWST 3050.03

EXCLUSION: ENGL 3050.06

### **ENGL 3270.03: Contemporary Canadian Literature.**

In this class, a variety of late twentieth-century and recent Canadian fiction and poetry texts will be studied from such perspectives as the following: postcolonial, postmodern, multicultural. The politics of cultural expression will be emphasized, as well as the relationship between ethics and aesthetic approaches to literature.

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

CROSS-LISTING: CANA 3270.03

EXCLUSION: ENGL 3233.03

### **ENGL 3300.03: TV: Theory and Criticism.**

This class considers television as a uniquely powerful source of cultural production, presenting students with some of the theoretical questions it raises and some of the critical methods that have been developed for engaging it. The class will explore the way TV mediates cultural attempts to understand the contemporary world.

FORMAT: Lecture

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3301.03: Graphic Novels.**

This course explores the history and development of graphic novels from the early twentieth century to the present. It examines the history and formal conventions of various genres, and it is particularly concerned with the cultural status of graphic novels and the relationship between verbal and visual forms.

PREREQUISITE: ENGL 1000.06; or any two of ENGL 1010.03, 1020.03, 1040.03, 1050.03, 1100.03; or THEA 1000.06; or the King's FYP

### **ENGL 3310.03: Writing in a Digital Age.**

ENGL 3310 focuses on the analysis and production of electronic texts. Students publish their work electronically and explore emerging theories about hypertext writing and the role of visual rhetoric. Objects of study will encompass a variety of electronic genres, but will focus mainly on sites on the World Wide Web.

FORMAT: Lecture/discussion

PREREQUISITE: Any class or combination of classes that satisfies the College of Arts and Sciences Writing Requirement

### **ENGL 3314.03: Shakespeare and his Contemporaries on Film.**

This course will study the adaptation of Shakespeare and his contemporaries to the medium of cinema, focusing on the differences between theatre and cinema, the process of textual adaptation, the updating of classic stories to modern settings, and the close analysis of the performer's choices.

FORMAT: Lecture/seminar

PREREQUISITE: Experience in Shakespeare at any level OR experience in Film Studies at any level.

CROSS-LISTING: THEA 3314.03

EXCLUSION: THEA 2313.03, ENGL 2313.03

### **ENGL 3501.03: The Modern Theatre 1: Realism and Responses.**

From the 1870s until the coming of the First World War, the theatre underwent a series of radical transformations. This class explores the key theatrical movements of this period, including realism, naturalism, symbolism, and expressionism, and compares the theories behind them to the plays, stagecraft, and performance techniques they produced.

FORMAT: Lecture/seminar/discussion 3 hours

PREREQUISITE: THEA 2011.03 and THEA 2012.03 or Permission of the Instructor

CROSS-LISTING: THEA 3501.03

EXCLUSION: THEA 3500.06

### **ENGL 3502.03: The Modern Theatre 2: High Modernism.**

From the close of WW1 to the 1960s, theatrical modernists sought new artistic forms for a rapidly changing world. This class introduces students to major forms of theatrical modernism from Dada and Theatre of Cruelty through Epic Theatre and Biomechanics to absurdism, and considers their legacy for the contemporary stage.

FORMAT: Lecture and seminar

PREREQUISITE: THEA 3501.03 or Permission of the Instructor

CROSS-LISTING: THEA 3502.03

EXCLUSION: THEA 3500.06

### **ENGL 3820.03: Nabokov.**

A close study of selected works by consummate twentieth century prose stylist Vladimir Nabokov - novelist, poet, critic and translator, author of notorious *Lolita*.

FORMAT: Lecture/discussion

CROSS-LISTING: RUSN 3820.03

### **ENGL 3841.03: Dante II. *Purgatory and Paradise*.**

The course will provide a reading of the *Purgatory* and *Paradise*, the pilgrim's climb of the holy mountain and his ascent to the heavens up to the vision of God. This class places Dante's *Divine Comedy* within a critical context and furthers the study of Dante's oeuvre on the backdrop of the European Middle Ages. Each class will involve reading from the text, commentary and discussion of the readings assigned. The course is taught in English. Italian minors and majors students will be required to read the texts in Italian.

FORMAT: Lecture

PREREQUISITE: Any 2000 humanities class or instructor's permission

CROSS-LISTING: Comparative Religions 4041, ITAL 4041.03

## ENGL 3916.06: Introduction to Applied Linguistics and Language Teaching.

For description of this cross-listed class, see Calendar under FREN 4016.06.

FORMAT: Lecture

CROSS-LISTING: FREN 4016.06

## English Classes at the 4000 Level

Classes at the 4000 level are small seminars intended for third and fourth-year English majors or honours students, offering intensive, research-oriented study of special topics, particular authors or periods, national traditions, literary or cultural forms and theories. Reflecting the specialties of their instructors, their subjects change every year. **Students should consult the detailed description of this year's seminars available on the English department website, and meet with an English department advisor before enrolling in one of these seminars.**

## Studies In Major Authors—4011–4099

## Studies in Genre—4200–4299

## Studies in National Literatures—4400–4499

## Studies in Literary History—4600–4699

## Studies in Culture and Theory—4800–4899

## ENGL 4990.00: English Honours Capstone.

This class is intended to be the culmination of an honours degree, to teach practices and hone skills to carry forward into academic and non-academic professional realms. Emphasis will be on effective communication, both oral and written, of the student's own research, and on constructive responses, both critical and editorial, to the research of others. The class fulfills the requirement of the College of Arts and Science at Dalhousie for an honours qualifying examination, with an importance equivalent to an honours thesis. It is graded pass/fail, carries no credit hours, but is a required distinguishing component of the honours degree.

FORMAT: Seminar

RESTRICTION: Admission by signature; for honours students in English

**Students should consult the department website for a complete list of seminar offerings.**

## IV. Creative Writing Class Descriptions

### CRWR 2000X/Y.06: The Creative Process.

This is a large interdisciplinary class that focuses on creativity in a wide variety of artistic and other areas of thought and expression, such as writing, painting, music, acting/directing, dancing, mathematics, medicine, and advertising.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Students must have fulfilled the Writing Class requirement listed in the Degree Requirements section of the Undergraduate Calendar.

### CRWR 3000.03: Creative Writing: Poetry II.

Building on the work done in English 3098.03, this seminar will involve students in the writing and assessment of poetry, their own as well as that of their peers. The process of writing poetry from the first draft to the final version will be stressed, with attention given to the developing relationship between form and content.

FORMAT: Workshop

PREREQUISITE: ENGL 3098.03

### CRWR 3001.03: Creative Writing: Fiction II.

Following the emphasis on short story writing in English 3099.03, this class will deal with novel writing, with attention to such matters as dramatic elements, story/plot, character development, setting, point of view, revision, and publishing.

FORMAT: Workshop

PREREQUISITE: ENGL 3099.03

### CRWR 4000X/Y.06: Creative Writing Poetry.

Students will meet in group session during the fall term to workshop their material that will lead to the production of a full manuscript of poetry. In the winter term students will meet on an individual basis with the professor to discuss and facilitate the completion of this project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Workshop

PREREQUISITE: CRWR 2000.06, ENGL 3098.03, CRWR 3000.03

### CRWR 4001X/Y.06: Creative Writing Fiction.

Students will meet in group session during the fall term to workshop their material that will lead to the production of a full manuscript of fiction (short stories or novel). In the winter term students will meet on an individual basis with the professor to discuss and facilitate the completion of this project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Workshop

PREREQUISITE: CRWR 2000.06, ENGL 3099.03, CRWR 3001.03

### CRWR 4003X/Y.06: Advanced Narrative Non-Fiction Workshop.

Senior Creative-Writing and/or Journalism students will write and critique narrative non-fiction, a genre which enjoys a rich history and contemporary popularity. Writing techniques from various genres (e.g., character development, metaphor, dialogue) will inform this fusion of fact and fiction, research and experience, the personal and the public etc.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Workshop (i.e., the primary texts will be student-generated and critiqued by students and professor)

PREREQUISITE: Equivalent of two full credits from: CRWR 3000.03, CRWR 3001.03, THEA 3600.03, JOUR 3440.03 and 3441.03 and/or permission of the instructor

### CRWR 4004.06: Advanced Creative Writing Workshop.

Senior creative-writing students will write and critique a variety of genres, including fiction, poetry, narrative non-fiction and/or drama. A significant portion of course time will be devoted to the workshop critique of peer writing. Sustained student work on one large manuscript project will be encouraged.

FORMAT: Workshop (i.e., the primary texts will be student-generated and critiqued by students and prof)

PREREQUISITE: Equivalent of two full credits from: CRWR 3000.03, CRWR 3001.03, THEA 3600.03, JOUR 3440.03 and 3441.03

### JOUR 3440.03: Introduction to Narrative Nonfiction.

Narrative nonfiction writing includes literary journalism, memoir and essay. In this introductory class, students will learn about the historic development of this genre as well as read and discuss some of the best examples of historical and contemporary narrative nonfiction. The goal is to make students better informed readers as well as to provide them with the tools to produce this kind of writing themselves.

PREREQUISITE: JOUR 1001.06 or permission of the Instructor.

### JOUR 3441.03: Advanced Narrative Nonfiction.

This is a how-to course that focuses on writing - and rewriting - a major piece of narrative nonfiction.

PREREQUISITE: JOUR 3440.03

RESTRICTION: This class is not available to BJ(H) students

### THEA 3600X/Y.06: The Playwright in the Theatre.

This class studies the play as a vehicle for performance rather than as a literary work. Through weekly writing exercises dealing with specific dramaturgical problems, the craft of play-writing is explored. With this background, the class then writes plays which are revised, critiqued, and given a public presentation.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 2901.03, THEA 2902.03, and/or permission of the instructor

# Environmental Studies

Contact Person: Dr. David Black  
Location: Department of Political Science  
Faculty of Arts and Social Sciences  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-6638

## BA with Minor in Environmental Studies

BA students must take two full credits of required classes and three full elective credits from the list of approved classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- A maximum of one half-credit class in the Major subject (i.e., a class beyond those required for the Major) can count instead toward the Minor.
- At least one full credit from the Approved Electives list must be in FASS classes and at least one credit must be from Science Approved Electives classes.
- In addition to ENVS 3200.03, at least 1.5 full credits must be at the 3000 level or above.

## Required Classes:

- ENVS 1000X/Y.06: Introduction to Environmental Studies
- PHIL 2480.03: Environmental Ethics
- ENVS 3200.03: Introduction to Environmental Law

## BA Approved Electives in Environmental Studies:

Additions to the following lists will be made, as relevant classes become available.

### Faculty of Science:

- BIOL 2060.03: Introductory Ecology
- BIOL 2601.03: The Flora of Nova Scotia
- BIOL 2605.03: Introduction to Marine Life in Nova Scotia
- BIOL 3060.03: Environmental Ecology
- BIOL 3061.03: Communities and Ecosystems
- BIOL 3225.03: Plants in the human landscape
- BIOL 3226.03: Economic Botany, Plants and Civilization
- BIOL 3601.03: Nature Conservation
- BIOL 3615.03: Methods in Ecology
- BIOL 4065.03: Sustainability and Global Change
- CHEM 2505.03: Environmental Chemistry
- ECON 2336.03: Regional Development
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- EARTH 2410.03: Environmental and Resource Geology I
- EARTH 3500.03: Geoscience Information Management
- GEOG 2800.03: Climate Change
- OCEA 2000.06: The Blue Planet
- OCEA 2800.03: Climate Change
- PHYC 2451.03: Astronomy I: The Sky and Planets
- PHYC 2800.03: Climate Change
- ENVS 2001.03: Analytical Environmental Science and Social Responsibility
- ENVS 3000.03: Environmental Science Internship
- ENVS 3210.03: Environmental Law II: Natural Justice and Unnatural Acts
- ENVS 3220.03: International Environmental Law for Scientists
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Contaminated Site Management
- ENVS 3400.03: Human Health and Sustainability
- ENVS 3501.03: Environmental Problem Solving I
- ENVS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory

### Faculty of Arts and Social Sciences (FASS):

- CTMP 3000.06: Science and Culture
- CTMP 3150.03: Nature and History
- CTMP 3210.03: Intersecting Bodies, Selves and Environments
- CTMP 3411.03: Studies in Contemporary Science and Technology
- EMSP 2310.03: Women and Gender in Early Modern Science
- EMSP 2330.03: Nature Imagined
- EMSP 3000.06: The Study of Nature in Early Modern Europe
- ENGL 4005.03: Green Reading: Nature, Culture, Canada
- ENGL 4400.03: Nature of America
- HSTC 3000.03: The Scientific Revolution
- HSTC 4000.06: Science and Nature in the Modern Period
- HSTC 4300.03: Nature and Romanticism
- HIST 3073.03: History of Marine Sciences
- HIST 3210/CANA 3020/GEOG 3020.03: Canadian Cultural Landscapes
- HIST 3302.03: Technology and History in North America
- HIST 3370.03: North American Landscapes
- HIST 3750.03: History of Seafaring
- HIST 4271.03: The Fisheries of Atlantic Canada - Society and Ecology in Historical Perspective
- HIST 4350.03: People and Things - Material Culture
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- INTD 3002.03: Seminar in Development: Development Practice
- INTD 3114.03: Environment and Development
- INTD 3304.03: Sustainable Development in Cuba
- INTD 4013.03: Environmental Conflict & Security
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2485.03: Technology and the Environment
- PHIL 3670.03: Philosophy of Science
- PHIL 4120.03: Theory of Rational Decision-Making
- POLI 3585.03: Politics of the Environment
- POLI 4228.03: Interest Groups
- POLI 4380.03: Politics of Climate Change
- SOSA 2100.06: Environment and Culture
- SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America
- SOSA 3190.03: Social Movements
- SOSA 3220.03: Coastal Communities
- SOSA 4210.03: Tourism and Development
- SPAN 2070.03: Area Studies on Mexico and Central America
- GWST 3310.03: Gender and Development in Africa

### Other Electives

- PLAN 2001.03: Landscape Analysis
- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3010.03: Urban Ecology
- PLAN 3020.03: Landscape Design
- PLAN 4106.03: Transportation Planning

In any given year, special and variable topics classes may be approved for credit towards the minor requirements when the content warrants. See the program director for information.

# Environment, Sustainability and Society

Location: 1459 LeMarchant St., Room 1401  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-4581  
Fax: (902) 494-8923  
Email: sustainability@dal.ca  
Website: www.ess.dal.ca

## I. Degree Programs

The College of Sustainability offers a BA Double Major and Combined Honours with any major/honours subject in the Faculty of Arts and Social Sciences or the Faculty of Science. For complete details about the College, its programs and classes please see the College of Sustainability section on page 44 of the Calendar.

### BA, Double Major/Combined Honours, Environment, Sustainability and Society

#### i. *Environment, Sustainability and Society as Subject A*

##### Subject A: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 (one full credit in fall term)
- SUST 2001.06 (one full credit in winter term)
- SUST 3000.03
- SUST 3502.03
- SUST 4000X/Y.06
- 3 full credits from the approved list (at least two credits outside subject B)

Additional requirements for Combined Honours:

- SUST 4900X/Y.06
- Cumulative GPA in Honours subject classes above 1000 level of 3.3, with no individual grade less than C

##### Subject B: Any Major/Honours subject in the Faculty of Arts and Social Sciences or the Faculty of Science

Please see subject B calendar entry and Academic Advisor for details.

#### ii. *Environment, Sustainability and Society as Subject B*

##### Subject A: Any Major/Honours subject in the Faculty of Arts and Social Sciences or the Faculty of Science

Please see subject A calendar entry and Academic Advisor for details.

Additional requirements for Combined Honours: Must comply with Honours requirements for Subject A.

##### Subject B: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 or SUST 2001.06
- three full credits from the approved list (at least two credits outside subject A and at least two credits above 2000 level)

# European Studies

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Coordinator

Coordinator: Michael House, German (michael.house@dal.ca, 494-1093)

## Faculty

Barnstead, John - Russian Studies  
Bingham, John - History  
Katherine Fierlbeck - Political Science  
Frigerio, Vittorio - French  
Glowacka, Dorota - Contemporary Studies  
Hanlon, Gregory - History  
House, Michael - German  
Joubert, Estelle - Music  
Laursen, Finn - Political Science  
Matteucci, Paolo - Italian  
O'Brien, Peter - Classics  
Sidler, Judith - German  
Schwarz, H. G. - German  
Stone, Marjorie - English  
Tetreault, Ronald - English  
White, Jerry - English  
Wright, Julia - English  
Zaiotti, Ruben - Political Science

## I. Introduction

The European Studies program at Dalhousie is designed to guide students to a multidisciplinary understanding of contemporary Europe. It is not housed in any one department but is a combined effort of most departments in the Faculty of Arts and Social Sciences and the University of King's College. It encourages students to develop a broad perspective on Europe as seen through history and politics, literature and ideas, and the fine arts, with special emphasis placed on acquisition of language skills. There is an Honours program and a 20 credit Major. Because it is already a multidisciplinary program, European Studies cannot be combined with other subjects to form a combined honours degree.

## II. Degree Programs

### A. BA Honours in European Studies

Students must meet the faculty requirements for honours.

#### Year I

A student would normally take five full-credit classes in the first year, meeting the distribution requirements of the BA. These classes include:

- a writing requirement class
- HIST 1004X/Y.06 (European History), or an equivalent class in a later year
- a language other than English
- a social sciences class
- a natural science class

Notes: Completion of the King's College Foundation Year Program satisfies the first-year requirements for European Studies, with the exception of the language class and the natural sciences class.

Some students may wish to take another "second language" class in the first year, and postpone one of the other classes until a later year.

## Years II to IV

The program consists of 15 further classes including the second year core class and an Honours project. The general requirements for the program are:

- Classes in two contemporary European languages other than English are required. One of these languages is studied up to 3000/4000 level (normally one full credit each year). The minimum requirement for the other language is a full credit at the first year level, though students are strongly encouraged to take advanced classes in both languages.
- Students take 11 - 13 classes with significant European content. As this is a multidisciplinary program, no more than five classes above the 1000 level may be taken from one department. No fewer than six classes must be taken from two other departments. These may include classes from a language department to fulfill the language requirement, or one of the King's Honours programs. At least three classes must be at the 3000 level or above, taken in at least two different departments. Classes taken during a study abroad year will need to be counted in the above mix.
- EURO 2101.03, EURO 2102.03
- Students should seek advice from the European Studies Coordinator, who will strive to ensure that classes are included from each of the following areas:
  - 1) History and Politics:  
Approved ES classes in the departments of History, Political Science, Sociology and Social Anthropology, Economics, Commerce
  - 2) Literature and Ideas:  
Approved ES classes in the departments of Classics, English, French, German, Italian, Philosophy, Religious Studies, Russian Studies, Spanish
  - 3) Fine Arts:  
Approved ES classes in the departments of Music, Theatre, and the Program in Film Studies

Approved ES classes in Contemporary Studies, Early Modern History, and Gender and Women's Studies may fit one or more of these groupings. Please consult a European Studies advisor.

In conjunction with the Honours project a fourth year multidisciplinary seminar is required.

- A term of study in the honours program at a European university, normally in a second-language environment. A summer work term in Europe is encouraged.

## B. BA (20 credit) Major

### Year I

A student would normally take five full-credit classes in the first year, meeting the distribution requirements of the BA. These classes include:

1. a writing requirement class
2. HIST 1004X/Y.06 (European History), or an equivalent class in a later year
3. a language other than English
4. a social sciences class
5. a natural science class

Note: Completion of the King's College Foundation Year Program satisfies the first-year requirements for the European Studies 20 credit Major, with the exception of the language class and the natural science class.

### Year II to IV

- After the first year, students take a minimum of nine classes from the approved list of classes with significant European content.
- No more than four of these may be taken in any one department, and at least five must be taken in two other departments.
- At least three classes should be at the 3000 level or above, taken from at least two different departments.
- The 4000 level multidisciplinary seminar and the second year core class are also required.

Students should aim, with help from the European Studies Coordinator, for a balance in their classes to reflect the three general areas outlined above.

## III. Class Descriptions

### EURO 2101.03: Europe: Ideas, Culture and Society to 1900.

A multidisciplinary introduction to European Studies emphasizing the period to 1900. Classes look at the interconnecting themes among literature, the arts, philosophy and society in Europe.

FORMAT: Lecture/discussion

PREREQUISITE: Completion of at least two first-year classes from FASS departments, or the King's Foundation Year Program.

### EURO 2102.03: Europe: Ideas, Culture and Society from 1900 to the present.

A multidisciplinary introduction to European Studies beginning in the 20th century. Classes look at the interconnecting themes among literature, the arts, philosophy and society in contemporary Europe.

FORMAT: Lecture/discussion

PREREQUISITE: Completion of at least two first-year classes from FASS departments, or the King's Foundation Year Program. Completion of EURO 2101.03 will ideally precede registration for this course.

### EURO 3999.03: Independent Study.

Individually directed research and writing, supervised by a faculty member. This class is taught only by special arrangement between individual students and individual instructors. Signature required.

INSTRUCTOR(S): Faculty members by arrangement with individual students

FORMAT: Independent study with a professor

PREREQUISITE: Restricted to 3rd year European Studies Advanced Majors and Honours students

### EURO 4510.06: European Studies Seminar.

Discussion of readings and presentations on European Studies topics. The topics for the seminar vary each year. The class emphasizes a broad multidisciplinary perspective on European Studies.

INSTRUCTOR(S): Staff

FORMAT: Restricted to 4th year European Studies Honours and Advanced Major students

### EURO 4512.03: European Studies Seminar.

Discussion of readings and presentations on European Studies topics. The topics for the seminar vary each year. The class emphasizes a broad multidisciplinary perspective on European studies.

FORMAT: Seminar

PREREQUISITE: Restricted to 4th year European Studies Honours and Advanced Major students

EXCLUSION: EURO 4510.06X/Y

### EURO 4800.06: Honours Essay in European Studies.

### EURO 4801.03: Honours Essay in European Studies.

RESTRICTION: Honours Student in their final year of study

### EURO 4802.03: Honours Essay in European Studies.

RESTRICTION: Honours Student in final year of study

### European Studies Approved Classes

Note: Students should note that some classes may have prerequisites or other departmental restrictions, and some classes may not be offered in every year.

Other Classes, not on this list, may be appropriate. Please consult an ES Advisor.

### Approved Classes

#### Classics

All classes

#### Religious Studies

- RELS 1002.03: Introduction to Western Religions
- RELS 1200.06: Classical
- RELS 2002.03: Christianity
- RELS 2025.03: Nature, the Human, Community and the Divine in the Pre-Modern West
- RELS 2026.03: Paganism
- RELS 2027.03: Magic Religion and Philosophy
- RELS 2203.03: Philosophy and God
- RELS 2282.03: Catholicism
- RELS 3019.03: Meetings Between Hellenism, Judaism and Islam until the Renaissance
- RELS 2365.03: Philosophy on Trial
- RELS 2366.03: Gods, Beasts and the Political Animal
- RELS 3008.03: Medieval Church
- RELS 3381.03: Medieval Philosophy from Augustine to Anselm



- RELS 3382.03: Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas
- RELS 3411.03: Augustine's Confessions I
- RELS 3412.03: Augustine's Confessions II
- RELS 3432.03: St. Augustine on the Trinity Part II
- RELS 3901.06: Neoplatonism
- RELS 4505.06: Medieval Interpreters of Aristotle

### **Contemporary Studies**

- CTMP 2120.03: Wagner
- CTMP 2303.03: Narrative and Meta-Narrative
- CTMP 3000.06: Science and Culture
- CTMP 3190.03: Weil
- CTMP 3192.03: Wittgenstein
- CTMP 3321.03/3322.03: The Holocaust
- CTMP 3410.03: Studies in Contemporary Social and Political Thought in the 20th Century.
- CTMP 4000.06: Deconstruction
- CTMP 4301.03: Freud, Lacan and the Critique of Psychoanalysis
- CTMP 4302.03: French Feminist Theory
- CTMP 4410.03: Contemporary Social and Political Thought

### **Early Modern Studies**

All classes

### **Economics**

- ECON 2219.03: Euros and Cents: From Common Market to European Union
- ECON 2239.03: European Economic History

### **English**

- ENGL 2001.03: British Literature to 1800
- ENGL 2002.03: British Literature after 1800
- ENGL 2018.03: Arthur
- ENGL 2020.03: Sampling Medieval Literature
- ENGL 2028.03: Short Poems in English
- ENGL 2030.03: Literature, Health and Healing
- ENGL 2034.03: The Short Story
- ENGL 2040.03: Mystery and Detective Fiction
- ENGL 2050.03: Literature and Propaganda
- ENGL 2088.03: Images and Texts
- ENGL 2214.06: Shakespeare
- ENGL 2218.03: Gothic fiction
- ENGL 2221.06: Fictions of Development
- ENGL 2229.03: Tragedy
- ENGL 2230.03: Satire
- ENGL 2231.03: Foundation of Science Fiction
- ENGL 2235.03: Tolkien: Fantasy and Medievalism
- ENGL 3001.03: History of Literary Criticism
- ENGL 3002.03: Contemporary Critical Theory
- ENGL 3005.03: Canterbury Tales
- ENGL 3007.06: Old English
- ENGL 3008.03: Introduction to Nordic Saga
- ENGL 3010.03/3011.03: Renaissance Poetry and Culture I/II
- ENGL 3015.03: Renaissance Drama
- ENGL 3017.03: English Poetry and Prose, 1660-1740
- ENGL 3019.03: Poetry and Prose, 1740-1789
- ENGL 3020.03: English Drama, 1660-1800
- ENGL 3022.03: English Fiction to 1820
- ENGL 3025.06: Literature of the Romantic Era 1789-1832
- ENGL 3029.03: Victorian Poetry
- ENGL 3031.03: 19th Century Fiction from Austen to Dickens
- ENGL 3032.03: 19th Century Fiction from Dickens to Hardy
- ENGL 3234.03: British Literature of the Earlier Twentieth Century
- ENGL 3235.03: British Literature of the Later Twentieth Century
- ENGL 3501.03: The Modern Theatre 1: Realism and Responses
- ENGL 3502.03: The Modern Theatre 2: High Modernism
- ENGL 3820.03: Nabokov

Note: Fourth year seminars in English change from year to year. For classes appropriate for European Studies please consult the European Studies coordinator.

### **French**

FREN all classes (except classes on linguistics, and on Quebec, Acadian and other non-European francophone literature and culture)

### **Gender and Women's Studies**

- GWST 2300.03: Making Gender: Male and Female from Antiquity to Mary Wollstonecraft.
- GWST 2320.03: Witchcraft in Early Modern Europe
- GWST 3013.03: Sex and Gender in Reformation Europe
- GWST 3250.03: French Women Writers
- GWST 4402.03: Recent French Feminist Theory
- GWST 4550.03: Literary Women of French Classicism

### **German**

All classes

### **History**

- HIST 1004.06: Introduction to European History
- HIST 2001.03: Early Medieval Europe
- HIST 2002.02: Later Medieval Europe
- HIST 2005.03: Europe 1400-1559
- HIST 2006.03/2007.03: The Atlantic World
- HIST 2015.03: War and Society in Early Modern Europe, 1550-1750
- HIST 2019.06: Early Modern Europe, 1450-1650
- HIST 2020.06: Imperial and Soviet Russia
- HIST 2021.03: Soviet Russia
- HIST 2022.03: Imperial Russia
- HIST 2030.06: Germany in 19th and 20th Centuries
- HIST 2032.03: 20th Century Germany
- HIST 2040.06: Modern France
- HIST 2041.03: France from the Revolution to the Great War
- HIST 2060.06: Origins of Modern Italy
- HIST 2061.03: Civilization of Baroque Italy
- HIST 2081.06: 20th Century Europe in Literature, Art and Film
- HIST 2100.06: Themes in British History
- HIST 2101.03: Medieval England
- HIST 2106.03: Tudor and Stuart England, 1485-1689
- HIST 2111.03: Modern Britain to 1884
- HIST 2112.03: Modern Britain from 1884 to present
- HIST 2151.03: History of the Scottish People
- HIST 3002.03: Medieval Church
- HIST 3003.03: England in later middle ages
- HIST 3006.03: Renaissance and Reformation Europe
- HIST 3007.03: Pre-Industrial European Society
- HIST 3013.03: Sex and gender in Reformation Europe
- HIST 3040.06: Culture and Behaviour in France 1550-1750
- HIST 3045.03: French Revolution
- HIST 3049.03: The First World War.
- HIST 3050.03: Europe and World War II
- HIST 3051.06: National Socialist and Fascist Movements
- HIST 3056.03: Holocaust
- HIST 3070.03: Urban Europe 1850-1950
- HIST 3090.03: Russian Society
- HIST 3092.03: Russian Topics
- HIST 3096.03: History of Ideas in Russia
- HIST 3102.03: Tudor History
- HIST 3103.03: Stuart History
- HIST 3105.03: English Civil War
- HIST 3107.03: English Family
- HIST 3108.03/3109.03: Topics in the Social and Cultural History of England
- HIST 3112.03: England 1867-1914
- HIST 3113.03: Britain in the Age of the First World War
- HIST 3114.03: Britain from Second World War to Thatcher
- HIST 3116.03: Advanced Seminar in British History
- HIST 4003.03: Medieval Civilization
- HIST 4060.03: Topics in the Civilization of Baroque Italy
- HIST 4105.03: English Civil War
- HIST 4106.03: Topics in Early Modern English History
- HIST 4639.03: Britain, Appeasement and the Origins of World War II

### **Italian Studies**

All classes

### **Music**

- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1352.03: Music History I

- MUSC 1353.03: Music History II
- MUSC 2221.03: Music Theory III
- MUSC 2222.03: Music Theory IV
- MUSC 2352.03: Music History III
- MUSC 2353.03: Music History IV
- MUSC 3066.03: Women, Gender and Music
- MUSC 3314.03: History of Opera
- MUSC 3221.03: Form and Analysis
- MUSC 3353.03: Chamber Music Literature
- MUSC 3355.03: The Piano and its Literature
- MUSC 4283.03: Early Music Analysis
- MUSC 4285.03: Late 19th Century Chromaticism
- MUSC 4353.03: Music since 1945
- MUSC 4355.03: Narrative Strategies in Nineteenth -Century Music
- MUSC 4356.03: Opera Studies

#### ***Philosophy***

- PHIL 2610.03/2620.03: History of Philosophy I, II
- PHIL 2710.03: Existentialism
- PHIL 3630.03: Kant
- PHIL 3635.03: 19th Century Philosophy
- PHIL 3650.03: Modern Philosophy
- PHIL 4190.03/4191.03/4192.03: Topics in the History of Philosophy

#### ***Political Science***

- POLI 2410.03: Crisis and Consent
- POLI 2420.03: Revolution and Rationality
- POLI 3320.03: European Politics
- POLI 3321.03: Politics of the European Union
- POLI 3430.03: Political Philosophy of Plato
- POLI 3435.03: Machiavelli
- POLI 4479.03: Liberalism

#### ***Russian Studies***

All classes

#### ***Spanish and Latin American Studies***

- SPAN 3025.03: Traducción
- SPAN 2100.03: Evolving Spain: History, Culture, Society
- SPAN 2105.03: Catalan Language and Culture
- SPAN 2150.03: Hispanic Identities through Film
- SPAN 2500.03: Introduction to Spanish Literature
- SPAN 3020.03: Translation
- SPAN 3035.03: Advanced Spanish I
- SPAN 3036.03: Advanced Spanish II
- SPAN 3090.03: Spanish Phonetics and Pronunciation
- SPAN 3095.03: Evolution of Spanish
- SPAN 3500.03: Contemporary Spanish Literature

#### ***Theatre***

- THEA 2011.03: Classical Theatre
- THEA 2012.03: Early Modern Theatre

### **Approved Classes with some European content (please consult European Studies Coordinator)**

#### ***Commerce***

- COMM 3701.03: The Firm in the International Environment

#### ***Economics***

- ECON 3349.06: History of Economic Thought
- ECON 3310.03: Economic Growth in Historical Perspective

#### ***Music***

- MUSC 2015.06: Music and Cinema

#### ***Philosophy***

- PHIL 2260.03: Philosophy of Art
- PHIL 2705.03: Philosophy in Literature
- PHIL 3170.03: Theories of Feminism
- PHIL 3660.03: Post-Modern Philosophy

#### ***Political Science***

- POLI 2300.06: Comparative Politics
- POLI 2410.03: History of Political Thought I

- POLI 2420.03: History of Political Thought II
- POLI 2520.03: Introduction to World Politics
- POLI 2530.03: Introduction to Foreign Policy
- POLI 3320.03: European Politics
- POLI 3321.03: Politics of the European Union
- POLI 3380.03: Politics of Climate Change
- POLI 3401.03: Contemporary Political Thought
- POLI 3450.03: Storm and Stress
- POLI 3475.03: Democratic Theory
- POLI 3431.03: Politics through Film and Literature
- POLI 4587.03: International Political Economy
- POLI 4322.03: The European Union as a Global Actor
- POLI 4323.03: Treaty Reforms in the European Union

#### ***Sociology and Social Anthropology***

- SOSA 2200.06: Family in Comparative Perspective
- SOSA 3005.03: Knowledge, Work, and Culture in the Contemporary World
- SOSA 3206.03: Ethnicity, Nationalism and Race
- SOSA 3401.03: History of Sociological Thought

#### ***Theatre***

- THEA 2300.06: Film Study
- THEA 2310.06: Film Genres
- THEA 3010.06: History of Musical Theatre
- THEA 3500.06: Modern Theatre
- THEA 3600.06: Playwright in the Theatre
- THEA 3911.03: Gender in Theatre: A Cross-Cultural Survey
- THEA 4931.03: Contemporary Theatre

# Film Studies

## Dalhousie Contact Person

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## Film Studies Advisor

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## I. Minor in Film Studies

From its inception, cinema has had a significant impact upon the way humans represent and understand the world around them. Whether created within an entertainment, experimental, documentary or scientific framework, moving images have altered modern perceptions of reality. The Film Studies Minor program - offered between Dalhousie, the Nova Scotia College of Art and Design, St. Mary's University, and the University of King's College - offers students an opportunity to become familiar with the history of film making, the language employed in the discourses of film, as well as the various methodologies and forms of categorization applied to related fields of study within film culture.

Classes within the core program survey the history of film from the late nineteenth century to the present day and introduce students to various aspects of film theory and criticism. Classes at the intermediate and advanced level provide opportunities to study specific genres, directors, national cinemas as well as interdisciplinary topics: narration and narrative in fiction and film, feminist film practices, music and film.

This is an inter-University program that allows students to obtain credits from any of the participating institutions.

## II. Curriculum

### A. Core Requirements

Students must complete two full credits of core classes, including:

- DAL THEA 2301.03: Film History I 0.5 credits or NSCAD AHIS 2800: Film History and Criticism 1890 - 1940 0.5 credits
- DAL THEA 3301.03: Film History II 0.5 credits or NSCAD AHIS 2810.03: Film History and Criticism 1940 - Present 0.5 credits
- DAL THEA 2311.03: Film Analysis 0.5 credits or SMU ENGL 2511: Reading Film 0.5 credits

\* Students are strongly advised to take the core classes as soon as they declare their film minor.

### B. Elective Requirements

Students must complete two full credits from the following list of classes, including at least one and a half credits at the 3000 level or above:

- DAL CHIN 3050.03/THEA 3350.03: Topics in Asian Cinema 0.5 credits
- DAL CTMP 3304.03/GWST 3304.03/JOUR 3304.03: Through Her Eyes: Women and the Documentary Tradition 0.5 credits
- DAL CTMP 3305.03: Modern Film and the Theory of the Gaze 0.5 credits
- DAL ENGL 2095.03: Narrative in the Cinema 0.5 credits
- DAL ENGL 3300.03: TV: Theory and Criticism 0.5 credits
- DAL FREN 2800.03: Cinema: The French Phenomenon I 0.5 credits
- DAL FREN 2801.03: Cinema: The French Phenomenon II 0.5 credits
- DAL GWST 3304.03/CTMP 3304.03/JOUR 3304.03: Through Her Eyes: Women and the Documentary Tradition 0.5 credits
- DAL GWST 3331.03/THEA 3331.03: Film Theory II: Desire in Cinema 0.5 credits
- DAL ITAL 2600.03/THEA 2314.03: Survey of Italian Cinema 0.5 credits
- DAL ITAL 3500.03: Topics in Italian Culture: Italian Neorealist Cinema 0.5 credits
- DAL ITAL 3600.03: Italian National Cinema: The New Wave 0.5 credits

- DAL JOUR 3304.03/CTMP 3304.03/ GWST 3304.03: Through Her Eyes: Women and the Documentary Tradition 0.5 credits
- DAL MUSC 2016.03: Topics in Music and Cinema 0.5 credits
- DAL MUSC 2017.03: Music and Cinema: Composer/Director Collaborations 0.5 credits
- DAL RUSN 2036.03/THEA 2336.03: Russian Film I 0.5 credits
- DAL RUSN 2037.03/THEA 2337.03: Russian Film II 0.5 credits
- DAL RUSN 2046.03/THEA 2346.03: East European Cinema: War, Love, and Revolutions 0.5 credits
- DAL THEA 2313.03: Shakespeare and his Contemporaries on Film 0.5 credits
- DAL THEA 2314.03/ITAL 2600.03: Survey of Italian Cinema 0.5 credits
- DAL THEA 2336.03/RUSN 2036.03: Russian Film I 0.5 credits
- DAL THEA 2337.03/RUSN 2037.03: Russian Film II 0.5 credits
- DAL THEA 2346.03/RUSN 2046.03: East European Cinema: War, Love, and Revolutions 0.5 credits
- DAL THEA 2360.03: Popular Cinema 0.5 credits
- DAL THEA 2911.03: Stars and Stardom on Stage and Screen
- DAL THEA 3313.03: Documentary, Experimental and Animated Film 0.5 credits
- DAL THEA 3330.03: Film Theory I 0.5 credits
- DAL THEA 3331.03/GWST 3331.03: Film Theory II: Desire in Cinema 0.5 credits
- DAL THEA 3350.03/CHIN 3050.03: Topics in Asian Cinema 0.5 credits
- DAL THEA 3351.03: The Cinema of David Lynch .05 credits
- DAL THEA 4390.03: Special Topics in Film studies 0.5 credits
- DAL THEA 4391.03: Special Topics in Popular Cinema 0.5 credits
- NSCAD AHIS 3822: Topics in Film History: Hitchcock's Films 0.5 credits
- NSCAD AHIS 3826: Topics in Film History: Film Noir and Neo-Noir 0.5 credits
- NSCAD AHIS 3832: Topics in Film History: Canadian Cinema 0.5 credits
- NSCAD AHIS 3835: Topics in Film History: Contemporary Cinemas of Globalization 0.5 credits
- NSCAD AHIS 3836: Topics in Film History: Subjectivities in Moving Pictures 0.5 credits
- NSCAD AHIS 3837: Topics in Film History: Out on Screen 0.5 credits
- NSCAD AHIS 3850: History and Criticism of Documentary Film 0.5 credits
- SMU ACST 3305: Moving Images of Atlantic Canada 0.5 credits
- SMU ENGL 3313: Narrative in Fiction and Film 1 credit
- SMU RELS 3356: Religions and Film 0.5 credits
- SMU ENGL 3511: Film and the City 0.5 credits
- SMU ENGL 2325: The Media in Everyday Life 0.5 credits
- SMU ENGL 3826: Contemporary Canadian Film and Television 0.5 credits
- SMU HIST 3450: Film and History 0.5 credits
- SMU SOSI 3346/CRIM 3303: Crime and the Media 0.5 credits
- SMU SOSI 4452: Atlantic Canadian Film and Television

# French

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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

Frigerio, V. (494-6805)

## Undergraduate Advisor

Masse, V., Honours and Majors Advisor (494-6812)

## Professors Emeriti

Bednarski, B., BA (London), MA (Dalhousie), PhD (Laval)  
Bishop, M., BA, BEd (Manchester), MA (Manitoba), PhD (Kent, Canterbury)  
Gordon, W. T., BA, MA, PhD (Toronto)  
Kocourek, R., State Examination, PhD, CSc (Charles U., Prague), Knight of the Order of Academic Palms  
Runte, H. R., MA, MPH, PhD (Kansas)

## Professors

Frigerio, V. Beaux Arts (Geneva), BA (York), MA, PhD (Toronto)  
Oore, I. Z., BA (Tel-Aviv), MA (Waterloo), PhD (Western)

## Associate Professors

Aïssaoui, D., DEA (Metz), PhD (Ottawa)  
Elson, C., BA (Vind's), MA (Dalhousie), Dr de 3e cycle (Sorbonne)  
Milicevic, J., BA (Belgrade), MA, PhD (Montreal)  
Mopoho, R., BA (Yaounde, Cameroon), MA, PhD (Montreal)

## Assistant Professors

Defert, J.-J. BA (Tours), MA, PhD (Alberta)  
Masse, V., BA, MA (McGill), PhD (Toronto)  
Simedoh, V., PhD (Queen's)  
Strik, N., MA (Amsterdam), MA (Paris), PhD (Paris)

## Senior Instructor

Lee Men Chin, P., BA (Concordia), MA, PhD (Dalhousie)

## Instructors

Abou Hassan, T., BA, MA (Dalhousie)  
Black, I., BA, MA (Toronto), PhD (Edinburgh)

## I. Introduction

The Department of French offers students not only the opportunity to develop fluency in classes backed up by computer-aided language learning facilities, but also the possibility of studying the literature and culture of France, French Canada and the other nations of the French-speaking world, as well as the linguistic structure and development of French.

Classes are available for beginners and for those with a background in the language who wish to improve and maintain any or all of the following skills: speaking, listening, reading, and writing. Other classes are specially designed for students who are interested in translation, or other areas of language study. The role of French in Canada and in the Maritimes is stressed in classes in Acadian and Québec literature and civilization. The literature of France and French-speaking

nations is brought to life in classes organized around a theme, a genre, or an historical period.

The Department of French urges students to practise the language as much as possible. The French Club organizes activities including films, French meals, parties and plays in which all students may participate. Participation in immersion programs and individual student travel and study are encouraged. Please consult the Department for information and see below: Studies in a Francophone Environment.

A BA degree in French with Honours, or with Honours in French and another allied subject, may lead the student to a career in education, translation or interpreting, or may provide the background for careers in many fields, including radio, television, law, social work, public relations, business, diplomacy, journalism and library science. Students considering French as a minor in a BA degree are invited to discuss the matter at any time (the earlier the better) with a departmental advisor. The focus is on the particular needs and aspirations of the individual. An Honours degree is normally required for access to graduate studies: MA and PhD degrees may be pursued in the Department (see the Calendar for Faculty of Graduate Studies).

The French Department offers a number of academic awards to students, including the Ruth Murray Scholarship, the French Department Scholarship, the Marcelle Cendres Sandhu Memorial Prize, the Prof. and Mrs. Robert Lloyd McIntosh Prize, the Prix de l'Alliance française, and Embassy book prizes. Graduating Honours and Majors students may apply to the French Embassy for an 8-month internship to tutor in France.

Students may, with the approval of the Department of French, take up to one year of study at a University in a francophone environment and receive credit at Dalhousie. Bursaries may be available for students selected to participate in the Dalhousie Studies in a Francophone Environment Programs.

The language requirement exemption test in French is given in the April examination period. Students should register at the Registrar's Office before mid January by completing an *Application for Exemption from the Language Requirement*. A copy of the form must be provided to the French Department. Please note that passing the language requirement exemption test does not give a class credit.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

Requirements for the four degree programs are set out in the following sections. Electives from other departments, when chosen with care, can enrich and enhance the major classes. Departmental Advisors can provide information on recommended electives. All Majors and Honours Students must consult with the Undergraduate Advisor.

Students interested in a degree in European Studies should consult the **European Studies** section of this calendar.

Students interested in an emphasis or a combined degree in Canadian Studies should consult the **Canadian Studies** section of this calendar.

### A. BA with Honours in French

This program offers systematic, comprehensive and individualized study of French language, literature, linguistics and other program elements both inside and outside the classroom. It is, therefore, an option which should be considered seriously by any student who, with career or personal objectives in mind, wishes to obtain a strong background in French and by those who plan to teach or earn a graduate degree in French.

Honours students are strongly encouraged to enrich their learning experience by spending at least one term in a French-speaking area. Please consult the department for information on our Dijon program.

Potential Honours applicants should consult the Department's Undergraduate Advisor, preferably during their second year of study, regarding the application procedure and relevant deadlines.

## 1. Concentrated Honours

### Departmental Requirements

2000 level

- FREN 2020.03
- FREN 2045.06
- FREN 2201.03
- FREN 2202.03

3000 level

- FREN 3021.03 or 3022.03
- FREN 3045.06
- one full credit in literature and/or culture

4000 level

- FREN 4017.03 and 4046.03
- two 4000 level full credits
- At least one other full credit, 2000 to 4000 level, for a total of nine French credits.
- FREN 4933.00 (Honours Seminar)

Second year (i.e., 2000 level) classes taken during the student's first year at Dalhousie may count towards major or honours, with the approval of the department.

An additional grade is required: either an Honours Essay or an Oral Presentation (see document entitled "French Honours Qualifying Examination" available from the Honours Advisor or the departmental secretary).

## 2. Combined Honours

From 11 - 14 credits in French and another subject; not fewer than five nor more than eight may be chosen in French. Minimum requirements for the Combined Honours program are as follows: 2045.06, 2201.03, 2202.03, 3045.06, 4017.03 and 4046.03 plus a minimum of one full credit in language, literature, culture or linguistics at the 3000 or 4000 level. When French is the primary subject, FREN 4933 (Honours Seminar) and an additional credit are required: either an Honours Essay or an Oral Presentation (see document entitled "French Honours Qualifying Examination" available from the Undergraduate Advisor or the departmental secretary).

## 3. Honours Conversion

The Honours Conversion is an option for continued study open to anyone who has previously completed a BA (15 credit) program at Dalhousie. Normally, it consists of five full credits of class work plus one additional credit: either an honours essay or an oral interview based on class work and /or a specific topic. Requirements for the Honours Conversion are similar to those for the concentrated Honours Program, but will vary according to individual circumstances.

20 credit degrees may also be converted to Honours degrees; please consult the departmental Undergraduate Advisor.

## B. BA (20 credit) Major in French

Students must take a minimum of seven and a maximum of nine credits in French.

### Departmental requirements

2000 level

- FREN 2045.06
- FREN 2201.03
- FREN 2202.03

3000 level

- FREN 3045.06
- Two other 3000 level full credits in French

4000 level

- FREN 4017.03 and 4046.03
- One other 4000 level full credit in French

PLEASE NOTE: Students with proper standing wishing to change to an Honours Program may do so, in which case they should also take FREN 2020.03 and FREN 3021.03 or FREN 3022.03 (required for Honours), and consult the Chair or the Undergraduate Advisor.

## C. BA (20 credit) Double Major in French

Students must take FREN 2045.06, 2201.03, 2202.03, 3045.06 plus one full credit at the 3000 level; at least five credits in French are required.

## D. BA (15 credit) Minor in French

Students should consult the Chair or a Department Advisor about the choice of classes.

Students are urged to take more than the minimum number of classes required, and, indeed, to do a four year degree (20 credit Major or 20 credit Honours) if a high level of proficiency in French is sought.

### Departmental Requirements

- Three full credits above the 1000 level, including FREN 2045 X/Y.06
- Among those three credits, one full credit must be above the 2000 level
- Courses given in English and FREN 2005 X/Y.06 are not admissible

Classes other than those required may be chosen freely in consultation with the Major Advisor, according to the student's desire to obtain a general knowledge of the field, or a greater concentration in specific areas such as Literature, Linguistics, French-Canadian Studies, etc.

Students wishing to change to an Honours Program may do so during the second or third year of studies, given sufficient standing, in which case they should consult the Chair or the Undergraduate Advisor.

## III. Minor in French

### Description

Intended to allow for a level of specialization in French in addition to students' major degree program(s).

### Requirements

- Three full credits above the 1000 level, including FREN 2045 X/Y.06
- Among those three credits, one full credit must be above the 2000 level
- Courses given in English and FREN 2005 X/Y.06 are not admissible

Exclusion

Cannot be combined with the major in French.

## A. Minor in Popular Culture Studies

### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip

- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## IV. Certificate of Proficiency in French

This certificate is normally awarded to students who are not specializing in French but who, having taken several French classes at Dalhousie, wish to have their proficiency officially acknowledged. Major and Honours students can also be awarded this certificate, provided all the requirements are met. A candidate's superior performance is reflected by a specific distinction appearing on his/her transcript.

### Requirements

- Classes: At least three full credits beyond the 1000 level including FREN 2045X/Y.06 (or 2021.03 and 2022.03), with at least one credit at the 3000 level, including FREN 3000.03 or 3045X/Y.06 (total three credits). A minimum grade of B- is required in each of the classes. Classes not given in French are excluded.
- Exam: A written and oral Examination with a minimum average of B- on each part. Students who fail the Examination on the first attempt will be allowed to write it again after one year.
- No one may take the Examination without having done the class work.

### Note:

Students working toward a Certificate in Proficiency in French must complete the requirements by June 30, 2013. After this date the Certificate will no longer exist as it is being replaced by the Minor in French.

## V. Studies in a Francophone Environment

### A. Year-Abroad Program in Dijon, France

Students at all levels of proficiency in French have the opportunity of spending a full regular session at the CIEF (Centre International d'Études Françaises) on the Université de Bourgogne campus in Dijon, which is located about 300 km southeast of Paris.

Students will register for classes via letter of permission and will receive grades on a Pass/Fail basis. The classes will be noted on the student's academic record as transfer credits.

Upon arrival at the CIEF, students are placed in the appropriate proficiency level, which correspond to first, second or third-year transfer credits at Dalhousie. Five full credits are awarded for the program.

In addition to compulsory language classes, the CIEF offers classes in French literature, civilization, history, art history, cinema, music, theatre, philosophy, French for commerce, and more. Students who opt for electives in areas such as history, theatre, philosophy and political science may be eligible for transfer credits in the other subject areas.

Study Work International Fund (SWIF) funding up to \$2,000 may be available through the International Centre.

An information session is held in November of each year, with applications due early in the new year. For information, consult the website at [www.dal.ca/dijon](http://www.dal.ca/dijon) or contact [french@dal.ca](mailto:french@dal.ca) or 494-2430.

## VI. Class Descriptions

**PLACEMENT TEST:** All students taking their first French class at Dalhousie are required to take the French Placement Test prior to selecting their first French class. The test is available on the World Wide Web at <http://www.dal.ca/frenchtest>.

Some classes are offered in English, including FREN 1060X/Y.06 which satisfies the Bachelor of Arts Language requirement. Other classes taught in English, that do not satisfy this degree requirement, are FREN 2060.03, FREN 2275.03, FREN 2800.03, FREN 2801.03, FREN 3125.03, FREN 3175.03, FREN 4016.06.

**NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year's class offerings.**

### FREN 1004X/Y.06: Pratique de la lecture/French for Reading.

This class develops the ability to read contemporary French prose with ease and accuracy. Emphasis is on the acquisition of skills that facilitate reading. Classroom work involves a grammar review, study and discussion of a wide variety of readings, reading comprehension, as well as correction of prepared translations and sight translations (from French to English only). FREN 1004.06 is given in English and is not, by itself, suitable for students who plan to major in French. It may, however, be taken by those with no prior training in French or as an additional first-year option for those taking FREN 1005X/Y.06 or FREN 1045X/Y.06. This class also satisfies the Bachelor of Arts Language Requirement. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. INSTRUCTOR(S): V. Frigerio, P. Lee Men Chin, Staff PREREQUISITE: Online French Placement Test ([www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)) EXCLUSION: FREN 1060.06

### FREN 1005X/Y.06: Français fondamental/Basic French.

For students with little or no previous background in French, for example students with grade 8-11 core French (online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)). This class presents the basic components of French grammar with an emphasis on simple sentence types, and develops all four language skills: speaking & writing, and listening & reading comprehension. It also provides an introduction to Francophone culture worldwide. This class is normally followed by FREN 1045X/Y.06 (for students who have achieved a final grade of B or above), or FREN 2005 for students who do not wish to major in French. This class satisfies the Bachelor of Arts Language Requirement. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. INSTRUCTOR(S): Staff FORMAT: Lecture PREREQUISITE: Online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest) EXCLUSION: FREN 1000X/Y.06, 1006X/Y.06, 1050X/Y.06

### FREN 1045X/Y.06: Français intermédiaire/Intermediate French.

For students with some background in French, for example grade 11-12 core French (online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)), or follows FREN 1005 (for students who have achieved a final grade of B or above) or FREN 2005. Focusing on the study of more advanced grammatical structures with an introduction to grammatical analysis, this course also aims to further develop the four language skills: listening, reading, writing and speaking. Selected readings will lead to the application of structures being studied and to vocabulary enrichment. Weekly tutorials are an integral part of this class. A final grade of B or above in this course leads to all second-year French classes. This class satisfies the Bachelor of Arts Language Requirement and is normally followed by FREN 2045 or FREN 2021 and FREN 2022. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. INSTRUCTOR(S): Staff FORMAT: Lecture/tutorial PREREQUISITE: FREN 1005X/Y.06 (final grade B or above), FREN 2005X/Y.06 or equivalent (Online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)) EXCLUSION: FREN 1050X/Y.06

### FREN 1050X/Y.06: Français pour anciens étudiants des programmes d'immersion/French for Former Immersion Students.

For students who have completed French Immersion to Grade 12 (online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)). Focusing on the study of more advanced grammatical structures including grammatical analysis, this course also aims to further develop the four language skills: listening, reading, writing and speaking. Selected readings will lead to the application of the structures being studied and to vocabulary enrichment. This course will enable immersion graduates to build on their strengths while working to eliminate ingrained errors. A final grade of B or above, in this course normally leads to all second-year French classes. This class satisfies the Bachelor of Arts Language Requirement and is normally followed by FREN 2045 or FREN 2021 and 2022. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. INSTRUCTOR(S): P. Lee Men Chin FORMAT: Lecture

PREREQUISITE: Online Placement Test required: [www.dal.ca/frenchtest](http://www.dal.ca/frenchtest)  
 EXCLUSION: FREN 1005X/Y.06, FREN 1045X/Y.06

### **FREN 1070.03: Introduction to Linguistics.**

Taught in English, the class focuses on core theories and methods of linguistics and its principal subfields: phonology, morphology, syntax, semantics, pragmatics and sociolinguistics.

INSTRUCTOR(S): J. Milicevic, R. Mopoho, Staff

FORMAT: Lecture

PREREQUISITE: None

**Note: Most classes above this level are given entirely in French. Exceptions: FREN 2060.03, FREN 2275.03, FREN 2800.03, FREN 2801.03, FREN 3125.03, FREN 3175.03, FREN 4016.06 (These classes do not satisfy the French degree program requirements or the Faculty of Arts Language requirement.)**

### **FREN 2002.03: Le français oral/Spoken French.**

In this class, students will develop their ability to express themselves orally in French. The class will emphasize the use of idiomatic and socio-culturally appropriate vocabulary and structures for a variety of communication purposes. Audio-visual and electronic resources, as well as interactive technology, may be integrated into class material.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1045X/Y.06, or 1050X/Y.06 FREN 2005X/Y.06 or 2000-level Placement Test result, or instructor's permission

### **FREN 2005.06: Français pratique pour non-spécialistes/Practical French for Non-Majors.**

This course follows French 1005 and is designed for students who do not wish to major in French but who would like to maintain and improve their general knowledge of French and Francophone language and culture. Along with further training in basic grammatical structures, the course focuses on the practical and accurate use of French to further develop communication skills. Based on authentic audiovisual and multimedia material (films, commercials, documentaries, etc.) Activities will aim at vocabulary enrichment, oral comprehension and expression development and will focus mainly on contemporary and daily life topics in a Canadian context. Successful completion of this course (final grade of B or above) leads to second year courses such as FREN 2002 or FREN 2021/2022 for Non-Majors, or to FREN 1045 for students who subsequently decide to major in French. This course does not count towards a Major or Certificate of Proficiency in French.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1005.03 (final grade of B or above) or instructor's permission

### **FREN 2020.03: Introduction à la linguistique/ Introduction to Linguistics.**

Linguistics is the science of language. This course is designed to serve as an introduction to basic concepts in linguistics. The various subfields of linguistics will be introduced with a focus on the core areas of linguistics: phonetics, phonology, morphology, syntax, and semantics. Students will learn about the structure of language at different levels of organization: phonemes, syllables, words, phrases, and sentences.

INSTRUCTOR(S): J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level Placement

Test result or instructor's permission

EXCLUSION: FREN 3020.06

### **FREN 2021.03: FREN 2022.03: Langue et culture/ Language and Culture.**

Normally follows FREN 1045X/Y.06 or 1050X/Y.06, and is taken in the second year of study. This class provides the opportunity to practise and improve language skills (vocabulary and grammar) already acquired. Each year sections offer topics from the options listed below. Each section focuses upon a broad cultural topic via which language skills are developed. No prior knowledge of the topic is supposed. Various readings lead to discussions and oral presentations. Descriptions for sections offered in a specific year may be obtained in April from the Department. All classes and assignments are entirely in French. A maximum

of two sections may be taken under the class designation of FREN 2021.03 and 2022.02. Approved in part with Canadian Studies (topic 7) and IDS (topic 3).

Topic 01: Le journalisme: I. Oore

Topic 02: La société française à travers la littérature

Topic 03: La civilisation francophone de l'Afrique occidentale et des Antilles

Topic 04: Etudes acadiennes

Topic 05: Monuments culturels de Paris

Topic 06: La France et ses photographes

Topic 07: Québécois et Québécoises célèbres

Topic 08: Contes et légendes

Topic 09: Nature et culture: C. Elson

Topic 10: L'Art en France depuis la Révolution

Topic 11: Voyages culturels à travers la France

Topic 12: Le roman policier: V. Frigerio

Topic 13: Aspects du cinéma français et francophone: C. Elson

Topic 14: Faim et festin: I. Black

Topic 15: Communication et compétence interculturelle

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level Placement

Test result, or instructor's permission

CROSS-LISTING: CANA 2021.03

### **FREN 2022.03: Langue et culture/Language and Culture.**

Normally follows FREN 1045X/Y.06 or 1050X/Y.06. This class provides the opportunity to practise and improve language skills (vocabulary and grammar) already acquired. Each year sections offer topics from the options listed below. Each section focuses upon a broad cultural topic via which language skills are developed. No prior knowledge of the topic is supposed. Various readings lead to discussions and oral presentations. Descriptions for sections offered in a specific year may be obtained in April from the Department. All classes and assignments are entirely in French. A maximum of two sections may be taken under the class designation of FREN 2021.03 and 2022.03. For possible topics, see FREN 2021.03. Approved in part with Canadian Studies (topic 7) and IDS (topic 3).

INSTRUCTOR(S): As above

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, FREN 2005X/Y.06 or

2000-level Placement Test result, or instructor's permission

CROSS-LISTING: CANA 2022.03

NOTE: The cross-listing with Canadian Studies depends on the topic of the course. Please check with your instructor to see if course is cross-listed for the current year.

### **FREN 2025.03: Morphologie/Morphology.**

The course builds upon elements of morphology introduced in FREN 2020 (Introduction to Linguistics). It focuses on the place of morphology in the general linguistic theory and on formal modeling of morphological phenomena in several languages, in particular French.

INSTRUCTOR(S): J. Milicevic

FORMAT: Lecture/3hrs

PREREQUISITE: FREN 2020/FREN3020 or equivalent

### **FREN 2032.03: Phonologie/Phonology.**

Using varied texts and recordings, this class studies the basic sounds (phonemes) of French, and the essential non-phonemic features of the language (rhythm, stress, intonation, etc.) It helps students master French phonemes, understand the role of non-phonemic features in oral communication and use the latter to develop self-expression and audio-comprehension.

INSTRUCTOR(S): Staff

FORMAT: Varied participatory activities, short lectures, language lab

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level Placement

Test result, or instructor's permission

### **FREN 2045X/Y.06: Grammaire intensive/Intensive Grammar.**

This course develops a more advanced knowledge of French. A detailed study of grammar through an in-depth analysis of all components of simple, complex and marked sentences leading to paragraph and text analysis. Emphasis is placed on the correspondence between grammatical content and meaning. Various grammar, writing and translation exercises will aim at developing the ability to communicate in clear, accurate written French. This class normally follows FREN 1045/1050, and is normally followed by FREN 3045.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): Staff  
 FORMAT: Lecture/tutorial  
 PREREQUISITE: FREN 1045X/Y.06 (final grade of B or above), FREN 1050X/Y.06 (final grade of B or above), or 2000-level Placement Test result  
 EXCLUSION: FREN 1040X/Y.06

### **FREN 2060.03: Pratique de la lecture, niveau supérieur/Advanced Readings in French.**

This class will continue the work of French 1004. By studying and discussing modern Francophone texts, from various fields of knowledge, students will practice the basic reading skills they have already acquired while developing more sophisticated ones, expanding their vocabulary and increasing their understanding of Francophone civilization. Since this class is given in English, it may NOT be used to satisfy the French degree program requirements. It may, however, be taken as an elective by students in the French Major or Honours programs.  
 FORMAT: Lecture/discussion  
 PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06 or FREN 2004X/Y.06 or 2000-level Placement Test result; or instructor's permission

### **FREN 2070.03: Le français des affaires I/French for Business I.**

This course aims to introduce the basic elements of business and administrative French. While developing oral, reading and writing skills through the use of authentic economic and business documents, students will master vocabulary specific to the workplace. This class is normally followed by FREN 3070 (French for Business II)  
 INSTRUCTOR(S): Staff  
 FORMAT: Lecture/discussion  
 PREREQUISITE: Fren 1045/50 or 2000-level placement test or instructor's permission  
 EXCLUSION: FREN 3030X/Y  
 RESTRICTION: Must be taken before FREN 3070

### **FREN 2201.03: FREN 2202.03: Introduction à la littérature/ Introduction to French Literature.**

A survey of literature in French from the Middle Ages to the 20th Century, presenting selected works of prose, poetry and theatre from France, and possibly also from Quebec, Acadia and other francophone areas. Introduction to general notions of literary history and to the basic techniques involved in reading literary texts. Attention is paid to the development of both oral and written expression of ideas. FREN 2201.03 and FREN 2202.03 may be taken consecutively. Classes involve group discussions and lectures.  
 INSTRUCTOR(S): Staff  
 FORMAT: Lecture  
 PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06, or 2000-level Placement Test result.

### **FREN 2203.03: Approches du texte littéraire/ Approaches to Literary Texts.**

An introduction to the critical reading of a selection of literary texts (various genres and periods) with an emphasis on Québec literature. The close analysis of short texts will lead to discussions of the broader nature of recurring images and myths as well as central themes. Strongly recommended for French majors and Honours students. Approved with Canadian Studies.  
 INSTRUCTOR(S): I. Oore  
 FORMAT: Lecture/discussion  
 PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06, or 2000-level Placement Test result  
 CROSS-LISTING: CANA 2203.03

### **FREN 2275.03: French Literature in Translation: The Novel/Littérature française le cas du roman en traduction anglaise.**

Given in English, this class will study key fictional works representative of different historical periods and the changing form of the novel. Approximately seven to eight works from a selection of the following authors will be studied: Chretien de Troyes, Marguerite de Navarre, Madame de Lafayette, Rousseau, Laclos, Balzac, Flaubert, Stendhal, Proust, Colette, De Beauvoir, Duras. The selection of authors and works may vary from year to year, but the "survey" nature of the class will be maintained. The language of the class will be English. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective.  
 FORMAT: Lecture/seminar

### **FREN 2800.03: Cinema: The French Phenomenon I. From the Lumière Brothers to the New Wave.**

Given in English, with no knowledge of French required, this class traces the history of French film from its beginnings, through its "classic" period, to the movements and authors of the 1950's and 60's New Wave in French cinema. The social and broad cultural dimensions of the French and Francophone film world will be explored, as will its rich and changing aesthetic and theoretical implications. Lectures will blend with open discussion periods based on selected readings and viewings. Oral presentations will occur during a tutorial hour otherwise available for questioning and further elaboration. Directors and scriptwriters whose work will be discussed include Renoir, Prévert, Bresson, Resnais, Duras, Godard, Robbe-Grillet, Varda, Bunuel, Truffaut, Malle, Rohmer, Chabrol. Actors as varied in technique as Arletty, Gabin, Belmondo, etc. will draw attention.  
 NOTE: Film Studies minor specialists should consult program requirements. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective.  
 INSTRUCTOR(S): C. Elson  
 FORMAT: Lecture/discussion/movie-viewing

### **FREN 2801.03: Cinema: The French Phenomenon II. From the New Wave to the New Millennium.**

Given in English, with no knowledge of French required, this class traces the history of French film from the author-based cinema of the New Wave period (1950's and 60's France) right up to contemporary developments in France and the contemporary Francophone world at large: Quebec, the Maghreb, West Africa, Acadia, Belgium, the Antilles, etc. As with FREN 2800.03, this class will consider the social and broad cultural dimensions of the French and Francophone film world and its rich and changing aesthetic and theoretical implications. Lectures will blend with open discussion periods based on selected readings and viewings. Oral presentations will occur during a tutorial hour otherwise available for questioning and further elaboration. Directors and scriptwriters whose work will be discussed include Godard, Robbe-Grillet, Varda, Truffaut, Malle, Rohmer, Chabrol, Besson, Tavernier, Jutra, Chiasson, Perreault, Arcand, etc. Actors as varied in technique as Deneuve, Depardieu, Dauteuil, etc. will draw attention. Consideration will be given to the documentary tradition, particularly its manifestations in French Canada.  
 NOTE: Film Studies minor specialists should consult program requirements. This class does not satisfy the French degree program requirements. French Majors and Honours students may take this class as an elective.  
 INSTRUCTOR(S): C. Elson  
 FORMAT: Lecture/discussion/movie-viewing

### **FREN 2994.03: Independent Study.**

This class is given in preparation for students studying abroad in the Winter term.

### **FREN 3000.03: Cours supérieur de français oral/ Advanced Oral French Workshop.**

Class discussions and oral presentations based on themes of contemporary concern. This class may also be offered in the summer in an intensive fashion. This class is intended to build vocabulary, perfect facility of expression (fluency) and style. Reading and research are necessary for the oral presentations.  
 INSTRUCTOR(S): Staff  
 FORMAT: Lecture/discussion  
 PREREQUISITE: FREN 2002.03 or instructor's permission

### **FREN 3021.03: Syntaxe/Syntax.**

Syntax is a linguistic discipline focusing on sentence structures i.e., on how words are organized linearly and hierarchically together in order to form larger units: phrases, sentences. Some theoretical frameworks have been defined which propose sets of principles/(meta) rules aiming at describing syntactic features that are both common to all languages and specific to individual ones. This course will concentrate on the description of French syntax (general/specific features) through one (or more) of these frameworks.  
 INSTRUCTOR(S): J. Milicevic, R. Mopoh  
 FORMAT: Lecture  
 PREREQUISITE: FREN 2020.03  
 EXCLUSION: FREN 3020.06

### **FREN 3022.03: Sémantique/Semantics.**

This class builds upon the elements of semantics introduced in FREN 2020.02. It focuses on the acquisition of fundamental semantic concepts (semanteme, semantic predicate/object, semantic decomposition, semantic & lexical relations)



and their application to semantic descriptions of fragments of particular languages, in our case of French.

INSTRUCTOR(S): J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2020.03

EXCLUSION: FREN 3020.06

### **FREN 3025.03: Les Parlers acadiens: Introduction linguistique/Linguistic Introduction to Acadian Dialectology.**

An examination of the phonetic, morphosyntactic and lexical systems of various Acadian speech communities, with emphasis on the Acadian dialects of Nova Scotia. Comparisons will be made between these dialects and both standard French and Québécois. Recorded and written materials are used. Approved with Canadian Studies and Linguistics.

INSTRUCTOR(S): Staff

FORMAT: Lecture

PREREQUISITE: FREN 2045X/Y.06 or instructor's permission

### **FREN 3026.03: Le français québécois/Quebec French.**

Definition, origin and evolution of the French of Quebec. Study of its phonetic, lexical, morphosyntactic and semantic characteristics. Comparison with Canadian French outside of Quebec and with international French. Analysis of written and oral documents for the purpose of illustration.

INSTRUCTOR(S): R. Mopoho, V. Masse

FORMAT: Lecture

PREREQUISITE: FREN 2045X/Y.06 or instructor's permission

CROSS-LISTING: CANA 3026.03

### **FREN 3045X/Y.06: Expression écrite /Written Expression.**

This class normally follows FREN 2045. It introduces the students to different types of texts and their communicative functions. Students learn how to analyze texts and how to produce them in similar written communicative situations. Grammar is hence taught in the natural context provided by the texts. Students work with a corpus of authentic documents and with electronic tools. While students' common grammar and stylistic weaknesses are addressed, attention is also given to students' individual writing problems. Self-correction strategies are put in place to help them overcome these. This class is normally followed by FREN 4017 and 4046.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Staff

FORMAT: Lecture

PREREQUISITE: FREN 2045X/Y.06 or equivalent or instructor's permission

### **FREN 3070.03: Le français des affaires II/French for Business II.**

This class is a continuation of FREN 2070 and will focus on the development of reading, writing and oral skills in the following areas: commercial correspondence and writing; management, banking, financial and economic terminologies; specificities of business word processing in French.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2070 or instructor's permission

EXCLUSION: FREN 3030X/Y

RESTRICTION: May not be taken before FREN 2070

### **FREN 3101.03: Culture et civilisation françaises/ French culture and civilization.**

This class aims to provide, through lectures, readings, discussions and presentations, an overview of French culture and civilization, which will focus on contemporary France while taking a historical perspective.

INSTRUCTOR(S): Staff

PREREQUISITE: 2000-level French class

EXCLUSION: FREN 3100X/Y.06

### **FREN 3125.03: The French-Speaking World/Le monde francophone.**

Given in English, with no prior knowledge of French required, this class provides an introduction to the French-speaking world from a political, cultural, social and economic perspective. Study of the organization known as la Francophonie, with an emphasis on its evolution and mandate, as well as on the bilateral and multilateral cooperation between its member countries. The class is destined for students who are not specializing in French. The class format will consist of

lectures and in-class discussion of print and audio-visual materials. Student assessment will be based on oral presentations, assignments, exams and written papers. This class does not satisfy the French degree program requirements. French majors and Honours students may take this class as an elective.

INSTRUCTOR(S): R. Mopoho, staff

FORMAT: Lecture

CROSS-LISTING: INTD 3125.03

### **FREN 3150.03: Aspects de la francophonie/Aspects of the Francophone World.**

Taught in French, this class provides an introduction to the study of the francophone world: political, economic, linguistic, literary and cultural aspects. From year to year the class might emphasize different regions: Western Countries, Sub-Saharan Africa, Pacific Islands, West Indies, Northern Africa.

INSTRUCTOR(S): R. Mopoho, staff

FORMAT: Lecture

PREREQUISITE: 2000-level French class or instructor's permission

CROSS-LISTING: INTD 3150.03

### **FREN 3175.03: Topical Issues in Francophonie/ Thèmes de la francophonie.**

Given in English, this course builds on the overview provided by FREN 3125, and involves an in-depth study of a selection of topics that are of relevance to the francophone world, including: the relationship between French and native languages; linguistic and cultural policies; languages in the educational system; economic development issues; North-South relations, etc. Approved with IDS. The class is taught in English and does not satisfy the French degree program requirements.

INSTRUCTOR(S): R. Mopoho, Staff

FORMAT: Lecture

PREREQUISITE: FREN/INTD 3125.03 or FREN/INTD 3150.03, or instructor's permission

### **FREN 3225.03: L'épistolaire/Letter Writing in French Literature.**

Letter writing as a literary genre: correspondences and epistolary Novels. The theoretical part deals with the birth of the Epistolary Novel, the various letter writing styles and types of letters. It explores the borders between letter writing and diary as well as the interaction between public and private spheres. Texts studied are epistolary novels and correspondences from the 18th century (beginning of the separation between private and public spheres), as well as extracts from 17th and 19th centuries correspondences.

INSTRUCTOR(S): Staff

FORMAT: Lecture and seminar

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3250.03: Écrivaines françaises/French Women writers.**

This class will explore the condition of women as expressed in a selection of texts from French women writers. The choice of writers may vary from year to year, and the class may be organized around a theme or a particular time period. Students taking this class as a Gender and Women's Studies class may write their essays and exams in English.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: Recommended: FREN 2201.03/2202.03

CROSS-LISTING: GWST 3250.03

### **FREN 3260.03: Contes et légendes du monde francophone/Tales and Legends of the Francophone World.**

Students in this class will become acquainted with a variety of French folk tales, fairy tales, legends, and "literary" short stories. Distinguishing between these sub-genres will be part of the focus of the class. The stories themselves will be drawn from a variety of periods and areas of the French-speaking world. They may include, among other sources of stories, fairy tales published by Perrault and by women writers of the 17th century, folk tales of the oral tradition collected in various parts of the francophone world, short stories by such modern writers as Balzac, Sand, Flaubert, Maupassant, Diop, Tournier, to mention only a few possibilities.

In addition to exams and traditional assignments requiring analysis, students will explore the oral tradition by learning to tell stories orally. Students will also write original stories and work on editing them and "publishing" them within the class.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion  
PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3300.03: La littérature médiévale/ Mediaeval French Literature.**

Textual analyses of selected works representing the major literary genres (epic, romance, theatre, poetry) from the chansons de geste to François Villon (most texts in modern French translations). The discussion of the origins and the development of a national French literature provides an introduction to critical approaches to literary texts.

INSTRUCTOR(S): V. Masse, Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3400.03: La littérature du seizième siècle/16th Century French Literature.**

This course explores the awakening, flourishing and decline of the Renaissance period in literature and language through the works of Marot, Rabelais, Du Bellay, Ronsard, Montaigne and the poets of the baroque. The 16th century's concern with the French language provides a solid introduction to the study of the development of modern French.

INSTRUCTOR(S): V. Masse

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3500.03: La littérature du dix-septième siècle/ 17th Century French Literature.**

This class offers an introduction to seventeenth century French literature with a primary focus on representative works by three major dramatists: Corneille, Molière and Racine. It explores their vision of humanity and the world and assesses their contribution to French literature and the history of ideas.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3600.03: La littérature du dix-huitième siècle/ 18th Century French Literature.**

An introduction to the literature of the 18th century which includes works by such authors as Voltaire, Rousseau, Diderot and Marivaux. Each year the readings and class discussions will be centred on a different theme (for example: the hero, women, love, wealth and power).

INSTRUCTOR(S): D. Aïssaoui

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3700.03: La littérature du dix-neuvième siècle/ 19th Century French Literature.**

An introduction to the main literary movements of the 19th Century: Romanticism, Realism, Symbolism. Focus is on representative authors and/or texts belonging to one or more of these trends.

INSTRUCTOR(S): V. Frigerio

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3730.03: La bande dessinée franco-belge - The Franco-Belgian Comic Strip.**

This course offers an analysis of the development of Franco-Belgian comics (bandes dessinées) from the post-war period to the present time, focusing on a number of major authors, magazines and publishers. Several theoretical approaches will be used including semiotics, sociocriticism and cultural studies.

INSTRUCTOR(S): V. Frigerio

FORMAT: Lecture/seminar

PREREQUISITE: FREN 2201.03, FREN 2202.03

### **FREN 3750.03: Littérature industrielle, roman populaire et roman de consommation/Popular Literature and the Rise of Mass Culture.**

The second half of the XIXth century witnesses the development and increasing popularization of the novel as the pre-eminent form of literary expression, concurrently with a dramatic increase and diversification of the reading public.

This class will explore the evolution of the novel during this period, with a particular emphasis on the appearance of serialized novels in magazines and newspapers (le feuilleton) and on the development of "genre" fiction and the

concept of "popular" literature. Books or excerpts from several representative writers of the time (Alexandre Dumas père, Eugène Sue, Balzac, Frédéric Soulié, Paul Féval, Jules Verne) will be analysed and discussed, in the light of theoretical works on the development of modern mass culture (Umberto Eco, René Guise, Daniel Couégnas, Lise Queffélec).

INSTRUCTOR(S): V. Frigerio, Staff

FORMAT: Lecture/seminar

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3800.03: Théâtre et poésie du vingtième siècle/ French Theatre and Poetry of the 20th Century.**

This course offers study of modern poetry from Dada and Surrealism to the work of contemporary poets such as Yves Bonnefoy, Jacques Dupin and Michel Deguy; and of modern theatre from Jarry to Beckett, Ionesco and beyond.

INSTRUCTOR(S): C. Elson

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3810.03: Prose et théorie littéraire du 20e siècle/ 20th Century Prose and Literary Theory.**

Analysis of a broad selection of short prose by major novelists of the 20th century from Gide, Proust and Aragon, but with emphasis upon the more recent work of Beckett, Sarraute, Simon, Duras, Le Clézio and Cixous. Parallel discussion will be centred upon the literary theory of critics such as Bachelard, Poulet, Starobinski, Barthes and Derrida.

INSTRUCTOR(S): C. Elson

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

### **FREN 3811.03: Introduction à la littérature francophone de l'Afrique subsaharienne et des Caraïbes/Introduction to African and Caribbean Francophone Literature.**

This class focuses on the evolution of African and Caribbean literature from its origins to the present day. It prepares students for upper level classes in African and Caribbean literature, for example FREN 4811 (Francophone Poetry).

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201/2202 or permission of instructor

### **FREN 3900.03: FREN 3901.03: La littérature canadienne française/French-Canadian Literature.**

In-depth study of a few major works of French-Canadian literature with emphasis on the period from 1945 to the present day. Approved with Canadian Studies.

INSTRUCTOR(S): I. Oore

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

CROSS-LISTING: CANA 3900.03/3901.03

### **FREN 3910.03: Études acadiennes/Acadian Studies.**

Critical investigation into the historical, socio-cultural, linguistic and literary significance of past and present Acadian writing. May follow Acadian Studies (FREN 2021.03/2022.03). Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

CROSS-LISTING: CANA 3910.03

### **FREN 3994.03: Independent Study.**

This class is given in preparation for students studying abroad in the Winter term.

### **FREN 4001.03: Histoire du français - Moyen Âge/ History of French - The Middle Ages.**

Advanced research into selected topics in Old and Middle French - manuscript studies; paligraphy; historical phonetics, morphology and syntax; the cultural-literary context of linguistic development; etc.

INSTRUCTOR(S): R. Mopoho, Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French class

### **FREN 4002.03: Histoire du français - époque moderne/History of French - The Modern Period.**

Advanced research into selected topics - the emergence of a national language, the problem of orthography, usage and the development of normative grammars, the evolution of vocabulary, epochal phenomena (Rhétoriciens, the Baroque, Préciosité, the Revolution, scientific French, argot), etc.

INSTRUCTOR(S): R. Mopoho, Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French class

### **FREN 4011.03: Lexicologie/Lexicology.**

How can French vocabulary be studied and structured? What is its formation (derivation, composition, metaphor, borrowing, abbreviation, etc.), its meaning, its development? Class reports, discussions and lexical assignments are important components of this class.

INSTRUCTOR(S): R. Mopoho, J. Milicevic

FORMAT: Seminar

PREREQUISITE: FREN 3020.06 or FREN 2020.03 and 3021.03 or 3022.03, or instructor's permission

### **FREN 4013.03: Pragmatique/Pragmatics.**

Introduction to the study of linguistic pragmatics: definitions, principles and methods. Analysis of the conditions of language use, with particular emphasis on the description of speech acts. Elements of literary pragmatics. Application exercises.

INSTRUCTOR(S): J. Milicevic, R. Mopoho, Staff

FORMAT: Lecture

PREREQUISITE: FREN 3020.06 or 2020.03 and 3021.03 or 3022.03, or instructor's permission

### **FREN 4014.03: Langue et société/ Language and Society.**

A linguistic introduction to the analysis of the relationship between language and society. Typology of sociolinguistic situations. The phenomena of language contact, linguistic variation, norms. The relationship between groups in multilingual situations. Principal theoretical tendencies. Practical applications.

INSTRUCTOR(S): R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 3020.06 or 2020.03 and 3021.03 or 3022.03, instructor's permission

### **FREN 4016.06: Introduction to Applied Linguistics and Language Teaching.**

Taught in English, this class provides students with a theoretical and practical introduction to issues in language teaching. It includes a survey of language teaching methods which focuses both on their theoretical underpinnings and their methodology. It will include some classic methods as Grammar-Translation as well as some fascinating but lesser known methods (Audio-lingual method, Silent Way, Suggestopedia, Community Language Learning). Significant class time will be devoted to current trends and conflicting views (for example, various definitions of "communicative" approach, the proficiency movement). Class time will be devoted not only to learning about these approaches, but to experiencing them via peer micro-teaching.

N.B. This class is open to senior students (or graduate students) in all language departments. French majors or honours students may not count this class towards the minimum number of credits required for their French degree, but may take it as a supplementary elective class.

NOTE: All students enrolled in the class must do a practicum of two hours per week. Normally, this will be done as volunteer tutoring for Dalhousie ESL students.

INSTRUCTOR(S): Staff

FORMAT: Lecture

CROSS-LISTING: ENGL 3916.06

### **FREN 4017.03: Traduction générale/General Translation.**

This class normally follows FREN 3045. Students taking this class will be familiarized with essential notions of translation theory, and will be introduced to professional translation practice. Emphasis will be placed on the translation of relatively short texts in a wide variety of subjects and fields, from English into French and from French into English. Assessment will be carried out through weekly assignments, as well as in-class exams.

INSTRUCTOR(S): V. Frigerio, R. Mopoho, Staff

FORMAT: Lecture

PREREQUISITE: FREN 3045.06 or instructor's permission

EXCLUSION: FREN 4015.06

### **FREN 4018.03: Outils et ressources électroniques d'aide à la rédaction, la traduction et la révision en français/Electronic tools and resources for French.**

The aim of this class is to provide the student with a wide range of electronic tools and resources useful to text writing, translation and editing activities in French.

The student will learn how to use these electronic tools and resources, and in particular, some of the techniques associated with them. Tools demonstrated will include grammar checkers, machine (aided) translators, concordancers and speech synthesizers/recognizers. Resources presented will consist of on-line terminology banks, dictionaries, thesauri and grammars, etc.

INSTRUCTOR(S): Staff

FORMAT: Lecture/lab

PREREQUISITE: FREN 3045X/Y.06 or equivalent or instructor's permission

### **FREN 4046.03: Composition avancée/Advanced Composition.**

This class normally follows FREN 3045. Students in this class will hone their writing skills by learning principles of good writing and putting them into practice via writing, editing and revising texts of various kinds. They will learn the conventions that characterize good academic writing in French. They will also create some professional documents, including a French curriculum vitae and job application letter. Students may also do some less formal writing, including descriptions or narratives.

INSTRUCTOR(S): Staff

FORMAT: Lecture

PREREQUISITE: FREN 3045.06 or instructor's permission

EXCLUSION: FREN 4045.06

### **FREN 4300.03: Le roman courtois/Courtly Novels.**

A close literary analysis of mediaeval French Arthurian romances. Texts in bilingual (Old French/French) editions.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4301.03: La poésie courtoise/Courtly Poetry.**

A stylistic and socio-cultural study of French courtly love poetry from the 9th to the 15th centuries. Early texts in modern French translations.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4401.03: La pensée philosophique, politique et morale de la renaissance/Philosophical, Political and Moral Thought of the Renaissance.**

An in-depth study of major currents of Renaissance thought: humanism, scientific awakening, the beginning of littérature engagée, and the emergence of the moralistes and philosophes.

INSTRUCTOR(S): V. Masse, Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4500.03: L'aventure intellectuelle du grand siècle/The Intellectual Adventure of 17th-Century France.**

This class examines, at an advanced level, a major writer, movement, genre or theme in 17th-century French literature. As the focus of the class may vary frequently, please consult the professor for detailed information on the topic and format.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4550.03: La femme de lettres au Grand Siècle/Literary Women of French Classicism.**

In this class, we will explore: aspects of the intellectual and social context particularly relevant to a study of literary women in seventeenth-century France (for example: social structures and norms, la préciosité, the salons, the libertinage of Ninon de Lenclos, women's contributions as patrons of the arts); a representative selection of works, from several literary genres, written by

seventeenth-century women (for example: novels by Mme de La Fayette and/or Mlle de Scudéry, Mme de Sévigné's letters, Mme d'Aulnoy's contes, Mme de Sablé's maxims); examples of literature written by men which counters the ambient misogyny of the period (for example: Molière's *L'École des femmes* and La Bruyère's *Caractères*).

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion/group activities

PREREQUISITE: 3000-level French literature class or instructor's permission

CROSS-LISTING: GWST 4550.03

### **FREN 4600.03: Le siècle des lumières: forme et philosophie/The Enlightenment: Form and Philosophy.**

An in-depth study of the French Enlightenment which treats some of the longer works by major authors and introduces the student to secondary authors whose works are also of significant literary, philosophical or historical value. The study is unified by an examination of recurring philosophical ideas and literary themes important to understanding the development of new genres and styles. Please consult the professor for information on the theme treated and the works to be studied in any given semester.

INSTRUCTOR(S): D. Aïssaoui

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4700.03: La révolution romantique/The Romantic Revolution.**

Romanticism is viewed primarily as a rebellious and creative force which greatly contributed to the reshaping of traditional society. The origins, main themes and trends of the movement are studied with an attempt to show Romanticism as a European movement, the impact of which was felt in fields beyond the boundaries of literature. Classes are conducted as seminars. The choice of texts depends largely on the students' previous experience: they include works by Mme de Staël, Chateaubriand, Lamartine, Hugo, Vigny, G. Sand and others.

INSTRUCTOR(S): V. Frigerio

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4701.03: Le roman du dix-neuvième siècle/ The Nineteenth-Century Novel.**

Intensive study of the work of a major novelist of the 19th century: e.g. Stendhal, Flaubert, Balzac, Zola, Sand; a study of his/her place in the development of the novel and of his/her contribution to the genre.

INSTRUCTOR(S): V. Frigerio

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4710.03: Du symbolisme au surréalisme/ From Symbolism to Surrealism.**

Analysis of the evolution of French literature from the various symbolist manners of Verlaine, Rimbaud, Mallarmé, Lautréamont and Laforgue, through the period of Jarry and Dada, to the aspirations and paradoxes of Surrealism viewed, principally, through the work of Breton, Eluard, Aragon and Desnos.

INSTRUCTOR(S): C. Elson

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4801.03: Le Nouveau Roman/Anti-novels of the 20th Century.**

In this class we are mainly interested in fictional techniques: how the author creates his illusion. Each of the works selected for detailed study is important due to the author's rejection of conventional ideas regarding the form of the novel.

INSTRUCTOR(S): C. Elson

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4811.03: La poésie francophone de Perse et Char à Senghor et Césaire/Francophone Poetry from Perse and Char to Senghor and Césaire.**

Discussion of the works of five or six major francophone poets of the modern period, chosen from: Perse, Reverdy, Claudel, Char, Frénaud, Senghor, Tchicaya, Césaire, Glissant, Miron and others.

INSTRUCTOR(S): C. Elson, Staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4902.03: FREN 4903.03: Écrivains québécois contemporains/Contemporary Quebec Writers.**

In depth study of one or more contemporary Québec writers. Approved with Canadian Studies.

INSTRUCTOR(S): I. Oore

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

### **FREN 4904.03: Écrivaines québécoises/ Quebec Women Writers.**

This class will explore the condition of women as revealed in texts by Québec women writers. In any given year different writers and time periods will be covered, and a variety of genres may be included. Approved with Canadian Studies.

INSTRUCTOR(S): I. Oore

FORMAT: Lectures/discussion

PREREQUISITE: 3000-level French literature class, preferably French Canadian

CROSS-LISTING: GWST 4250.03

### **FREN 4933X/Y.00: Séminaire "de spécialisation"/ Honours Seminar, Honours Essay.**

The honours seminar is a compulsory preliminary to the honours essay or oral presentation and is given as a fall term class for honours students in their graduating year writing their Honours Essay in French. The seminar prepares students to write the honours essay, beginning with a detailed outline of the work. It provides instruction, advice, and guidance on all the essential steps for producing the honours essay, from selecting and researching a topic, through planning and drafting the text, to matters of form and style. Students continue the work begun in the seminar by working individually with a supervisor during the winter term.

INSTRUCTOR(S): Undergraduate Advisor

FORMAT: Seminar

PREREQUISITE: Only open to students in graduating year of French Honours program.

### **FREN 4994.03: FREN 4995.03, FREN 4996.03/FREN 4997.03, FREN 4998.03/FREN 4999.03: Recherches indépendantes/Independent Research.**

May only be taken with the approval of the Chair or the Undergraduate Advisor.

FORMAT: Independent study/seminar

PREREQUISITE: 3000-level French literature or linguistics class

# Gender and Women's Studies

Location: 1376 LeMarchant Street  
Multidisciplinary Centre  
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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Coordinator

Warwick, J. (494-1926)

## Professor Emerita

Sherwin, S. B., BA (York), PhD (Stanford), FRSC

## Faculty

Akbulut-Yuksel, M. (Economics)  
Bain, J. (Music)  
Barker, R. (Theatre)  
Baur, S. (Music)  
Borgerson, K. (Philosophy)  
Brown, C. (School of Social Work)  
Brown, M. (School of Social Work)  
Brownlee, S. (Theatre)  
Carbert, L. (Political Science)  
Cooper, A. (Sociology & Social Anthropology)  
Dieleman, S. (Philosophy)  
Denike, M. (Political Science)  
Edwards, E. (Contemporary Studies)  
Fitting, E. (Sociology & Social Anthropology)  
Gambold, L. (Sociology & Social Anthropology)  
Gardiner Barber, J.P. (Sociology & Social Anthropology)  
Ginn, D. (Law)  
Glowacka, D. (Contemporary Studies)  
Irvine, D. (English)  
Jackson, L. (Health & Human Performance)  
Kesselring, K. (History)  
Luckyj, C. (English)  
Martin, F. (Sociology & Social Anthropology)  
McCallum, T. (History)  
Meynell, L. (Philosophy)  
Morris, K. (Early Modern Studies)  
Numer, M. (Health & Human Performance)  
Richard, B. (School of Social Work)  
Stone, M. (English)  
Tillotson, S. (History)  
Ulicki, T. (International Development Studies)  
Warwick, J. (Music)  
Whelan, E. (Sociology & Social Anthropology)  
Wunker, E. (English)

## I. Introduction

Gender and Women's Studies is a dynamic and rapidly expanding interdisciplinary area of study. An alternative to the traditional curriculum, Gender and Women's Studies provides students with the opportunity to examine history, social structures, the sciences, language, literature, and culture from critical and illuminating perspectives.

At Dalhousie, students can currently enter the following programs in Gender and Women's Studies: a Minor, a Major, a Double Major, or a Combined Honours program. These programs include classes in the disciplines of Economics, English, History, Music, Philosophy, Political Science, Sociology and Social Anthropology, and Theatre, and in interdisciplinary and professional fields, including Contemporary Studies, International Development, Law, and Nursing.

Students in the Dalhousie Gender and Women's Studies programs develop a critical understanding of gender as a category of analysis in scholarly enquiry, social dynamics, cultural expression, and belief systems. They also investigate the ways in which gender intersects with other variables such as race, class, and cultural difference. They study women's contributions to civilization in many fields of knowledge, and examine the social and ideological forces that have made these contributions "invisible" in the past. Through exposure to a large and growing body of research in a number of disciplines and fields, Gender and Women's Studies Majors gain a grounding in the methodologies and concepts shaping the organization and dissemination of knowledge.

Our classes also provide students with opportunities of uniting theory with social and cultural practice, addressing contemporary issues that individuals and institutions are grappling within today's changing world order. They provide a context in which women can find strength and insight through exchanging experiences and ideas with other women, and a context in which women and men together can further human understanding and equality through exploring and respecting differences.

Do men take Gender and Women's Studies classes? Yes. Gender has operated as a fundamental category in the organization of knowledge, social systems, forms of representation and modes of production and consumption. The critical examination of gender is relevant to both men and women.

## II. Degree Programs

Gender and Women's Studies programs provide preparation for careers in a variety of fields, as well as for professional schools or graduate programs. For example, graduates can work as consultants, policy analysts, and officers in government and para-governmental organizations, in business and industry, and in educational institutions. The fields they enter include employment equity, public administration, international development, health care, work place conditions, personnel relations, publishing and editorial work, and public relations.

For students interested in a preparatory degree, Gender and Women's Studies programs provide appropriate preparation for professional schools and programs in the fields of education, social work, counselling, journalism, the health professions, and certain areas of law. They also provide suitable preparation for graduate programs in Women's Studies, Gender Studies, Interdisciplinary Studies, Cultural Studies, and studies in Social Justice. Students interested in proceeding to graduate work should enter a four-year degree program.

Students may enter Gender and Women's Studies programs in the first, second, or third year of study. In many cases, students in second or third years may already have acquired some Gender and Women's Studies credits through taking classes in the traditional disciplines or in other interdisciplinary programs that are cross-listed with Gender and Women's Studies core classes.

Students can currently enter four programs in Gender and Women's Studies: a BA with Combined Honours, a 20 credit BA with Major in Gender and Women's Studies, a 20 credit BA with Double Major in Gender and Women's Studies with a traditional discipline or with another interdisciplinary program such as International Development Studies, Sustainability, Canadian Studies, or Contemporary Studies; and a 15 credit BA with Minor in Gender and Women's Studies.

NOTE: In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. Minor in Gender and Women's Studies

The BA (15 credit) option permits a wide range of choice in class selection. A three year degree in Gender and Women's Studies can prepare a student for work in the occupational areas described above, or it can be used as a preparatory degree for professional programs such as Law and Social Work.

The minor may also be added within other 20 credit degree programs.

## Departmental Requirements

- Three credits beyond the 1000 level in Gender and Women's Studies
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes

## B. BA (20 credit) Major in Gender and Women's Studies

### Four year, 20 credit program

This program provides a more comprehensive grounding in Gender and Women's Studies than the BA (15 credit) minor in Gender and Women's Studies. Students interested in applying to graduate programs should enter a four year degree program.

## Departmental Requirements

- At least six and no more than nine credits beyond the 1000 level in Gender and Women's Studies of which at least three must be beyond the 2000 level
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes

## C. BA (20 credit) Double Major

### Four year, 20 credit program

Students can combine Gender and Women's Studies classes with classes either in a traditional discipline or with another interdisciplinary program such as International Development Studies, Canadian Studies, or Contemporary Studies.

## Departmental Requirements

- At least 10 and no more than 14 credits beyond the 1000 level in two allied subjects, one of which is Gender and Women's Studies, with no more than eight and no fewer than five in either
- At least two credits in each of the two subjects chosen shall be beyond the 2000 level
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes.

## D. BA with Combined Honours

### Four year, 20 credit program

Students can enter a BA with Combined Honours program in Gender and Women's Studies and a range of other subjects including Biology, Classics, Contemporary Studies, English, Environment, French, History, International Development Studies, Philosophy, Political Science, Psychology, Sociology, Social Anthropology, Sustainability, and Theatre. Students interested in any of these combinations or any other that involves Gender and Women's Studies and another subject should consult with the Departments concerned.

## General Degree Requirements

Please read the detailed description of BA with Combined Honours Program in the Degree Requirements section of this calendar. A minimum of 11 and maximum of 14 credits is required in the honours subjects beyond the 1000 level, with no fewer than five and no more than eight credits in each subject.

PLEASE NOTE: Where a class selected from the Gender and Women's Studies "list" in the BA with Combined Honours program is cross-listed with a class in the allied subject, the class may not be double counted (ie. it may be counted on one or other list, but not on both). Where a class selected for the Gender and Women's Studies "list" in the BA with Combined Honours program is cross-listed with a class in the allied subject, this should not result in a student exceeding the maximum allowed in either of the allied subjects and may be counted for one subject or the other.

## Departmental Requirements

In addition to meeting the Degree Requirements set out by the Faculty, Gender and Women's Studies students must meet the following requirements:

1. At least three Gender and Women's Studies classes must be taken beyond the 2000 level.
2. At least three different disciplines must be represented in a student's selection of Gender and Women's Studies classes (in disciplines other than the allied subject).
3. The following classes are required:

- a) At least one full credit from the following: GWST 2066.03, 2300.03, 2301.03, 2500.03, 2800.06 (Normally this requirement should be met in the second year of the program.)
- b) At least one full credit 4000 level Gender and Women's Studies class, either Directed Readings, Special Topics, or cross-listed classes (Normally this requirement should be met in the fourth year of the program.)
- c) To meet the Honours Examination requirement when Gender and Women's Studies is the major subject, students will prepare a research paper under the supervision of a Gender and Women's Studies faculty member and will take GWST 4900X/Y.03.

## III. Class Descriptions

NOTE: Some classes may not be offered every year. Please consult the current timetable to determine if these classes are offered. More detailed information can be obtained from the Gender and Women's Studies office.

In addition to the classes listed below, appropriate classes in other departments (for example, Special Topics classes on women and/or gender issues) may be taken as Gender and Women Studies credits, with the permission of the Instructor concerned and the Coordinator. Students may also select Gender and Women's Studies classes at Saint Mary's or Mount Saint Vincent Universities, subject to the rules and regulations of the College of Arts and Science at Dalhousie regarding transfer credits and in consultation with the Gender and Women's Studies Coordinator.

### GWST 1010.03: Introduction to Gender and Women's Studies.

Gender and Women's Studies is an interdisciplinary field aimed at developing a critical understanding of gender as a category of analysis in scholarly enquiry and social dynamics. Paying close attention to the experiences and perspectives of women, students have the opportunity to examine history, social structures, the sciences, language, literature, culture from the illuminating perspective of gender. In all these areas, Gender and Women's Studies investigates how gender intersects with other variables such as race, class, and cultural difference. This introductory class provides an overview of some of the central topics of Gender and Women's Studies, such as the sex/gender distinction, understanding sexualities, the social construction of motherhood, changing definitions of manliness and womanliness, and the place of sex and gender in the legal system.

INSTRUCTOR(S): S. Tillotson

FORMAT: Lecture/discussion

### GWST 1015.03: Gender and Diversity.

This class continues from "Introduction to Gender and Women's Studies" to focus particularly on the many ways that gender as a social system interacts with other systems of power and inequality. We all make sense of our lives through multiple identities that combine in shifting ways to define our opportunities for action and the limits we face. Identities based on gender, race, ethnicity, age, class, sexuality, disability, nation, or religion are blended in varied ways for individuals, but they are not just individual self-perceptions. They are also elements of larger social systems. Topics may include the multiple identities of the body; race, gender, and violence; diversity and work; contemporary transformations of the family; and gender and globalization.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### GWST 2000.03: Directed Readings in Gender and Women's Studies.

Readings and research in Gender and Women's Studies on selected topics. In exceptional circumstances, and with the permission of both the Gender and Women's Studies Coordinator and the Instructor concerned, students may arrange to take appropriate classes for credit in Gender and Women's Studies that are not otherwise available as one term classes in Gender and Women's Studies. To find out how to register in one of these classes, please see [genderandwomenstudies.artsandsocialsciences.dal.ca/](http://genderandwomenstudies.artsandsocialsciences.dal.ca/)  
FORMAT: Variable  
PREREQUISITE: Variable

### GWST 2066.03: Women, Gender and Music.

This class explores the variety of ways in which gender shapes musical discourse. The role of gender in music will be examined through three broad topics: the history of female contributions to music as musicians, composers, patrons and listeners; musical constructions of gender, race, class and sexuality; and feminist criticism in recent musical discourse. No formal training in music is required.

INSTRUCTOR(S): J. Bain, J. Warwick

FORMAT: Lecture

CROSS-LISTING: MUSC 3066.03

### GWST 2217.03: Women and the Economy.

This class will provide a broad and relatively non-technical analysis of women's economic experiences. For example, we will study questions such as: Are there feminists who are economists? Have economic conditions improved for women in Canada over the past 30 years? How do economic outcomes for women in Canada compare with those in other affluent countries? Is there a glass ceiling for women in the workplace? Is there gender discrimination in the Canadian labour market? Who does the unpaid work? What are the economic consequences of divorce? Are women more likely than men to be poor? Are there inequalities within families?

FORMAT: Lecture

PREREQUISITE: ECON 1101.03/1102.03 with a grade of C- or better

CROSS-LISTING: ECON 2217.03

### GWST 2300.03: Making Gender: Women and Men, Sex and Gender in Pre-Modern Europe.

This course examines the diverse and fascinating ways western cultures have shaped what it meant to be a woman or a man. Beginning in the time of the Roman Empire and continuing to the age of the French Revolution, the course examines such topics as eunuchs, fasting saints, female 'popes', changing notions of the physical differences between the sexes, and early struggles for women's rights.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2614.03

### GWST 2301.03: Making Gender: Male and Female from the American Revolution to the Present.

This class examines the diverse and fascinating ways western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are explored in this class through topics such as: the doctrine of separate spheres, respectability, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and infertility.

INSTRUCTOR(S): S.M. Tillotson

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2615.03

### GWST 2310.03: Women and Gender in Early Modern Science.

This class will explore the roles of women, and questions about women's nature, in the development of early modern science. The class will consider several interrelated aspects of scientific culture in the sixteenth, seventeenth, and eighteenth centuries: first, we will look at the place of women in the scientific institutions of the time. Although women were, for the most part, excluded from universities and scientific academies, some women were able to do scientific work through their participation in salons and craft guilds. The second part of the course will look at the contributions of some particular women to the fields of physics, astronomy, botany, and medicine. We will then examine how science interpreted sex and gender. We will pay special attention to the biological sciences and their treatments of sex differences, conception, and generation. We will consider how these biological theories were influenced by, and at the same time used to uphold, various political and social structures. Finally, the course will explore the ways in which gender and nature were portrayed in the broader cultural context. We will, for example, discuss the ways in which women were depicted as scientists and as symbols of science in art and literature.

INSTRUCTOR(S): K. Morris

CROSS-LISTING: EMSP 2310.03, HSTC 2310.03

### GWST 2320.03: Witchcraft in Early Modern Europe.

The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious and political contexts. The class will pay special attention to early modern notions of gender and sexuality and their influence on the witch hunts and witch trials.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar

CROSS-LISTING: EMSP 2320.03, RELS 2420.03

### GWST 2412.03: Human Sexuality.

This class is concerned with biological, cultural, ethical, historical, psychological, religious and semantic aspects of human sexuality. Four themes are threaded throughout the class - diversity in gender roles and in sexual attitudes, behaviours and customs; critical thinking; making responsible decisions; sexual health. The class is designed to support positive integration of sexuality into the lives of individuals and to foster the prevention of sexuality-related problems, at all stages of life.

FORMAT: Lecture/discussion 3 hours

CROSS-LISTING: HPRO 4412.03

### GWST 2500.03: Philosophical Issues of Feminism.

An exploration and examination of some of the concepts, issues, and arguments underlying feminist claims and perspectives. Such topics as pornography, rape, mothering, the nature of gender, and feminism's responses to racism will be considered.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: PHIL 2160.03

### GWST 2800X/Y.06: Comparative Perspectives on Gender.

This course examines gender in a global perspective. Drawing upon historical and current anthropological and sociological theory the course provides a theoretically based understanding of how gender differences are culturally produced, as well as socially, economically, politically, and spatially organized. The class begins by examining the extent to which gender experiences in society are taken for granted, perceived to be based in nature rather than culture. Topics in the first half of the class include evolutionary and materialist perspectives, feminism, and equality, the domestic sphere and the division of labour, masculinities, sexuality and the state. Readings are broad and include ethnographic accounts of the various ways that gender is experienced around the world. The second half of the class examines power relations and political discourse, work and parenthood, the politics of reproduction, gender and violence, development and the global economy, and gender and belief systems. By examining some of the contemporary struggles of both women and men cross-culturally, the class is designed to help students understand the undeniable breadth of gendered experiences and issues therein.

NOTE: Students taking this class must register in X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, 1200X/Y.06; or Gender and Women's Studies class

CROSS-LISTING: SOSA 2190X/Y.06

### GWST 3000.03/3001.03/3002X/Y.06: Directed Readings in Gender and Women's Studies.

Readings and research in Gender and Women's Studies on selected topics. Students may take appropriate classes in other Departments under these numbers, with the permission of the instructor and the Gender and Women's Studies Coordinator, or they may construct their own reading list and research project in consultation with an appropriate faculty member and the Coordinator. To find out how to register in one of these classes, please see [genderandwomenstudies.artsandsocialsciences.dal.ca/](http://genderandwomenstudies.artsandsocialsciences.dal.ca/)

NOTE: Students taking GWST 3002X/Y.06 must register in X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Variable

PREREQUISITE: Variable

### GWST 3006.03: Comparative Perspectives on Gender and Work.

This class will use comparative perspectives to explore a range of topics relating to the gendering of work: wage-work, household-based labour, the informal sector, masculinity and femininity in the work place, occupational segregation, employment policies directed at changing the status quo (such as affirmative action, pay equity), and unionization. The context will be the changing global political economy and its consequences for the strategies of different groups (such as nation states, but also trade unions, feminist groups and employer groups).

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3006.03

EXCLUSION: SOSA 2140.03, SOSA 2141.03

### GWST 3013.03: Sex and Gender in Reformation Europe.

This class looks at the historical development of the norms and practices surrounding sexuality and family relations, with special focus on the changes accelerated by the sixteenth-century religious reformations. It historicizes ideas about what is “natural” in regards to such practices. It examines the motives and results of attempts to regulate sexuality and marriage. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

INSTRUCTOR(S): K. J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous history class

CROSS-LISTING: HIST 3013.03

### GWST 3050.03: Contemporary Women Poets.

Reading women’s poetry in local and global contexts, this course will address the emergent practices of contemporary poetics in Canada and the United States. The majority of our readings will consist of book-length works of poetry—that is, longer texts that transgress the limits of the lyric and collections of shorter poems linked by various formal, narrative, and thematic continuities. These texts represent some of the key innovations and formations of women’s poetics and poetics from the end of the twentieth to the beginning of the twenty-first centuries.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000.06

CROSS-LISTING: ENGL 3250.03

### GWST 3150.03: Sociology and Anthropology of the Body.

This class will consist of a micro-sociological examination of the human body as a socio-cultural construction. Topics include: bodily self image, cultural definitions of physical attractiveness, stigmatization, proxemic behaviour, non-verbal communications, body hygiene and pollution taboos, and cultural aspects of human reproduction and sexuality. Special attention will be paid to class, gender and ethnicity and their relationship to body politics.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3150

### GWST 3168.03: Issues in Latin American Society.

This course introduces students to case studies on contemporary Latin America. The goal of the course is to familiarize students with key social and cultural issues in the region. The focus of the course will change from year to year, and may include a particular country or region, or a theme or topic. Students should contact the Gender and Women’s Studies department/co-ordinator for details on the specific theme of the course in a given year. This course will only be offered as a Gender and Women’s Studies class in years when the topic is gender-related.

FORMAT: Lecture

CROSS-LISTING: SOSA 3168.03

### GWST 3215.03: Feminism and Science.

Science has been the subject of intense scrutiny by contemporary feminist theorists. The course will examine the various feminist critiques of natural science, as well as the positive proposals that feminism has brought to science and scientific culture. Questions that will be addressed include: Is the style of science gendered? Has feminism influenced the content of various sciences? How has science contributed to gendered constructions of nature? Is there such a thing as value-free scientific research? How do feminist theories of knowledge differ from traditional understandings of scientific knowledge and scientific objectivity? The readings for this course will include work by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.

INSTRUCTOR(S): K. Morris

FORMAT: Seminar

PREREQUISITE: Second year and above.

CROSS-LISTING: CTMP 3215.03, HSTC 3411.03

### GWST 3300.03: Family and Community in North America 1600-1900.

The family in North American society from, when the family was a model for social relations to the time when it was idealized as a private refuge. Among the topics considered are the role of the family in rural and urban communities; the demographic transition from high fertility and mortality; the reduction of the family’s economic and educational autonomy; the role of ideology in shaping sex roles and child rearing; and the relations of family and community according to ethnic group, class and economic setting.

RECOMMENDED: A class in the Sociology or Social Anthropology of the family.

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 3350.03

### GWST 3304.03: Through her Eyes: Women and the Documentary Tradition.

This course will explore the rarely examined historical and contemporary involvement of women in the field of documentary filmmaking. Women documentary makers have produced extensive bodies of engaging work that challenge many societal assumptions about gender, class, race, the function of political power, sexuality and peace-war. They have worked at every level within the process: as directors, cinematographers, editors, sound recordists, producers, writers and fund-raisers. A variety of documentaries made by women from diverse backgrounds will be screened and analyzed along with a close reading of selected critical texts. Students will identify the similarities and differences in subjects, themes, style, aesthetics, and approached to creation, production and distribution.

INSTRUCTOR(S): S. Hamilton

FORMAT: Film Screening and Seminar

CROSS-LISTING: CTMP 3304.03

### GWST 3331.03: Film Theory II: Desire in Cinema.

This course focuses on theories of gender, sexuality and desire in the cinema. It addresses debates around the representation of gender, sexuality and desire on screen, as well as theorizations of spectatorial desire.

INSTRUCTOR(S): S. Brownlee

FORMAT: Lecture/discussion

PREREQUISITE: One of the Film Studies courses (or other exposure to the discipline)

CROSS-LISTING: THEA 3331.03

### GWST 3350.03: Rewriting Gender.

Against a widespread view that postmodernism is inimical to feminism, the readings in this class demonstrate that recent literature by women, both fiction and critical theory, has widely adopted postmodern strategies in order to advance feminist views. The postmodern canon has allowed female authors to question the way in which woman’s subjectivity has always been constructed through male-oriented processes of signification. The works of fiction covered in this class, by Kathy Acker, Angela Carter, Marianna Hauser, Octavia Butler, and others, exemplify aesthetic subversions of phallogocentric discourses. Literary texts will be supplemented with theoretical works by leading feminist/post-structuralist thinkers such as Judith Butler, Drucilla Cornell, Diane Elam, and Gayatri Spivak. The class includes video-taped material and slide-shows of postmodern feminist art.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

CROSS-LISTING: CTMP 3350.03

### GWST 3358.03: Slavery, Gender, and Power: Women in Nineteenth Century America.

This course studies the tangled histories of slavery and gender in nineteenth century America. Principal topics include the lives of female slaves, the cult of domesticity, the rise of early feminism, the role of women in the destruction of slavery, and the tension between gender and race.

INSTRUCTOR(S): P. Riley

FORMAT: Seminar

CROSS-LISTING: HIST 3358.03

### GWST 3365.03: Narrative Strategies in the Nineteenth Century Music: Gender, Identity, and Social Politics.

An interdisciplinary survey of nineteenth-century instrumental music, focusing on the narrative potential of nineteenth-century musical conventions and their relationship to other aspects of nineteenth-century Western culture. Representative musical works will be studied within the context of broader social and cultural issues, including gender, race, class, sexuality, nationality, ethnicity, and identity.

INSTRUCTOR(S): S. Baur

FORMAT: Seminar

PREREQUISITE: Permission of the instructor

CROSS-LISTING: MUSC 3365.03

### GWST 3426.03: Sex and the State.

This class will consider the role of the state and other institutions in the social, moral and legal production and regulation of sex and gender, particularly in Western countries. It will begin with a brief historical overview of the role of religious prescriptions in the social and legal regulation of sex, and in the



refinement of laws and policies that have been implicated in sex-and gender-based discrimination. We will also address a range of contemporary topics such as the decriminalization of homosexuality; hate crimes against sexual minorities; the politics of relationship recognition; state response to HIV/AIDS; gender-related refugee claims; and developments in the regulation of reproductive technologies.

INSTRUCTOR(S): M. Denike

FORMAT: Seminar

PREREQUISITE: POLI 1010, 1015, 1030, 1035, 1050, 1055, 1100, 1103, 2210, 2230 2350, 2410, 2420, 2430, 2440, 2450, or permission from the instructor

CROSS-LISTING: POLI 3426.03

### GWST 3500.03: Contemporary Feminist Theories.

Contemporary feminism is not a single theory but comprises multiple theoretical perspectives, reflecting both a diversity in women's experience of subordination and a diversity of interests and approaches. This class aims to present some of the richness and variety in feminist theory while offering students the opportunity for sustained critical engagement with influential feminist thinkers.

FORMAT: Seminar

PREREQUISITE: &#65279;At least two previous classes in Gender and Women's Studies, or at least two previous

classes in Philosophy, or permission of the instructor.

CROSS-LISTING: &#65279;PHIL 3170.03, PHIL 5170.03, GWST 5170.03

### GWST 3600.03: Sexualization of Western Political Thought.

Representations of women and constructs of femininity are a significant part of mainstream western political thought. This course explores these topics in the work of leading western philosophers, such as Aristotle, Aquinas, Hobbes, Locke and Rousseau, with attention to understanding the relation of ideas of sexual difference to general systems of thought. The course also considers how conceptions of gender difference and equality shape contemporary political, legal and philosophical discourses and practices, including in feminist critical theory and international human rights scholarship and activism. We will consider the arguments and strategies used by men and women in the past century to address systemic discrimination and advance gender equality.

INSTRUCTOR(S): M. Denike

FORMAT: Seminar

PREREQUISITE: POLI 1010, 1015, 1030, 1035, 1050, 1055, 1100, 1103, GWST 1010, 1015, 2000, 2053, 2066, 2200, 2217, 2300, 2301, 2310, 2320, 2500, 2800, permission from the instructor.

CROSS-LISTING: POLI 3427.03

### GWST 3800.03: Gender and Health.

This course aims to reflect upon and challenge our taken-for-granted assumptions about the gendered dimensions of health and healthcare. Rather than take the categories of 'women's health' and 'men's health' as its foundation, the course revolves around two main questions: (1) how does the field of health and healthcare define and enforce the very categories of 'women' and 'men?'; (2) how does gender, thus defined and enforced, affect the health, healthcare, and health work of those defined as men, women, or other? We will consider these questions by examining particular health topics that have a strongly gendered component, such as sexual health, reproductive health, and disability. Throughout the course, we will explore the theoretical perspectives used in the field; the two-sex model and challenges to it; the gendering of particular health problems and health professions; the medicalization of womanhood and, more recently, manhood; and the relationships between gender and other forms of social classification (e.g. race, class, sexual orientation).

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3145.03

### GWST 3810.03: Women and Aging.

As women grow older the experience of aging is generally more difficult for them than for men. Somewhere in the forties, anxieties about the aging process exacerbate the difficulties facing women in modern society. Disempowering older women is usually accomplished in small increments. "Old woman" is a pejorative label; the older a woman becomes, the less credibility she generally has; this is especially true for women of color, poor women, lesbians, and women who are physically challenged. While aging is a biological phenomenon, ageism is socially constructed. Specifically, under patriarchy, older women are seen as a burden, desexualized and segregated by both men and younger women. They are usually not taken very seriously, nor seen as a threat. This class will explore the issues related to social, psychological, political and economic factors that are major

determinants to the well-being of aging women based upon race, gender, sexual orientation, disabilities and class inequities.

FORMAT: Lecture/discussion/seminar

PREREQUISITE: SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, or 2 credits in Women's Studies

CROSS-LISTING: SOSA 3245.03, NURS 4370/5850.03

### GWST 3911.03: Gender in Theatre: A Cross-Cultural Survey.

This seminar class examines the roles gender has played in the shaping of world theatre alongside the roles the theatre has played in the shaping of various cultural conceptions of gender. By exploring plays and performances from Europe, North America, China, Japan, India, Iran and/or other traditions, we will strive to understand the ways in which various forms of representation reflect their cultures' governing images of masculinity and femininity. In the process, we will interrogate the historical and cultural variability of the notion of 'gender' itself. The main objective of the seminar will be to ask how gender determines performers' choices in various cultures, and to see how gender itself can actually be shaped by performance.

INSTRUCTOR(S): R. Barker

FORMAT: Lecture/seminar; 3 hours

PREREQUISITE: None, although a background in Gender and Women's Studies, Theatre or Dramatic Literature will be an asset.

CROSS-LISTING: THEA 3911.03

### GWST 3912.03: Gender Theory and Contemporary Performance.

This seminar class offers students an opportunity to encounter some of the most provocative and challenging gender theory of recent years in relation to contemporary theatre, film and performance art. Students will read considerations of the relationship between gender, performance and identity by such authors as Jacques Lacan, Michel Foucault, Hélène Cixous, Luce Irigaray, Julia Kristeva, Judith Butler, Peggy Phelan and Camille Paglia, among others. Alongside these works, we will examine contemporary performances, from the popular to the oppositional. Through this intertextual exploration of theory and performance, we will aim to expand our understanding of the ways in gender roles are created, maintained, questioned and changed in contemporary culture(s).

INSTRUCTOR(S): R. Barker

FORMAT: Lecture/seminar (3 hours plus bi-weekly screenings)

CROSS-LISTING: THEA 3912.03

### GWST 4000.03: 4100.03/4200X/Y.06: Directed Readings in Gender and Women's Studies.

Advanced readings and research in Gender and Women's Studies on selected topics. Students may take appropriate classes in other Departments under these numbers, with the permission of the Instructor and the Gender and Women's Studies Coordinator, or they may construct their own reading list and research project in consultation with an appropriate faculty member, and the Coordinator. To find out how to register in one of these classes, please see [genderandwomenstudies.artsandsocialsciences.dal.ca/](http://genderandwomenstudies.artsandsocialsciences.dal.ca/)

NOTE: Students taking GWST 4200X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Variable

PREREQUISITE: Variable

RESTRICTION: Restricted to senior students

### GWST 4116.03: Contemporary Issues in Gender and Development.

The course critically examines how development processes affect women and men and gender relations. Many development projects and policies have had a negative impact on women. The course provides a theoretical and conceptual grounding in gender/women and/in development, explores the gendered impact of policies and processes and examines issues such as governance, HIV/AIDS, and conflict.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03

CROSS-LISTING: INTD 3116.03

### GWST 4150.03: Special Topics in Gender and Women's Studies I.

In this seminar class, students will explore some of the current research on a focused topic in Gender and Women's Studies or gender theory. Topics may be drawn from such areas as queer theory, gender and embodiment, contemporary theory of sexuality, representations of gender, women and eating disorders,

postcolonial feminist theory, and so on. The course will be directed to majors and honours students in Gender and Women's Studies, but will be open to qualified students from other disciplines.

FORMAT: Seminar

PREREQUISITE: One full credit in Gender and Women's Studies or permission of instructor

### **GWST 4151.03: Special Topics in Gender and Women's Studies 2.**

In this seminar class, students will explore some of the current research on a focused topic in women's studies or gender theory. Topics may be drawing from such areas as queer theory, gender and embodiment, contemporary theory of sexuality, representations of gender, women and eating disorders, postcolonial feminist theory, and so on. The course will be directed to majors and honours students in Gender and Women's studies but will be open to qualified students from other disciplines.

FORMAT: Seminar

PREREQUISITE: One full credit in Gender and Women's Studies or permission of instructor

### **GWST 4200X/Y.06: Directed Readings in Gender and Women's Studies.**

Readings and research in Gender and Women's Studies on selected topics. Students may take appropriate classes in other Departments under these numbers, with the permission of the instructor and the Gender and Women's Studies Coordinator, or they may construct their own reading list and research project in consultation with an appropriate faculty member and the Coordinator.

NOTE: Students must register in X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Variable

PREREQUISITE: Variable

### **GWST 4300.03: Introduction to Women and the Law.**

The class begins with a focus on feminist legal theory, and the integration of feminism with issues of race, class, sexual orientation, and disability. The second major focus is on equality rights in Canada, from the early cases to current concepts of equality under the Charter. The class then considers the impact of feminist legal theories on particular areas of the law. This is followed by student class presentations on major paper topics.

INSTRUCTOR(S): D. Ginn

FORMAT: Seminar

PREREQUISITE: This class is open to all 2nd and 3rd year Law students and all students eligible to take classes from the classes listed as Gender and Women's Studies core classes. However, this is a seminar class and is limited to a total of 18 students from Law and Gender and Women's Studies combined. Therefore, available spaces may be limited.

CROSS-LISTING: LAWS 2152.03

### **GWST 4315.03: Women's Suffrage From The French Revolution To World War I.**

The question of women's participation in representative government first emerged during the French Revolution but by 1914, only two European countries had granted women the right to vote. This seminar explores the suffrage movement in the nineteenth century and the obstacles in the process of women's enfranchisement.

INSTRUCTOR(S): J. Pekacz

FORMAT: Seminar

PREREQUISITE: A modern European history course above the introductory level

CROSS-LISTING: HIST 4613.03

### **GWST 4330.03: Topics in the History of Sexuality.**

This seminar is intended for senior undergraduates. The specific content of the course varies from year to year, with a general focus on comparative, historiographic and theoretical issues relating to the history of sexuality. Topics may include: the rise and fall of schools of sexology as embodied by Ellis, Freud and Kinsey; sexual violence and harassment; the commodification of sexuality; the history of the body; sexuality and colonialism; gay and lesbian subcultures; and the intersection of class, race and gender in sexual experiences, discourses and communities.

INSTRUCTOR(S): T. McCallum, S. Tillotson

FORMAT: Seminar

PREREQUISITE: HIST 2614 or GWST 2300 or HIST 2615 or GWST 2301 or HIST 3350 or GWST 3300 or HIST 3013 or GWST 3013

CROSS-LISTING: HIST 4614.03

### **GWST 4355.03: Narrative Strategies in Nineteenth-Century Music: Gender, Identity, and Social Politics.**

An interdisciplinary survey of nineteenth-century instrumental music, focusing on the narrative potential of nineteenth-century musical conventions and their relationship to other aspects of nineteenth-century Western culture. Representative musical works will be studied within the context of broader social and cultural issues, including gender, race, class, sexuality, nationality, ethnicity, and identity.

FORMAT: Seminar

PREREQUISITE: Permission of the instructor

CROSS-LISTING: MUSC 4355.03

### **GWST 4402.03: Recent French Feminist Theory.**

This class will concentrate on some of feminism's most challenging voices, those that have emerged from France in the past 50 years: Beauvoir, Kristeva, Cixous and Irigaray. The class will attempt to illuminate the intellectual background against which these women write, particularly in the areas of linguistic and anthropological structuralism, and in psychoanalytic theory. The class will be organized in part by the historical evolution of feminist thought, in part by the consideration of central feminist concerns.

INSTRUCTOR(S): E. Edwards

FORMAT: Lecture/tutorial

CROSS-LISTING: CTMP 4302.03

EXCLUSION: CTMP 2030.06 and 4300.06

### **GWST 4500.03: Topics in Feminist Philosophy.**

In this class, we shall explore some of the current research in a focused area of feminist philosophy. Previous topics have included feminist ethics, feminist epistemology, postmodern feminism, the feminist sexuality debates, and ecofeminism.

INSTRUCTOR(S): Meynell

FORMAT: Seminar

PREREQUISITE: Strong background in philosophy or feminist theory (normally including at least one class in feminist philosophy or permission of the instructor).

CROSS-LISTING: PHIL 4500.03, PHIL 5500.03, GWST 5500.03

### **GWST 4900X/Y.03: Honours Thesis.**

Students writing an honours thesis in Gender and Women's Studies as the primary subject of a Combined Honours program must enroll in this class. The class meets five times over the course of the academic year in which the student writes her thesis. The grade for the honours thesis is assigned under this class number.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar and supervised thesis writing

PREREQUISITE: Admission to the honours program

## **IV. Related Classes**

These classes are subject to change; consult the program office for offerings.

### **Classes Offered at Mount Saint Vincent University and Saint Mary's University**

Classes offered within the Women's Studies programs at these universities are available to Gender and Women's Studies majors at Dalhousie. Classes offered are subject to change.

Please consult:

1. Women's Studies, Mount Saint Vincent (902) 457-6547; or
2. Women's Studies, Saint Mary's University (902) 420-5842.

These classes must be taken on a letter of permission (see the Dalhousie Gender and Women's Studies Program Coordinator).

# Geography

Note: There is no Geography program at Dalhousie, however several classes taught in various departments are commonly recognized as Geography classes. Only classes which are cross-listed in Science departments may be used to meet the life or physical science subject requirement for the BA degree.

## I. Minor in Geography

See page 521 for requirements.

## II. Class Descriptions

### GEOG 1030.03: Introduction to Physical Geography.

This non-lab science course examines the nature of weather and climate, earth's surface features and processes, and internal processes that contribute to landform development. An integral component of the course is an exploration of the representation and interpretation of physical geographic data through the examination of a variety of maps.

NOTE: There are no pre-requisites for this course and students may take this class in addition to any other first year Earth Sciences class.

INSTRUCTOR(S): A.M. Ryan, L. Plug

FORMAT: Lecture-class 3 hours each week, and 1 hour tutorial weekly. Some classes may include map work

CROSS-LISTING: EARTH 1030.03

### GEOG 1035.03: Introduction to Human Geography.

Human geography examines the ways that people perceive, use, and alter the landscapes they occupy. Two themes run throughout the class. One theme deals with the aspects of culture that characterize different social groups. These are matters of material culture as well as group behaviour, and belief systems. The second theme has to do with the systems of production, livelihood, spatial organization, and administration that societies erect. Interwoven with these themes is the interaction of human societies with each other and their environments. The class introduces the principal tools of human geographers: maps, demography, and analysis of cultural patterns.

NOTE: This class cannot be used to meet the life or physical science subject requirement for the BA degree.

INSTRUCTOR(S): J. Boxall

FORMAT: Lecture 3 hours

### GEOG 1060.03: Earthquakes, Volcanoes and Natural Disasters.

Earthquakes, meteorite impacts, rapid climate change, volcanic eruptions, hurricanes, landslides, solar flares, and floods are natural disasters that affect our economy, public policy, and safety. Where, why and how frequently do natural disasters occur? Are predictions possible? Are media portrayals of risk and damage realistic? This course, aimed at the nonspecialist, investigates these intriguing questions. Excerpts of "disaster films", in conjunction with lectures and discussions are used to identify the causes, consequences and sometimes erroneous perceptions of natural hazards. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and real-time events worldwide.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours

CROSS-LISTING: EARTH 1060.03

### GEOG 2000.03: Cartography.

Maps, which are visual representations of our world, are essential aids to disciplines that span archaeology to zoology. Navigation is the art and science of finding one's way through both natural and built landscapes. This class primarily uses hands-on assignments to investigate how maps are constructed and interpreted (including concepts of spatial reference systems, scale, projections, symbols, and design), how maps can distort perceptions, and can influence one's decisions. Students also study navigation by compass, global positioning systems (GPS), and dead-reckoning.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours plus occasional field trips as appropriate

PREREQUISITE: EARTH/GEOG 1030, or EARTH 1080

### GEOG 2001.03: Landscape Analysis.

Designers and planners need to understand the influence of physical, biological, and cultural systems in landscape evolution, and the relevance of that information in analyzing land capability. Students develop inventory and analysis tools for understanding environmental processes and their implications for design and planning. There will be field trips and a lab component.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: EARTH 1030.03

CROSS-LISTING: PLAN 2001.03

### GEOG 2006.03: Space, Place and Geographic Information Systems.

Planners use Geographical Information systems (GIS) for data collection, coordination, and analysis. Properly interpreted, GIS data contribute to informed decision-making. This course explores the application of GIS in planning within a project-centred setting. Students learn to use GIS to address and use and site planning issues. The course also considers mapping standards used within the field of planning, and examines legal, privacy, and ethical implications of using GIS data in the public realm.

INSTRUCTOR(S): Rapaport, E.

FORMAT: Lectures/labs. Three hours weekly

PREREQUISITE: PLAN/GEOG 2001

CROSS-LISTING: GEOG 2006.03

### GEOG 2070.03: Area Studies on Mexico and Central America.

Following an examination of the indigenous heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Somoza dynasty, Nicaragua under the Sandinistas, the U.S. role in the region, the human rights situation in Central America, and probable developments in the region. The class is designed to provide an understanding of the contemporary reality of this volatile region, in many ways a microcosm of the crucial situation of Latin America as a whole.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion 2 hours/conducted in English

PREREQUISITE: No prerequisites. Open to students in all departments. No knowledge of Spanish necessary

CROSS-LISTING: HIST 2383.03

### GEOG 2100X/Y.06: Environment and Culture.

Concern about the environment is a widespread phenomenon as virtually everyone is confronted by environmental issues -- be they global warming, the depletion of the ozone layer or the continuing problems of water pollution and solid waste disposal. Furthermore, we are becoming increasingly aware of that environmental issues often have global implications. The efforts of cities in Canada to deal with environmental pollution, for example, may lead to conflicts with rural regions. Similarly, rural regions, in their use of various chemical agents, may find themselves affecting the lives of city dwellers. This class will explore key relationships between human culture and the physical environment. Topics to be examined include: historical, social, and legal aspects of contemporary environmentalism, food and agriculture, environmental ethics, health, traditional ecological knowledge, sustainable forestry, waste management, public participation and environmental movements.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200 X/Y.06

CROSS-LISTING: SOSA 2100.06

### GEOG 2201.03: Introduction to Development I.

Poverty, inequality and injustice are widespread throughout the contemporary developing world. This course will examine how this situation came to be. It begins by analyzing the different meanings of the term "development" and then examines the major approaches that have shaped practical development initiatives on the ground in the Global South over the past 60 years. The course also examines the legacies of history for contemporary development efforts in the Global South through specific case studies.

FORMAT: Lectures/ tutorial

PREREQUISITE: Completion of five full credits at the 1000 level or permission of the instructor  
CROSS-LISTING: INTD 2001.03

### **GEOG 2202.03: Introduction to Development II.**

This course builds upon the core concepts and approaches studied in INTD 2001 (i.e. different theoretical approaches to development and the historical creation of underdevelopment). The course examines key contemporary issues in the field of development and analyses the connections between them: debt, global trade rules, foreign aid, hunger and malnutrition, rural and urban livelihoods, population growth. The course also examines the principle actors involved in development and the strategies they have used to promote and resist development, including: governments, non-governmental organizations (NGOs), the World Bank and IMF, and popular social movements in the Global South and North.

FORMAT: Lectures/tutorial

PREREQUISITE: Completion of five credits at the 1000 level or permission of the instructor

CROSS-LISTING: INTD 2002.03

### **GEOG 2206.03: Africa: An Introduction.**

This course will focus on contemporary Africa. Stereotypical portrayals of Africa will be examined and critiqued with the goal of emphasizing the immensity, diversity and complexity of the continent in order to better understand the opportunities and challenges of African development in the twenty-first century.

FORMAT: Lecture/tutorials

CROSS-LISTING: INTD 2106.03

### **GEOG 2336.03: Regional Development.**

Most countries have richer and poorer regions. Economic development issues, policies, and theories facing more industrialized nations are analyzed with particular focus on Canada (especially the Atlantic region), the European Economic Community, U.S.A., Japan, and Australia. Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take one class in Political Science and one class in Canadian History before taking ECON 3336.

FORMAT: Seminar 2.5 hours/tutorials

PREREQUISITE: ECON 1101.03 and 1102.03

CROSS-LISTING: ECON 2336.03

### **GEOG 2800.03: Climate Change.**

Most models of the atmosphere predict that increasing concentrations of greenhouse gases will continue to warm the surface of the earth and the oceans in the twenty-first century. The magnitude of the warming and its consequences are still very controversial. This class will discuss, mainly from a nonmathematical viewpoint, the reasons for the greenhouse effect, the current warming in the context of the historical record of climate change, and sources of natural climate variability such as the El Nino Southern Oscillation. It will also review arguments that attribute the warming that has occurred in the Twentieth century to natural variability, and those that attribute the warming to increased human emission of greenhouse gases.

INSTRUCTOR(S): G. Lesins

FORMAT: 3 hours

CROSS-LISTING: PHYC 2800.03

EXCLUSION: ECON2850.06, PHYC2850.06

### **GEOG 3001.03: Landscape Ecology.**

Landscapes reflect the interaction of natural and cultural processes. This course introduces the principles of ecology to landscape analysis. It explores relationships between environmental components in the landscape to inform community design and land use planning applications.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: PLAN 2001.03 or GEOG 2001.03 or permission of the instructor

CROSS-LISTING: PLAN 3001.03

### **GEOG 3002.03: Reading the City.**

Any city reflects the history of its topography, cultural traditions, and design interventions. This course introduces the principles, theories, and methods of urban form analysis in the local urban context. Students explore the local urban environment to interpret what the city means, and how it comes to take the shape it does.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture/lab 3 or 4 hours

CROSS-LISTING: PLAN 3002.03

### **GEOG 3005.03: Cities and the Environment.**

The contemporary landscape reflects a long history of human activities on the land and design and planning interventions through time. Civilizations rise and fall, often because of their degradation of the ecosystems that support them. This course examines the relationship of cities with the environment to enhance our understanding of landscape change, urban form and patterns in human settlements through the ages.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 3005.03

### **GEOG 3006.03: Reading the Landscape.**

Any landscape reflects its natural and cultural history. This course explores principles, theories, and methods of landscape interpretation. These approaches will be applied to community design problems in local landscapes.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: PLAN 3001.03, 3002.03, or GEOG 3001.03, 3002.03

CROSS-LISTING: PLAN 3006.03

### **GEOG 3110.03: Migration and Development.**

The purpose of this course is to explore and better understand the connections between migration and development in contemporary societies. Classes will introduce or further explore one main theme or issue, such as development-induced displacement, labour migration, and HIV/AIDS and migration. Each class will centre on one or more discussion questions, exchange insights from relevant experiences of class participants or focus on a case study

FORMAT: Lecture/seminar

CROSS-LISTING: INTD 3110.03

### **GEOG 3114.03: Environment and Development.**

This course will examine the interconnections between the natural environment and different forms of social and economic development with a specific focus on developing countries. Various perspectives will be used to analyze the links between environmental issues and poverty, inequality, wealth, economic globalization and the ways in which different cultures understand and interact with the environment.

FORMAT: Lecture/seminar

CROSS-LISTING: INTD 3114.03

### **GEOG 3165.03: Peoples and Cultures of the World: Selected Area Studies.**

This class examines a specific geographic and/or culture area. The class begins with background material on geography and history. Its focus is on the people themselves, their social organization and political, economic, and cultural systems. How they relate to globalization and development will also be examined. Consult the Department to find which region is to be covered in a particular year. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06; 1050X/Y.06; 1100X/Y.06; 1200X/Y.06

CROSS-LISTING: SOSA 3165.03

EXCLUSION: SOSA 2370.03

### **GEOG 3210.03: Canadian Cultural Landscapes.**

This course explores the origins of one "signature" landscape in each province. Contact with different geographies shaped distinctive regional histories; but at the same time, the story of each place is tied to the national narrative. These landscapes also illuminate how nature has been understood, used, and transformed since the fifteenth century.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture and Discussion

CROSS-LISTING: HIST 3210.03, CANA 3020.03

### **GEOG 3220.03: Coastal Communities in the North Atlantic.**

Coastal communities as a social/ecological type are examined as populations, and social structures (territorial, economic, occupational, political) as they have developed in response to particular ecological and social circumstances. Various perspectives which have been applied to coastal communities are examined with regard to the contribution they may make to understanding the dynamics of these communities. The focus is on North Atlantic communities.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3220.03

### **GEOG 3284.03: Living in Cities.**

2008 marked the first time in history that more of the global population lived in cities than in rural areas. What perspectives to anthropology and sociology offer on cities and their inhabitants? This course explores the social dynamics that constitute 'the city' and surveys how social scientists have studied and engaged with cities and city-dwellers. It approached 'the city' both as a whole and through its constituent parts: people landscapes. Examples may be drawn from cities large and small, near and far - including Halifax.

INSTRUCTOR(S): M. Radice

FORMAT: Lecture and Seminar

PREREQUISITE: One of SOSA 1000.06, SOSA 1050.06, SOSA 1100.06 SOSA 1200.06 FYP or PLAN 2005.06

CROSS-LISTING: SOSA 3284.03

### **GEOG 3370.03: North American Landscapes.**

Landscapes are the product of human culture ordering nature for economic, social, political, religious, recreational, and artistic purposes. Landscape history analyzes and interprets the use and design of such features as fields and woodlands, roads and waterways, settlements and buildings, towns and suburbs, and parks and cities. This class examines the use and meaning of the spatial environment among the various societies in North America from the sixteenth to the twentieth centuries. Among the topics are the meaning of area resources for indigenous peoples, the occupation and settlement of colonial populations, transportation and continental expansion, town planning, the politics of water and land in the West, preservation movements, scenic tourism, and the literary and artistic stylization of landscapes. The class welcomes non-history students with an interdisciplinary interest in issues regarding planning and design, cultural ecology, and the governance of resources.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture/discussion 3 hours

CROSS-LISTING: HIST 3370.03

### **GEOG 3400.03: Human Health and Sustainability.**

This course examines the relationships between the health of populations and health determinants in the context of environmental sustainability. Weekly laboratory exercises will teach students how geomatics (GIS, GPS, and remote sensing technologies) and epidemiological tools can be used to assess the links between the health of human populations and the health of the environment, and how to use these tools for environmental health research.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3.0 hours, Lab 1.5 hours

PREREQUISITE: Must be a third year student or have permission of instructor

CROSS-LISTING: ENVS 3400.03

### **GEOG 3440.03: Geomorphology.**

Geomorphology is the quantitative study of Earth's surface processes and landforms applies to geology, civil engineering, hydrogeology, and environmental management. We investigate slope stability, weathering and soils, sediment production, wind-driven and coastal environments, tectonic landforms, and river, glacial and permafrost processes.

INSTRUCTOR(S): L. Plug, J. Gosse

FORMAT: Lecture 3 hours, lab 3 hours including mandatory field trips

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course; 1090 recommended; or SCIE 1502.21, or 1503.21, or SCIE 1504.27, or SCIE 1510.33 or permission of the instructor AND completion or concurrent enrollment of a 1000-level mathematics class, a 1000-level physics class, and a 1000-level chemistry class.

CROSS-LISTING: EARTH 3440.03

### **GEOG 3500.03: Exploring Geographic Information Systems.**

Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and pattern of processes is important. GIS plays a significant role a wide range of applications, from modeling, to analysis and predictions, to decision making. The class is aimed at a broad base of potential users and draws on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data.

Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS.

Exercises draw on the diversity of GIS applications in a number of application areas.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Two years of university study or equivalent or instructor's permission

CROSS-LISTING: EARTH 3500, EARTH 5600, ENVS 3500

EXCLUSION: Credit will only be given for one of GEOG 3500, SCIE 3600, EARTH 3500, EARTH 5600, ENVS 3500

### **GEOG 3633.03: Spatial Information and GIS in Ecology.**

A hands-on approach to understanding and using spatial information, this class introduces students to Geographic Information Systems (GIS) as a tool to answer ecological questions. Together, students conduct a major field project, collecting data, creating maps using GIS, and interpreting spatial patterns, to address and applied problem in ecology.

NOTE: Offered in the summer through DEASIDE. an auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: ENVS 3633.03, BIOL 3633.03

### **GEOG 4440.03: Geomorphology and Landscape Evolution.**

Ripple-to mountain range-scale landforms evolve under predictable internal and external forces that are modulated by the physical and chemical properties of the rock. The purpose of this course is to provide a thorough examination of the development of landscapes by tectonics and surficial processes involving weathering, mass wasting, streams, and glaciers. The concepts of equilibria, climate and vegetation change, and rock character are recurring themes throughout the course. Dating and thermochronology methods are discussed in the context of rates of landscape change. Early classic viewpoints of landform development are contrasted with the latest numerical simulations of landscape evolution. The labs are mostly field-oriented with emphasis on Quaternary stratigraphy, describing and interpreting soils, local geomorphology, and geomorphometrics.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course; 1090

recommended. Must be a 4th year Science student familiar with excel, or with instructor's permission

CROSS-LISTING: EARTH 4440.03

### **GEOG 4450.03: Introduction to Landscape Simulation.**

We examine different approaches to numerical modelling of earth-surface processes such as erosion and landslides, melting permafrost, and braided rivers. Using class and/or individual projects as examples, the selection of variables, sensitivity testing, and methods for testing models against nature are discussed. We use Matlab; programming experience is useful but not essential.

INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours, lab

PREREQUISITE: EARTH 3440.03, MATH 1010 or 1400, PHYC 1280.03/1290.03X/Y and three courses at the 3000-level in the physical sciences (chemistry, earth science, physics) or with consent of instructor

CROSS-LISTING: EARTH 4450

### **GEOG 4520.03: GIS Applications to Environmental and Geological Sciences.**

Note: This class is not offered every year. Please consult department in the spring for further information.

Geographic information systems (GIS) provide a rich set of new tools to the geologist and environmental scientist, not only to solve conventional problems, but also to explore questions not readily answered by other means. This class builds on the fundamentals of GIS taught in EARTH 3500.03 to explore analytical tools that aid in decision-making processes encountered in mineral exploration, hydrogeology, site selection, environmental assessment, and global change analysis. The class concentrates on case studies and problem solving, including those requiring multi-criteria and multi-objective decision making processes.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: GEOG 3500.03, ENVS 3500, EARTH 3500.03; EARTH 5600, or SCIE 3600.03; STAT 1060.03  
CROSS-LISTING: EARTH 4520.03

### GEOG 4530.03: Environmental Remote Sensing.

The goal of this class is to introduce students to the role of remote sensing as a technique provide environmental and geologic information. Particular emphasis will be placed on examining the potential and limitations of remote sensing methods and data in this context. The lectures discuss the fundamentals of remote sensing with an emphasis on multi-spectral satellite systems. In the lab, students use computerized techniques of digital image enhancement and thematic information extraction to process images derived from optical, radar, and hyperspectral remote-sensing systems. The integration of remote-sensing information with GIS (Geographic Information Systems) is stressed in both the labs and lectures.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3500.03, ENVS 3500.03, or EARTH 5600.03 or SCIE 3600.03 or GEOG 3500.03

CROSS-LISTING: EARTH 4530.03

## German

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### Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

### Chair

Sidler, J. (494-1094)

### Undergraduate Advisor

Garvey, B. V. (494-1095)

### Professor Emeritus

Gaede, F. W., PhD (Freiburg), FRSC, McCulloch Professor

### Professor

Schwarz, H. -G., MA (Munich), PhD (McGill), McCulloch Chair in German; also *Lehrauftrag* at the University of Heidelberg

### Associate Professor

Sidler, J., MA (Freiburg), MA (Dalhousie), PhD (Queen's)

### Assistant Professor

House, M. K., MA, PhD (Princeton)

### Adjunct Professors

Aurnhammer, A., Dr. phil.habil, Univ of Freiburg  
Curran, T. H. BA (Hons) (Toronto), MA (Dalhousie), PhD (Durham)  
Grüning, H.-G., Dott., Univ. of Macerata  
Heuer, F., Dr. phil., Univ. of Heidelberg  
Kanzog, K., Dr. phil., (Berlin), Dr. habil. (Munich)  
Roesch, G. M., Dr. phil.habil, Univ. of Heidelberg  
Strack, F., Dr. phil. habil., Dr. h.c. Univ. of Heidelberg

### Senior Instructor

Garvey, B. V., BA (Hons), MA (Dalhousie)

### Lecturers

two positions

## I. Introduction

German, the most widely used language in Europe, is spoken by approximately 100 million people as their native tongue in Austria, Germany, Switzerland, Italy, Belgium, and some parts of Eastern Europe. The cultural, economic, and scientific role of the German-speaking countries makes the knowledge of German indispensable to the study of most academic disciplines. The number of publications in the German language is second only to the number published in English.

The departmental program "German Studies" is the investigation of German culture and its place in the formation of the modern world. The program concentrates on significant aspects of the cultural tradition of the German-speaking countries. From Luther to Nietzsche, Freud, and Marx, German writers have moved people and nations to change the class of the world. The literary and intellectual development of Germany culminated around 1800 in the epoch of Classicism. The authors of this epoch (Lessing, Herder, Hegel, Goethe, Schiller) founded their writings on a thorough knowledge of the cultural tradition of Europe, especially Greek culture. As scientists, historians, and politicians they

described problems and questions of a universal nature in their works. They became the first historians of literature and created the discipline of aesthetics. The universality of the authors of German classicism explains their present-day relevance and makes the study of German important and attractive.

Major or honours students may, with the approval of the Department of German, take up to one year (five full credits) at a university in a German-speaking country and receive credit at Dalhousie. The Department has exchange arrangements with the universities of Heidelberg and Freiburg. In addition there is a "visiting scholars" program which brings distinguished scholars from Germany to Dalhousie.

For students of **German for Business**, the Department offers access to one of the most prestigious MBA programs in International Industrial Management in Germany at the FH-Esslingen in co-operation with Daimler and Bosch.

For advanced **Engineering students**, the Department offers access to the MSc in Automotive Engineering and the MSc in Information Technology and Automation Systems at the same Graduate School.

## II. Certificate of Proficiency in German

The certificate is normally awarded to students who are not specializing in German but who, having taken several German classes, wish to have their proficiency officially acknowledged. Major and honours students may also be awarded the certificate, provided they meet the requirements.

### Requirements

- At least three full credits beyond the 1000 level. Classes not given in German are excluded.
- At least one of the above must be at the 3000 level.
- Examination with both written and oral components. A passing grade of B or above is required.
- Students will not be permitted to sit the examination without having completed the class work.

Administration: Please contact the German Department for details.

## III. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

The following programs are normally followed, other possibilities do exist.

Students considering a degree in German are advised to consult with the undergraduate advisor of the Department.

Applications for Honours Programs should be discussed with a departmental advisor at an early stage. Later applications can also be accommodated.

### A. BA with Honours in German

Beyond Beginner-level German, the Honours program requires nine additional credits in German Language, Literature and Thought at or above the 2000 level, including at least two classes in German Literature or Thought at the 3000 level or higher. It is recommended that at least four classes be completed in the last two years of the program. At the end of the program, students take an oral Honours Exam.

Honours students are strongly advised to complete some classwork in Germany, e.g., through the Canadian Year in Freiburg Program. Consult with the undergraduate advisor.

### B. BA with Combined Honours

To take an Honours degree combining German with another subject, a student must consult with the academic advisors of both departments to arrange the specifics of the program. In general, a combination of 11 - 14 intermediate and advanced credits in the two subjects is required. If students intend to take the German Honours exam, they need a minimum of six credits in German, including classes in Literature and Thought; if the Honours thesis or exam is completed in the other department, a minimum of five intermediate and advanced credits in German is required.

### C. BA (20 credit) Major in German

For a BA with Major in German, at least six (and up to nine) credits beyond the 1000 level must be completed; at least three of these credits must be at the 3000 level or higher. Two credits must be in classes dealing with literature or thought.

### D. BA (20 credit) Double Major in German

A BA with a Double Major in German and another subject requires a combination of 10 - 14 intermediate and advanced credits in the two subjects. Of these five to eight can be in German, including at least two at the 3000 level or higher. Two credits must be in classes dealing with literature or thought.

### E. BA (15 credit) Minor in German

See requirements for minor below.

### F. Minor in German

Students must complete three credits selected from classes taught in German beyond the 1000 level, at least one of which must be at the 3000 level or higher.

### G. Minor in German Studies

Students must complete four credits beyond the 1000 level. Required: GERM 2000.06

### H. Minor in German Philosophy

Students must complete three credits beyond the 1000 level from the following list:

- GERM 2290.03
- GERM 2450.06
- GERM 2551.03
- GERM 2600.03
- GERM 2601.03
- GERM 2650.06
- GERM 3100.06
- GERM 3120.03
- GERM 3450.03
- GERM 3550.03
- GERM 4100.06
- GERM 4200.06
- GERM 4250.06
- PHIL 3635.03
- PHIL 4190.03
- PHIL 2650.06
- PHIL 3630.03
- PHIL 3635.03

Other classes may be possible with departmental approval.

Students must take 1.5 credits from the German Department and 1.5 credits from the Philosophy department.

## IV. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year's class offerings.

PLEASE NOTE:

- GERMAN 1001X/Y.06 is to be taken by students with no previous knowledge of German.
- GERM 1010X/Y.06 is to be taken by students with no previous knowledge of German.
- GERM 1060X/Y.06 is to be taken by students with no previous knowledge of German.
- Students who have completed high school German will normally take GERM 2000X/Y.06.
- GERM 1010X/Y.06/1060X/Y.06: Intensified German

All students with previous knowledge of German should see the Undergraduate Advisor.

### Intermediate Classes

Intermediate classes are based on GERM 1010X/Y.06, 1060X/Y.06, high school German Grade 10, 11, 12 or an equivalent basic knowledge. A combination of GERM 2000X/Y.06 and GERM 2020X/Y.06 serves as an accelerated Intermediate

German class and is designed for students who want to make rapid progress in the language.

Unless noted otherwise, all upper year classes are taught in German with German texts.

### **GERM 1001X/Y.06: German: A Practical Course for Beginners.**

This class provides the linguistic and cultural background needed to interact successfully with German speakers. The class replaces traditional grammar instruction with practical exercises reflecting the basics of communication in domestic and academic life as well as in business and tourism. This class combines a predominantly oral method based on conversation and discussion with written work. For a more traditional approach, see GERM 1010X/Y.06 or GERM 1060X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Classroom instruction/language lab and oral classes

### **GERM 1010X/Y.06: German for Beginners.**

GERM 1010X/Y.06 is a seminar class for beginners only, and no previous knowledge is required. Its equivalent is two years of German in high school with a final mark of 75% or better. The class emphasizes the spoken language, and provides the student with a thorough knowledge of basic grammar. Conversational tutorials are a required part of the course.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

### **GERM 1020X/Y.06: German Fiction in Novel and Film.**

This class satisfies the university's guidelines for the Writing Requirement. It examines the conceptual transition from the printed word to the screen; classic German novels and short stories are to be read and compared with their film versions. Works by Kleist, Fontane, Kafka, Thomas Mann, Heinrich Mann, Böll and Handke will be included on the reading list. All texts will be read in English translation. Some of the best known and most innovative cinematic works will be shown and discussed. Directors will include Fassbinder, Herzog, Schlöndorff, Wenders, von Trotta and Visconti. All German language films will either be "dubbed" into English or provided with English subtitles.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: ✍ Writing Requirement, Seminar

### **GERM 1021X/Y.06: German Fiction in Novel & Film.**

Students enrolled in GERM 1021 attend lectures along with those in GERM 1020. However, as they do not need a writing class, they are not required to complete all 8 assignments. Instead, they attend a separate tutorial and submit fewer, more detailed and fully researched essays.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

EXCLUSION: GERM 1020X/Y.06

### **GERM 1060X/Y.06: German for Reading.**

In this class, students acquire a solid foundation for comprehending and translating texts in the humanities and sciences. No previous knowledge of German is required. The class is taught in English. For purposes of admission to advanced classes in German it is equivalent to GERM 1010X/Y.06. This class satisfies the Bachelor of Arts Language Requirement. The combination of GERM 1010X/Y.06 and 2010X/Y.06 is recommended for students who desire rapid progress in the German language.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): J. Sidler

FORMAT: Seminar

EXCLUSION: GERM 1060.06

### **GERM 1080X/Y.06: German Folk and Fairy Tales.**

Beginning with the great Germanic epic of the Nibelungen, and finishing with the famous collection of fairy tales by the Brothers Grimm, this class aims to familiarize students with the most significant Germanic myths and tales. Their origins and aspects of their historical, political, social and literary importance will be discussed, through readings presenting a wide variety of critical approaches. The course encourages an interest in narrative style - in the epic, the legend and the fairy tale as literary forms. The history and essential qualities of these forms

will be investigated; students will develop a greater awareness of the role and influence which the imagery of these forms has had (and continues to have) in the visual arts and music, in advertising and film, in poetry and theatre. The readings for this class are in English.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): B. Garvey

FORMAT: Writing Requirement, Seminar

EXCLUSION: GERM 2010.03, GERM 2011.03

### **GERM 2000X/Y.06: Intermediate German.**

The main aim of this course is to develop a certain degree of speaking fluency as well as to improve reading and writing skills. Small conversation classes once a week as an aid to speaking fluency are offered.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): B. Garvey

FORMAT: Seminar

PREREQUISITE: GERM 1010X/Y.06 or 1060X/Y.06 or equivalent

### **GERM 2020X/Y.06: Exercises in Translation and Composition.**

English and German texts from various periods and of different types will be translated. These translations lead to the discussion of specific difficulties of grammar and construction. Students must prepare translations or compositions for each class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): B. Garvey

FORMAT: Seminar

PREREQUISITE: GERM 1010X/Y.06 or equivalent

### **GERM 2040.03: Monsters and Madness: 20th Century German Film.**

This course provides an introduction to German culture through the medium of film. Both the classical early period and the contemporary German film will be discussed. No knowledge of the German language is necessary; all films are subtitled and all discussion is in English.

FORMAT: Seminar

### **GERM 2050.03: German Reading I.**

This is a seminar specifically intended for students who do not fit into our normal program offerings. Please consult departmental advisor.

### **GERM 2051.03: German Reading II.**

This is a seminar specifically intended for students who do not fit into our normal program offerings. Please consult departmental advisor.

### **GERM 2060.03: German for Business, Economics and Tourism I.**

This class introduces students to the specialized vocabulary used in business and economics. It also aims to familiarize the students with all aspects of the German economy and business world.

FORMAT: Seminar

PREREQUISITE: Any of GERM 1010X/Y.06, 1060X/Y.06 or equivalent

### **GERM 2061.03: German for Business, Economics and Tourism II.**

This class introduces students to the specialized vocabulary used in business and economics. It also aims to familiarize the students with all aspects of the German economy and business world.

FORMAT: Seminar

PREREQUISITE: GERM 1010X/Y.06, 1060X/Y.06 or equivalent

### **GERM 2150X/Y.06: Goethe's Faust.**

A close reading of Goethe's Faust, comparing the German original and an English translation, will give rise to questions about translation techniques, the theory of drama and the reshaping of a legend. While Goethe's masterpiece stands at the centre, other German versions of the Faust legend will also be discussed in detail. Assignments will involve research into later echoes of the Faust legend as well. The language of instruction is English but the texts are in German.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.



INSTRUCTOR(S): J. Sidler  
 FORMAT: Lecture/discussion  
 PREREQUISITE: GERM 1010X/Y.06 or a reading knowledge of German

### **GERM 2200X/Y.06: Introduction to German Literature.**

A study of texts representing major periods of German Literature from the 18th to the 20th century. Special emphasis is on the interaction between literature, society and other forms of art. The class also serves as an introduction to literary criticism. The language of instruction is German and English, as needed; the texts are in German.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Seminar/tutorial

PREREQUISITE: GERM 2000X/Y.06 or equivalent or a reading knowledge of German

### **GERM 2280.3: Friedrich Schiller's Historical Drama.**

Friedrich Schiller's five historical dramas range over Early Modern Europe from the Hundred Years War, and find settings in medieval Switzerland and France, as well as Counter-Reformation Spain and Elizabethan England. These five plays will be analyzed according to lyrical, theatrical, historical and aesthetic criteria.

INSTRUCTOR(S): T. Curran

FORMAT: Lecture/discussions

CROSS-LISTING: EMSP 2280

### **GERM 2290.3: German Romanticism: from Goethe to Hegel.**

Genuine feeling and political liberation are enhanced by attention to classical antiquity and modern folktale. Apparently a reaction against the modern, from Goethe to Hegel, Romanticism manages to eclipse almost everything else and define some six decades of German philosophy and literature in the writings of Herder, Goethe, Schiller, Novalis, A.W. and Friedrich Schlegel, Eichendorff, Hölderlin, Schelling, Hegel, Büchner.

INSTRUCTOR(S): T. Curran

FORMAT: Lecture/discussions

CROSS-LISTING: EMSP 2290

### **GERM 2400X/Y.06: German Art and Literature.**

This class gives an introduction to modern German Art and Literature. Special emphasis is on the interaction between art and literature, particularly the themes and styles shared by visual and literary expression during the various epochs of modernity. The language of instruction is German and English, as needed. The texts are in German.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): H.-G. Schwarz

FORMAT: Seminar

PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 2450X/Y.06: Kant and the History of German Idealism.**

A study of Kant's relation to modern Rationalism and Empiricism, and an inquiry into the principles of Idealism. This class is taught in English and uses English translations.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

### **GERM 2550.03: In Pursuit of Freedom from Luther to Nietzsche I.**

This is a study of major thinkers, with emphasis on Luther, Leibniz, Herder, Hamann, Kant and Schiller. This class is taught in English using English translations.

FORMAT: Seminar

PREREQUISITE: A general introduction to literature, culture or philosophy

EXCLUSION: GERM 2300X/Y.06

### **GERM 2551.03: In Pursuit of Freedom from Luther to Nietzsche II.**

This is a study of major thinkers, with emphasis on Hegel, Schopenhauer and Nietzsche. This class is taught in English using English translations.

FORMAT: Seminar

PREREQUISITE: A general introduction to literature, culture or philosophy

EXCLUSION: GERM 2300X/Y.06

### **GERM 2600.03: 'Freiheit'. Freedom in German Literature and Thought I.**

In contrast to other European literatures of the 18th century with their utilitarian and moralistic aims, the German Sturm und Drang movement puts the individual into the centre. A secular society demands a new conception of man ("Mensch") liberated from God and the gods. As a consequence, the traditional view of man inherited from Aristotelian poetics is replaced by characters who shape their own destiny. A new myth of a defiant Prometheus is created by Goethe. German idealism formulates a new theory of freedom which was summed up by Kant in the categorical imperative. Goethe's Iphigenie illustrated the humanism of the epoch. The ultimate freedom, however, can only be achieved in the artistic realm. Again, Goethe provides the model in his Divan.

Texts by J.M.R. Lenz, Goethe, Schiller, Winckelmann, Kant, and others will be read. Translations will be offered. Language of instruction: English. This course should appeal to students interested in the history of ideas.

INSTRUCTOR(S): H.-G. Schwarz

FORMAT: Lecture

### **GERM 2601.03: 'Freiheit'. Freedom in German Literature and Thought II. 19th and 20th century.**

Goethe's Divan opens our discussion, Goethe follows the Persian poet Hafiz to the Orient. There he finds freedom of the imagination which enables him to ignore the reality of the Napoleonic wars. Goethe's avoidance of reality became the role model for the Symbolist movement. The German Romantics placed a writer's imaginative capacity ("Fantasie") and subjectivity ("Witz" and "Ironie") higher than any concerns about objective reality. New forces, like chance ("Zufall"), counter man's perceived freedom, as is shown in the works of Heinrich von Kleist. The dependence on circumstances, social structures and natural laws becomes the great topic of Realism and Naturalism. The human being without hope, faith or the chance of salvation is manifested in Büchner's works. Finally, the existential crisis of modern man finds its most representative expression in the works of Franz Kafka.

Texts by Goethe, Gautier, Kleist, Büchner, Kafka and others will be read in the original. English translations will be provided. Language of instruction: English. This course should appeal to students interested in the history of ideas. Attendance of Part I is not a prerequisite.

INSTRUCTOR(S): H.-G. Schwarz

FORMAT: Lecture

### **GERM 2650X/Y.06: Modern German Philosophy.**

This course provides a survey of the German philosophical tradition from the enlightenment to the present. Students will gain a broad overview of the German intellectual history through focused readings of the theoretical texts.

FORMAT: Lecture and Tutorial

CROSS-LISTING: PHIL 2650.06

### **GERM 3000X/Y.06: Advanced German.**

Translations, readings, essays and discussions will promote fluency in the language on the advanced level.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 3001.03: Advanced Spoken German I.**

This class aims to develop the oral proficiency and fluency of advanced students. We will improve pronunciation, practise discussion skills and idiomatic expression, build vocabulary, memorize set phrases and practise listening comprehension. Audio-visual materials will be used. Students' active participation is essential in this course (Non-native speakers only).

FORMAT: Seminar

PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 3002.03: Advanced Spoken German II.**

This course builds on German 3001. In this half of the course, we will continue to work on improving pronunciation and intonation, to expand vocabulary and practise sentence and conversational structures. We will especially focus on increasing fluency and confidence in conversational interaction. Students' active participation is essential in this course (Non-native speakers only).

FORMAT: Seminar

PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 3010.03: Advanced Translation I: German - English.**

German texts of various kinds are used to deal with techniques and problems of translating from German into English. The class includes discussion of translation theories, elements of style and questions of ambiguity and textual redundancy.  
FORMAT: Seminar  
PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 3011.03: Advanced Translation II: English - German.**

English texts of various kinds are used to deal with the techniques and problems of translating from English into German. The class includes discussion of translation theories, elements of style and questions of ambiguity and textual redundancy.  
INSTRUCTOR(S): Staff  
FORMAT: Seminar  
PREREQUISITE: GERM 2000X/Y.06 or equivalent

### **GERM 3050X/Y.06: German Reading.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### **GERM 3051.03: German Reading III.**

This is a seminar at the advanced level which offers readings outside our normal program offerings. Please consult departmental advisor.  
INSTRUCTOR(S): H.-G. Schwarz  
FORMAT: Seminar  
PREREQUISITE: Any 2000-level class

### **GERM 3052.03: German Reading IV.**

This is a seminar at the advanced level which offers readings outside our normal program offerings. Please consult departmental advisor.  
INSTRUCTOR(S): H.-G. Schwarz  
FORMAT: Seminar  
PREREQUISITE: Any 2000-level class

### **GERM 3100X/Y.06: German Literature and Thought from Reformation to Enlightenment.**

A study of German literature between the 16th and 18th centuries as a direct reflection of the important religious, social and philosophical developments after the Reformation and during Absolutism.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
FORMAT: Seminar. Held together with GERM 5500X/Y.06  
PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

### **GERM 3120.03: Origins of Comparative Religion from Hegel to Nietzsche.**

Comparative Religion was an invention of lecturers at the University of Berlin from 1810. Religious doctrines and cults were assessed according to the Christology of German Idealism. The beginning is Hegel's 1827 Lectures on Religion; the criticisms of Schopenhauer, D.F. Strauss, Feuerbach and Kierkegaard shall lead us to Nietzsche's "Anti-Christ."  
FORMAT: Lecture/seminar/tutorial  
CROSS-LISTING: RELS 3120.03

### **GERM 3150X/Y.06: Goethe and the Enlightenment.**

A study of German literature and thought of the time which preceded and witnessed the great revolutions of the 18th century.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
FORMAT: Seminar. Held together with GERM 5520X/Y.06  
PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

### **GERM 3200X/Y.06: Goethe and Romanticism.**

A study of Goethe, Hölderlin, Kleist, and Novalis.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
FORMAT: Seminar. Held together with GERM 5570X/Y.06  
PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

### **GERM 3240X/Y.06: Literature of the 19th Century.**

A discussion of essential literary texts which throw a critical light on the growing forces of materialism and positivism.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
INSTRUCTOR(S): H.-G. Schwarz  
FORMAT: Seminar. Held together with GERM 5610X/Y.06  
PREREQUISITE: GERM 2200.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

### **GERM 3250X/Y.06: Modern German Literature.**

Modern authors as witnesses of the philosophical and social changes of our century: a study of selected prose texts of Hugo von Hofmannsthal, Franz Kafka, Arthur Schnitzler and Thomas Mann. The language of instruction is English and German, as needed; the texts are in German.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
INSTRUCTOR(S): J. Sidler  
FORMAT: Seminar. Held together with GERM 5620X/Y.06  
PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

### **GERM 3300X/Y.06: History of German Poetry.**

The poems we shall read represent the stations of the modern mind. We shall begin with the 17th Century; we shall end with Nietzsche and his post-modern pupils of the 20th century.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
FORMAT: Seminar  
PREREQUISITE: GERM 2200X/Y.06 or GERM 2400X/Y.06 or another literature class

### **GERM 3400X/Y.06: Germany and Europe: The Cultural Union.**

Modern German literature is shaped by the orient (Les mille et une nuits 1704-1717), by Winckelmann's discovery of Greek sculpture and the reception of Shakespeare and Milton in the mid 18th century. The Sturm and Drang movement used the works of Shakespeare as its inspiration to create a radical anti-Aristotelian concept of drama and of man. Writers of this period created an "open form" of drama which foreshadowed the plays of Büchner and Brecht. The new concept of man spread throughout Europe, becoming the basis for European Romanticism. German Romanticism, however, is quite different from its European counterparts; its influence is felt by European Symbolists like Baudelaire and Mallarmé. This class aims to study the interconnectedness of the European national arts and literatures. A reading knowledge of German, French and English is required.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
INSTRUCTOR(S): H.-G. Schwarz  
FORMAT: Seminar  
PREREQUISITE: GERM 2200X/Y.06, 2400X/Y.06 or other German literature class at the 2000 level

### **GERM 3450.03: Confronting Fascism.**

This course focuses on German writers, artists, filmmakers, and intellectuals whose work impacted and was impacted by the rise of fascism in the 20th century.  
FORMAT: Lecture/tutorial  
CROSS-LISTING: POLI 3449.03 and HIST 3059.03

### **GERM 3550.03: Germany and the Environment.**

In this course we will study the ever-changing ideas of nature and the environment in German culture from the 18th century to today. The seminar will be conducted in English. All readings will be in English.  
INSTRUCTOR(S): Lecture/Tutorial

### **GERM 3650X/Y.06: History and Theory of the German Novel.**

Representative works from the Baroque Age to the 20th Century are studied and the principles of the genre discussed. The language of instruction is English and German, as needed; the texts are in German.  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
FORMAT: Seminar. Held together with GERM 5660X/Y.06  
PREREQUISITE: GERM 2200X/Y.06 or GERM 2400X/Y.06 and another literature class

**GERM 3750X/Y.06: Modern German Drama.**

An historical study of modern German Drama from the 1770s to the twentieth century. Works by J.M.R. Lenz, J.W.v. Goethe, H.v. Kleist, G. Büchner, G. Hauptmann, E. Toller, B. Brecht and B. Strauß will be discussed. The notion of Freedom (Freiheit) and its apparent impossibility in the nineteenth and twentieth century is central. The texts are read in English translation with the German originals as back-up.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

CROSS-LISTING: THEA 3751X/Y.06

**GERM 3850.03: The End of the World: The Apocalypse in German Thought.**

The war, death and destruction that define European history in the 20th century can only begin to explain the obsession with the apocalypse in contemporary German thought. In this seminar we will study the secular appropriation of apocalyptic imagery from the Judeo-Christian tradition.

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 3202.03

RESTRICTION: Restricted to students in 2nd year or above.

**GERM 4100X/Y.06: Aesthetic Theory.**

An historical study of the development of aesthetic theory. Hegel's "Ästhetik", Heidegger's "Ursprung des Kunstwerkes" and Gadamer's "Aktualität des Schönen" will be studied.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): H. G. Schwarz

FORMAT: Seminar. Held together with GERM 5630X/Y.06

PREREQUISITE: GERM 2200X/Y.06 or GERM 2400X/Y.06 and another literature class

**GERM 4200X/Y.06: Seminar on Hegel's Phenomenology of Spirit.**

The Phenomenology of Spirit, published in 1807, was Hegel's first major work. He intended to write an introduction to philosophy by demonstrating the necessity of the advance from the most immediate form of knowledge to absolute knowledge. To achieve this he had to write the Phenomenology as an introduction to his own philosophy.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: GERM 2200X/Y.06, GERM 2400X/Y.06 or other German literature class at the 2000-level

**GERM 4250X/Y.06: Studies in German Idealism.**

This seminar is specifically intended for students in the 20-credit major and 20-credit honours degree programs. The specific content of the seminar varies from year to year, but is always related to some aspect of Idealism.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

**GERM 4500.03: Special Topics Class I.**

This is an intensive research seminar dealing with selected topics to be announced.

**GERM 4501.03: Special Topics Class II.**

This is an intensive research seminar dealing with selected topics to be announced.

**GERM 4600X/Y.06: Special Topics Class.**

This is an intensive research seminar dealing with selected topics to be announced.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

## Health Studies

Contact Person:	Dr. Katherine Fierlbeck
Location:	Department of Political Sciences Faculty of Arts and Social Sciences PO Box 15000 Halifax, NS B3H 4R2
Telephone:	(902) 494-6631

### I. Minor in Health Studies

The Minor in Health Studies is a four credit (24 credit hour) Minor taken in conjunction with either a 20 credit (Major/Double) Major BA, or an Honours/ Combined Honours BA in one or two of the Faculty of Arts and Social Sciences disciplines. The minor provides choices among a broad set of classes relating to health, covering historical, philosophical, literary, political, social and scientific aspects of health.

### II. Curriculum

#### A. Required Classes

Students must complete four classes (24 credit hours) above the 1000 level from the list of approved elective classes noted below. A minimum of "B-" in theses approved elective classes above the 1000 level earns credit toward the Minor.

#### B. Elective Requirements

Four full classes or equivalent from the approved list below, all above the 1000 level, and two full classes above the 2000 level. These four classes (or equivalents) must include classes from at least two of the following disciplines: Humanities, Social Sciences, Physical/Life Sciences. Not all of these classes are offered every year. Some classes require prerequisites.

- RELS 3532.03: Science and the Sacred
- ENGL 2030.03: Literature, Health and Healing
- HIST 2995.03: History of Modern Medicine, 1800-1950
- HIST 3108.03: Topics in the Social and Cultural History of England: Madness and Marginality
- HIST 3223.03: The Caring Society? - Welfare in Canada since 1900
- INTD 3115.03: Global Health: Challenges of Global Health Equity in the 21st Century
- PHIL 2410.03: Philosophy of Psychology
- PHIL 2420.03: Philosophy of Biology
- PHIL 2805.03: Ethics and Health Care: Patient Care
- PHIL 3810.03: Ethics and Health Care: Social Policy
- POLI 3260.03: The Politics of Health Care in Canada
- SOSA 2400.06: Health and Illness Across Cultures
- SOSA 2501.06: Sociology of Health and Illness
- SOSA 2502.03: Biomedicine and the Illness Experience
- SOSA 3135.03: The Social Organization of Health Care
- SOSA 3141.03: Sociology of Mental Disorders
- SOSA 3143.03: Health, Illness and the World
- SOSA 3145.03: Gender and Health (cross-listed with GWST 3145.03)
- SOSA 3147.03: Social Gerontology
- SOSA 3148.03: The Sociology of Addiction
- SOSA 3150.03: Sociology and Anthropology of the Body (cross-listed with GWST 3150.03)
- SOSA 3155.03: Sociology and Anthropology of Emotion
- SOSA 3231.03: Psychological Anthropology
- SOSA 3245.03: Women and Aging, (cross-listed with GWST 3810.03)
- SOSA 4006.03: Issues in Health and Illness

## Faculty of Science

- ANAT 1020.03: Basic Human Anatomy
- ANAT 5555.03: Embodying the Body
- BIOL 3503.06: Introduction to the History of Science
- BIOL 3601.03: Nature Conservation
- CHEM 1000.06: The Chemical World
- CHEM 1410.03: Intro to Chemistry Related to Human Health
- ECON 2231.03: Health Economics
- ENVS 3400.03: Environmental & Ecosystem Health
- PHYL 2030.06: Human Physiology.
- PSYO 1011.03, 1012.03, 1021.03 or 1022.03: Introduction to Psychology
- PSYO 2080.03: Social Psychology
- PSYO 2090.03: Developmental Psychology
- PSYO 2220.03: Abnormal Psychology
- PSYO 3129.03: Childhood Psychopathology
- PSYO 3280.03: Personality
- PSYO 3224.03: Forensic Psychology
- PSYO 3225.03: Health Psychology
- STAT 1060.03: Intro to Stats for Science and Health Sciences (cross-listed with MATH 1060.03)

## University of King's College

- CTMP 2301.03: Pain
- EMSP 3310.03: Hidden Worlds: Microscopy in Early Modern Europe (cross-listed with HSTC 3310.03)
- HSTC 2202.03: The Beginnings of Western Medicine: Birth of the Body
- HSTC 2200.06: Introduction to the History of Science (cross-listed with HIST 2074.06 and BIOL 3503.06)

Note: All University of King's College classes are open to Dalhousie students.

## Faculty of Engineering

- FOSC 4090.03: Food Hygiene and Public Health

## Faculty of Health Professions

- HAHP 1000.03: Introduction to Health Promotion
- HAHP 1100.03: Personal Health
- HAHP 1200.03: Communication
- HAHP 2000.03: Human Growth and Development
- HAHP 3000.03: Community Development
- HESA 4000.03: Canadian Health Care Delivery System
- HESA 4001.03: Management Roles and Competencies
- HESA 4002.03: Health Human Resource Management
- HESA 4004.03: Health Care Planning
- HESA 4005.03: Health Care Financial Management
- HPRO 1195.03: Introduction to Health Promotion
- HPRO 2110.03: Health Promotion Theory
- HPRO 2120.03: Health Promotion Policy
- HPRO 2250.03: Human Nutrition
- HPRO 2255.03: Drugs & Drug Education
- HPRO 2361.03: Program Planning
- HPRO 3325.03: Mental Health Promotion
- HPRO 3335.03: Introduction to Disease Prevention
- HPRO 3360.03: Multicultural Health Promotion Research & Policy
- HPRO 3370.03: International Health Promotion Research & Policy
- HPRO 3397.03: Community Health Promotion Strategies
- HPRO 4365.03: Health: A Biopsychosocial Approach
- HPRO 4412.03: Human Sexuality
- HPRO 4422.03: Environmental Health
- HPRO 4450.03: Comprehensive School Health Promotion
- KINE 3200.03: Sociocultural Issues in Physical Activity
- LEIS 2127.03: Leisure Theory
- LEIS 3296.03: Leadership and Group Dynamics
- LEIS 3360.03: Analysis of Leisure Service Delivery Settings
- OCCU 2000.03: Occupation and Daily Life

## Faculty of Computer Science

- CSCI 1204.03: Computer Science I for Health Professionals

\* Classes marked with an asterisk are at the 1000 level and will not count towards the Minor. Students may nevertheless wish to consider taking classes from this group because of their health content.

# History

Location: 6135 University Avenue, Room 1158  
PO Box 15000  
Halifax NS B3H 4R2  
Telephone: (902) 494-2011  
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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

Bleasdale, R. (494-3355)

## Undergraduate Coordinator

Bingham, J. (494-3641)

## Professors Emeriti

Crowley, J. E., AB (Princ), MA (Mich), PhD (Johns Hopkins) (Munro Professor of History)  
Flint, J. E., MA (Cantab), PhD (London), FR HistS, FRSC  
Pereira, N. G. O., BA (Williams), MA, PhD (UC Berkeley)  
Waite, P. B., MA (UBC), PhD (Toronto), FRSC

## Professors

Hanlon, G., MA (Toronto), Dr.de 3e cycle (Bordeaux), University Research Professor  
Kesselring, K., BA, MA (Dalhousie), PhD (Queen's)  
Neville, C. J., BA, MA (Carleton), PhD (Aberdeen) FRHistS. George Munro Professor of History and Political Economy  
Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)  
Tillotson, S. M., BIS (Waterloo), MA, PhD (Queen's)  
Traves, T., BA (Manitoba), MA, PhD (York), President and Vice-Chancellor, Dalhousie University

## Associate Professors

Bannister, J., BA (Memorial), MA, PhD (Toronto)  
Bell, C., BA (Calgary), MA (London), PhD (Calgary)  
Campbell, C., BA (King's/Dalhousie), MA, PhD (Western)  
Ghazal, A., BA (Beirut), MA, PhD (Alberta)  
Kynoch, G., BA, BEd (Queen's), MA, PhD (Dalhousie)  
Mitchell, C., BA (Regina), MA (McGill), PhD (Toronto)  
Pekacz, J., MA (Jagiellonian), PhD Musicology (Polish Academy of Sciences), PhD History (Alberta)  
Zachernuk, P., BA, MA (Dalhousie), PhD (Toronto)

## Assistant Professors

Bingham, J., BA (UNB), MA (Toronto), PhD (York)  
Bleasdale, R., BA, MA, PhD (Western)  
Corke, S. J., BA, MA (Guelph), PhD (UNB)  
Cowan, B., AB (Harvard College), MA, PhD (UC Los Angeles)  
Kozlov, D., BA (Herzen Russian State Pedagogical Univ.), MA (Mass. Amherst), PhD (Toronto)  
McCallum, T., BA (Queen's), MA (Simon Fraser), PhD (Queen's)  
Riley, P., BA, MA, PhD (UC Berkeley)  
Roberts, J., BA (Simon Fraser), MA (Queen's), PhD (Johns Hopkins)

## I. Introduction

Just as people need to know who they are and how they arrived where they are, groups, classes, states and nations need a sense of their own past as part of their culture.

The academic study of history, therefore, is concerned to discover as much as possible of the reality of the past and to interpret human behaviour in its changes through time. It is a unique subject, scientific in the way it uses evidence, but still an art because the reconstruction of the past requires a disciplined imagination and an effective rhetoric for the communication of meaning.

The contemporary world is one of intensive specialization, in which the varieties of human knowledge have increased well beyond the capacity of any individual to command them all. These developments have reinforced the role of history as the foundation of a person's education, because history can never draw frontiers around itself to exclude any branch of human knowledge, although individual historians will want to select that portion of it especially relevant for them. History's field of study will always be the entirety of the human experience.

The subject of history does not have a monolithic body of knowledge. Historical understanding is a matter of interpretation, of offering explanations for events and movements which are subject to constant revision by scholars. Arguments, scepticism and controversy are thus the very stuff of history. The history student does not merely acquire a particular mass of information, but learns to think independently.

Especially in the 3000 and 4000 level classes, students gain more than sophistication about substantive areas of history. They also develop transferable skills for oral and written communication, for presentations of findings to groups, for group and independent research, for computer literacy in the human sciences, for research skills in primary and secondary materials, and for the application of foreign languages.

A degree in history provides an appropriate background for students planning to enter professional careers in fields such as law, education and journalism, as well as those interested in pursuing graduate study in history or related social science and humanities disciplines.

## II. Degree Programs

All BA programs are governed by the general requirements of the College of Arts and Science for degrees, as set out in the University Calendar. See the Degree Requirements section for complete details, particularly with respect to Distribution Requirements, the Writing Class, the Language Class, and Arts and Science Electives. Before registering for the second year, each student in the College of Arts and Science must declare a subject of concentration. Once a student has declared History as the subject of concentration, then the following degree programs apply.

Classes in the History Department are grouped numerically in several geographical, chronological, subject and other areas: for example, Canadian, American, British, African, Medieval and Early Modern European, Modern European, Science and Technology, etc. Students are strongly encouraged to select a distribution of classes from different areas in order to experience the variety and richness of history.

Students who wish to build up a greater specialization in history than the minimum requirements outlined below may do so by taking classes of an historical nature given by the Departments of Classics, Economics, Music, Philosophy, Political Science, Spanish and Latin American Studies, Theatre, etc.

History students interested in obtaining an Emphasis in Canadian Studies along with their Major or Minor in History should consult the Canadian Studies calendar entry for information on requirements and for a list of History classes approved with Canadian Studies.

Students who wish to concentrate in a particular area of history should acquire the appropriate language skills, especially if they intend to pursue graduate study in it.

The following outline presents the MINIMUM departmental requirements for each program and should be read in conjunction with the general requirements of the Faculty.

### A. BA (20 credit) Honours in History

The Honours degree is intended for students who plan to proceed to graduate work and for others who wish to enjoy the experience of an intensive research project, the Honours essay. Students must complete the requirements for the BA with major in History and fulfil the following additional requirements:

- Honours students must take at least nine but not more than 11 full credits in History beyond the 1000 level.

- Honours students must take HIST 4990X/Y.06, (the Honours essay), HIST 4986.06, (The Varieties of History) and at least one half-credit 4000-level seminar in History.
- Applicants normally should have achieved an existing Grade Point Average of at least 3.3 to be considered for admission.
- A grade of B- or better is required on nine full History credits
- A grade of B- or better is required on the honours thesis

NOTE: Applications for Honours in History are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

### B. BA (20 credit) Combined Honours including History

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for Combined Honours (20 credit). Students must take 11-14 full credits in two subjects beyond the 1000-level, with no more than eight nor fewer than five credits in either of them. Students must complete two full credits at the 3000/4000 level in both Honours subjects. A grade of B- or better is required in at least four full History credits.

### C. BA (20 credit) Major in History

The 20 credit Major requires more advanced training in History than does the three year degree. Besides the general degree requirements for all BA degrees, students majoring in History are required to take at least six but not more than nine full History credits beyond the 1000 level.

- At least three of these History credits must be above the 2000 level.
- Within the last 15 full credits, students must take at least one credit in each of two subjects other than History.
- BA Majors in History must take at least one half-credit 4000 level seminar in History.

### D. BA (20 credit) Double Major including History

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for the BA with Double Major, which include 10 - 14 full credits in the major subjects beyond the 1000 level, with no more than eight nor fewer than five in either subject. Students must complete at least two full credits above the 2000 level in each major subject. Within the last 15 full credits, students must complete one full credit in a single subject other than the two major subjects. If History is the primary subject for the Double Major, students are required to take at least one half-credit 4000 level seminar in History.

### E. BA (15 credit) Minor in History

The three year program is a general liberal arts degree with minor in History. It permits a wide range of choice in the selection of classes. See requirements for minor below.

### F. Minor in History

- At least three and not more than four and a half full credits in History, beyond the 1000 level.
- At least two of these credits must be above the 2000 level.

### G. Minor in American Studies

Three credits to be selected from the list below. Students minoring in American Studies must take at least one half credit from each of the three participating departments: ENGL, HIST, POLI. Please note that not all classes are offered each year.

- ENGL 2003: American Literature
- ENGL 2070: African American Literature
- ENGL 3061: American Literature to 1865
- ENGL 3062: American Literature 1865-1914
- ENGL 3070: 20th Century African American Novel
- ENGL 3220: American Literature of the Earlier Twentieth Century
- ENGL 3221: American Literature of the Later Twentieth Century
- ENGL 3245: Beat Generation
- ENGL 3820: Nabokov
- ENGL 4017: William Faulkner and Toni Morrison
- ENGL 4022: Ellison and Everett
- ENGL 4280: Hollywood Fiction
- ENGL 4400: Nature and American Culture
- ENGL 4405: American Gothic
- ENGL 4406: New York in Fiction and Poetry

- ENGL 4456: American Literature of the Great Depression
- ENGL 4609: Moby Dick in Context
- ENGL 4803: Race and Gender in American Speculative Fiction
- ENGL 4281: Literature and Television
- HIST 2331: Creation of the American Republic
- HIST 2332: The American Republic, 1840 to 1990
- HIST 2333: Political Reform in Twentieth Century America
- HIST 2335: Modern American Culture
- HIST 2336: The American Century
- HIST 2340: The Cold War
- HIST 3358: Slavery, Gender, and Power: Women in Nineteenth Century America
- HIST 3361: The American Civil War and Reconstruction
- HIST 3365: The Vietnam War
- HIST 3368: American in the 1950s
- HIST 3369: American in the 1960s
- HIST 3370: North American Landscapes
- HIST 3372: The Cuban Missile Crisis
- HIST 3373: Spying on the World: The CIA in American History
- HIST 3374: The Objectivity Question in American History
- HIST 3380: Slavery and Freedom in the Americas
- HIST 4360: Slavery and American Political Culture
- HIST 4988: The Historiography of American Foreign Relations, Post-1945
- POLI 2300: Comparative Politics
- POLI 2540: Canadian-American Relations
- POLI 3304: Comparative Federalism
- POLI 3378: US Constitution, Government and Politics
- POLI 3431: Politics Through Film and Literature
- POLI 3440: The Politics of Fear
- POLI 3525: Comparative Foreign Policy Simulation
- POLI 3574: American Foreign Policy
- POLI 4242: Politics of Reason, Passion, Biology
- POLI 4512: The Politics of North America

## H. Minor in Latin American Studies

SPAN 2020.06

Any any two of:

- SPAN 2069.03
- SPAN 2070.03
- SPAN 2109.03
- SPAN 2110.03
- SPAN 2130.03
- SPAN 2200.03
- SPAN 2510.03
- SPAN 3215.03
- SPAN 3510.03

Any any two credits from:

- HIST 2381.03
- HIST 2386.03
- HIST 3390.03
- HIST 4300.03
- INTD 3302.03
- INTD 3303.03
- INTD 3304.03
- INTD 3310.06
- INTD 3401.03
- POLI 3360.03
- SOSA 3168.03 (or Xlist code GWST 3168.03)

At least .5 credit must be at the 3000 level or above.

## I. Minor in Middle East Studies

See 5.b, page 136 for information about a Minor in Middle East Studies.

## III. Types of Classes

1000 level classes take broad geographic perspectives over long periods of history to provide a background to many subsequent History classes. 2000 level classes typically deal with countries and transnational regions over at least a couple of centuries. 1000 level classes typically use textbooks for readings and assume no prior university-equivalent preparation; second-year classes typically assign

academic books and articles and assume that students have the skills typically developed in the first year of university study. At the 1000 and 2000 levels, classes are lecture format, three hours per week, with tutorials featured in some classes. 2000 level classes begin more specialized study of an area of History as a major or minor.

3000 and 4000 level classes provide opportunities for the intensive pursuit of interests developed in previous classes. The relatively small size of 3000 level classes (usually 35 students) allows intensive discussion of demanding primary materials and secondary publications, as well as students' presentation of their independent work. 4000 level classes are taught in a seminar format to cultivate students' independent research skills; undergraduate enrolments are limited to 15 or less; some are cross-listed as graduate classes. These classes are particularly recommended for Honours students and prospective Honours students.

## IV. Class Descriptions

NOTE: Not every class is offered every year. Please consult the current timetable to determine which classes are offered this year.

### HIST 1004X/Y.06: Introduction to European History.

This class will introduce students to the major themes and events in European history, from the end of the Roman Empire to the fall of Communism in 1990. Since the class will be taught by two class directors (one in each term), the exact period, the topics presented and the approach will vary from one year to another. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

EXCLUSION: HIST 1001.03, 1002.03, 1003.03

### HIST 1005X/Y.06: Introduction to European History.

This class will introduce students to the major themes and events in European history, from the end of the Roman Empire to the fall of Communism in 1990. Since the class will be taught by two course directors (one in each term), the exact period, topics presented and approach will vary from one year to another. History 1005 is formally designated as a writing class. Students complete a writing assignment once per month and also participate in weekly small-group discussion sessions, designed to complement lectures.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture/discussion

EXCLUSION: HIST 1004.06X/Y

### HIST 1501.03: The Black Death, Silk, and the Mongols - Shock: Culture, and Awe in Medieval Eurasia (12-15th centuries): Comparative Global History.

Global history — the study of change over long spans of time and large areas — allows us to examine questions not easily recognized in history conducted on smaller scales. The world order familiar to us — dominated by “the West” and organized by capitalist relations — contains elements both ancient and new. By comparing different cultural zones in historical periods before Europe’s global dominance in the nineteenth century, this class will explore the diverse ways different cultures met the challenges of survival, and how patterns of connection and domination were made and unmade. Select themes — including trade, transportation, ecology, and state formation — will be used to highlight pre-modern patterns of connection across the globe.

FORMAT: Lecture

EXCLUSION: HIST 1500.06

### HIST 1502.03: Origins of Modern Global Society.

The contemporary world is both intricately connected and intensely confusing. To make some sense of the global stage on which we now live, historians have recently redoubled their efforts to explore the development of these connections, especially since the eighteenth century. This class follows some of these explorations, attempting to understand the nature and impact of Europe's economic expansion, and how diverse cultures around the world experienced modern social and economic forces. Understanding the complex flows of such things as nationalist ideas, labour migrations, disease epidemics, and imperial control helps reveal the ties which bind us together.

FORMAT: Lecture/tutorial 3 hours

EXCLUSION: HIST 1500.06

### **HIST 1701.03: History of the Americas: From Pre-Contact to the Revolutionary Era.**

The course explores the history of the Americas from Pre-Columbian times to the early nineteenth century. The course considers indigenous people before 1492, conquest and colonialism, as well as slavery, religion, gender, warfare and revolution. This course provides a background for understanding contemporary Canada, the United States, and Latin America.

INSTRUCTOR(S): J. Bannister, R. Bleasdale, P. Riley or J. Roberts

FORMAT: Lecture

EXCLUSION: HIST 1862X/Y.06, HIST 1867X/Y.06

### **HIST 1702.03: History of the Americas: from the Revolutionary Era to the Present.**

This course explores the history of the Americas from the early nineteenth century to the present. It traces the rise of new nation-states as they evolved from colonies to global powers, amid continental expansion and settlement, political experiments, waves of immigration, and international conflicts. We will encounter people, places and events that have shaped contemporary Canada, Latin America, and the United States. In the process, we will see some of the different ways historians have put together stories of the past. Themes vary from year to year; please see the timetable for specifics.

INSTRUCTOR(S): C. Campbell, S. Tillotson, S. Corke, or T. McCallum

FORMAT: Lecture

EXCLUSION: HIST 1862X/Y.06, HIST 1867X/Y.06

### **HIST 2001.03: Early Medieval Europe.**

An investigation of the period between the fourth and the twelfth centuries. Major themes of lectures and tutorials include the mingling and exchange of Roman traditions with the Barbarian cultures in the fifth and sixth centuries, the creation of the successor states of Europe following the disintegration of the Carolingian Empire, the development of monasticism, church-state relations, the Gregorian Reform and the Investiture Contest, the rise of papal government, the twelfth-century Renaissance, peasant life and popular culture. Original sources in translation are used to familiarise students with the medieval world view.

RECOMMENDED: HIST 1004X/Y.06

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/tutorial

### **HIST 2002.03: Later Medieval Europe.**

A study of the period beginning with the crusades, and ending with the emergence of the early modern European states. After a preliminary introduction to the nature of medieval society at the end of the twelfth century attention is turned to a variety of themes: political, social, cultural, economic and religious. Topics examined include church-state relations, heresy, peasant life and peasant rebellions, chivalry, political thought, varieties of medieval law, literature, and the concept of decline, or the "autumn" of the Middle Ages. Students make use of original sources in translation.

RECOMMENDED: HIST 1004X/Y.06 and/or 2001.03

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/tutorial

### **HIST 2003.03: The Fall of the Roman Republic.**

See class description for CLAS 2205.03 in the Classics section of this calendar.

### **HIST 2006.03: The Atlantic World, 1450-1650: European Colonization of the Americas.**

The commercial and colonial expansion of Europe into the Americas. Topics of particular interest are the relations of Europeans and indigenous peoples, the ecological consequences of colonization, the use of unfree labour, the role of technology, the establishment of settler colonies, the effect of overseas communication on European culture, and the role of colonial expansion in the development of the world economy.

RECOMMENDED: HIST 1004X/Y.06, 1501.03, 1701.03, 1702.03

FORMAT: Lecture/discussion

### **HIST 2007.03: The Atlantic World, 1650-1800: European Empires in the Americas.**

The development of the European colonial societies after their initial settlement and the establishment of their staple economies in the sixteenth and seventeenth centuries. The topics of chief interest are the predominance of colonial trade in Europe's large-scale commerce, the role of the colonies in European conflicts, the renewal of exploration, the development of the colonies' internal economies, and their revolts against European rule.

RECOMMENDED: HIST 1004X/Y.06, HIST 1501.03, 1701.03, 1702.03, HIST 2006.03

FORMAT: Lecture/discussion

### **HIST 2012.03: Eighteenth-Century Europe: Politics, Society and Culture.**

The course will focus on the major political, social, intellectual and artistic developments of eighteenth-century continental Europe. Topics of special interest will include: the emergence of the great powers; property, the underprivileged and reform; literacy and education; art and culture; religious observance and beliefs; the Enlightenment; and the crisis of the old order leading to the French Revolution.

INSTRUCTOR(S): J.T. Pekacz

FORMAT: Lecture/discussion

PREREQUISITE: HIST 1004X/Y.06

### **HIST 2015.03: War and Society in Early Modern Europe, 1550-1750.**

The class deals with the presence of war in European societies, and how states and societies adapted and transformed under the impetus of the desire to achieve victory against an adversary. Among specific topics the class will deal with the transformation of tactics and technology on land and sea; the creation of modern tax systems; problems of supply and recruitment; ideologies of the military function; the creation of standing armies; the impact of hostilities on society.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

### **HIST 2016.03: The Classical Greek World: Athens, Sparta and a Century of Conflict.**

See class description for CLAS 2215.03 in Classics section of this calendar.

### **HIST 2017.03: The Roman World from Constantine to Theodosius (A.D. 313-395).**

See class description for CLAS 2209.03 in the Classics section of this calendar.

### **HIST 2018.03: The Transformation of the Roman World (A.D. 395-565).**

See class description for CLAS 2211.03 in the Classics section of this calendar.

### **HIST 2019X/Y.06: Early Modern Europe, 1450-1650.**

A detailed and comprehensive survey of the principal topics in European history from the Italian Renaissance and the Christian Reformations, to the end of the great conflicts in the mid-seventeenth century. The course will proceed in roughly chronological progression, to examine in turn Italy, Spain and Portugal, France, the Netherlands, Germany and the Empire, the Christian kingdoms of eastern and northern Europe, and the European territories of the Turkish Ottoman Empire.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

### **HIST 2021.03: Soviet Russia.**

Survey of Soviet Russia from 1917 to the present. Topics discussed will include the Revolution of 1917, the Civil War and War Communism, NEP, Collectivization, the Great Purges, WWII, and the Post-Stalin era.

FORMAT: Lecture/tutorial

CROSS-LISTING: RUSN 2023.03

EXCLUSION: HIST 2020X/Y.06, RUSN 2021X/Y.06

### **HIST 2022.03: Imperial Russia.**

Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917.

FORMAT: Lecture/discussion

CROSS-LISTING: RUSN 2022.03

EXCLUSION: HIST 2020X/Y.06, RUSN 2021X/Y.06

### **HIST 2023.03: Roman Legions and the Barbarians.**

See class description for CLAS 2233.03 in the Classics section of this calendar.

FORMAT: Lecture

CROSS-LISTING: CLAS 2233.03

### **HIST 2032.03: Twentieth Century Germany.**

Across two catastrophic world wars and a revolution, as empire, quasi-socialist republic, Cold War outpost, and the showplace for the end of Communism,

Germany's history has embodied to an unparalleled extent the "age of extremes" in the twentieth century. The class explores the historical dimensions of these events and their resonance today.

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture

EXCLUSION: HIST 2030.06X/Y

### **HIST 2041.03: France from the Revolution to the Great War.**

The course examines the long nineteenth century in France and its interpretations. The themes include: the legacy of the French Revolution, social structure and divisions, religion, education, crime and punishment, gender issues, intellectual and artistic developments. No French required.

INSTRUCTOR(S): J.T. Pekacz

FORMAT: Lecture/discussion

PREREQUISITE: RECOMMENDED: HIST 1004X/Y.06

EXCLUSION: HIST 2040X/Y.06

### **HIST 2055.03: War and Society since 1945.**

This class examines the role of war, the development of military forces, and the changes in the international balance of power since 1945. Topics of discussion will include the Cold War; decolonization; "superpowers", military alliances, and the "Third World"; nuclear weapons and deterrence theory; terrorism, guerilla warfare, and counter-insurgency; developments in conventional forces; war in Algeria, Indo-China, Korea and the Middle East.

INSTRUCTOR(S): C. Bell

FORMAT: Lecture

### **HIST 2060X/Y.06: The Civilization of Baroque Italy.**

A descriptive introductory survey of Italy from the late Renaissance to the French Revolution. Lectures and tutorials will feature a broad array of original sources in translation and numerous images. Taught in English.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

CROSS-LISTING: ITAL 2101X/Y.06

EXCLUSION: HIST 2061.03

### **HIST 2061.03: Civilization of Baroque Italy.**

This is a scaled-down version of 2060X/Y.06, and studies Italy at the time of its greatest influence on Western civilization. The class examines Italy's politics, its vibrant urban and rural societies, the place of Catholicism in its cultural and intellectual life, and the innovative early modern economy, all before the great crisis of the 1620s. Open to first-year students.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

CROSS-LISTING: ITAL 2061.03

EXCLUSION: HIST 2060.06

### **HIST 2063.06: History of Modern Italy from the Renaissance to the Present.**

This course embraces the broad sweep of Italian history from the late Renaissance to the present day. It will advance in chronological progression, treating politics and society, religion and culture, geography and economy. The lecture/tutorial format will also familiarize students with an array of primary sources.

FORMAT: Lecture/tutorial

CROSS-LISTING: ITAL 2102

EXCLUSION: HIST 2061

### **HIST 2065.03: Evolving Spain: History, Culture, Society.**

Please see the description for SPAN 2100 in the Spanish and Latin American Studies section of the Calendar

### **HIST 2074X/Y.06: Introduction to the History of Science.**

See class description for HSTC 1200X/Y.06 in the History of Science section of this calendar.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### **HIST 2081X/Y.06: Twentieth-Century Europe in Literature, Art and Film.**

A survey of contemporary European history that employs representative works of literature, art, architecture and film as well as traditional published records and monographic accounts to introduce students to major events of the twentieth century: the two world wars, the Russian Revolution, the political systems of Italian Fascism, German Nazism and Soviet Communism, the Holocaust and others.

RECOMMENDED: HIST 1001.03, or 1002.03, or 1003.03, or 1004.X/Y.06  
NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/discussion

EXCLUSION: HIST 2082.03

RESTRICTION: Restricted to students in their second year or higher.

### **HIST 2088.03: The Roots of Greek Civilization: From Crete and Troy to the Rise of Athens.**

See class description for CLAS 2214.03 in the Classics section of this calendar.

### **HIST 2089.03: Alexander the Great and the Hellenistic Kings: Transforming the Ancient East and West.**

See class description for CLAS 2216.03 in the Classics section of this calendar.

### **HIST 2090.03: The Rise of Rome: Consuls, Classes, and World Conquest.**

See class description for CLAS 2231.03 in the Classics section of this calendar.

### **HIST 2091.03: The Fall of Rome: Caesars, Saints, and Warlords**

See class description for CLAS 2232.03 in the Classics section of this calendar.

### **HIST 2092.03: Death, Sex, and Gold in the Ancient Roman World**

See the description for CLAS 2234.03 in the Classics section of the calendar.

### **HIST 2101.03: Medieval England.**

This class examines some of the major social, political, economic and cultural themes in English history from the reign of Alfred the Great to the Wars of the Roses. Major topics of study include the development and maturation of the English church, the impact of the Norman Conquest on Anglo-Saxon government and society, the development of the common law system, English monasticism, constitutional struggles in the later medieval period and war with France and Scotland. In an effort to understand and appreciate more fully the culture of medieval England, detailed consideration is given to contemporary sources, in translation.

RECOMMENDED: HIST 1004X/Y.06

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2100X/Y.06

### **HIST 2106.03: Tudor and Stuart England, 1485-1688.**

A survey of the major events, personalities, and developments in sixteenth and seventeenth century English history. Topics to be covered include the religious reformation, the achievements of the Elizabethan age, colonial expansion, the civil war, and the "Glorious Revolution."

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Lecture

EXCLUSION: HIST 2100, HIST 2104, HIST 2105

### **HIST 2111.03: Modern Britain to 1884.**

A survey of the development of British society from the reign of George III to the late Victorian era. This class will examine the emergence of class society, movements of popular protests, political reform, the growth of empire, and cultural change.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2100.06

### **HIST 2112.03: Modern Britain from 1880 to 1980.**

This class will examine the development of British society from 1884 to the present day, touching upon the experience of Britain in two world wars, the



growth of the welfare state, the decline of Britain's empire and economy, the upheavals of the 1960's and 1970's and the emergence of Thatcher.

RECOMMENDED: HIST 2111.03

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2100.06

### **HIST 2153.03: Scotland from the Earliest Times to the Reformation.**

This class examines the factors that contributed to the making of Scotland as a British and European nation, from c. 100 to the sixteenth-century Reformation. Lectures examine a series of themes arranged in roughly chronological fashion, including the peoples who populated the region of North Britain around the year 1000, the coming of the Normans, urban life, relations between core and peripheral regions in the kingdom, the Scottish manifestation of the European witch-hunt, the "problem" of the Highlands, and pre-Reformation religious, social and political life. Emphasis is laid on the distinct social and cultural developments of the northern kingdom in contrast to its larger neighbour, England. In an attempt to appreciate more fully the civilization of this long period the reading of contemporary documents (in translation) constitutes an integral aspect of the class.

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2151.03 and 2152.03

### **HIST 2207.03: Aboriginals and Empires: Canada's Origins to 1763.**

This course explores Canada's origins to 1763. It covers the history of First Nations peoples before and after the arrival of Europeans. It addresses themes such as the role of the physical environment; the fur, fish, and timber trades; and the imperial struggle for dominance in North America. While the lectures will narrate the major developments in the seventeenth and eighteenth centuries, the tutorials will focus on specific issues, such as the role of treaties in Canadian history. The course climaxes with the Conquest of Quebec and the end of the Seven Years War.

FORMAT: Lecture / tutorial

CROSS-LISTING: CANA 2207

### **HIST 2208.03: Patriots, Rebels, Refugees: Canada's Roots in the Age of Revolution, 1763 to 1860.**

As empires continued their international contest and Britain fought to maintain colonies within North America, old and new inhabitants of what would become Canada also wrestled with questions concerning who would exercise power within their communities and governing bodies. In the process they gave new and, at times, conflicting answers to old questions: What did it mean to be a patriot? Who and what were they willing to defend? Who and what were they prepared to resist? Immigrants, exiles and the refugees of European and North American wars shaped new homelands, even as the First Nations peoples became refugees within their own lands. In this course we explore the related questions of loyalty and conscience through the diaries and letters of men and women defining their place in a new order.

FORMAT: Lecture/tutorial

CROSS-LISTING: CANA 2208.03

### **HIST 2209.03: Making a Nation: Canada, 1860-1929.**

This is the story of how British North America was transformed into a distinct nation-state for the twentieth century. We'll see how a young Canada grappled with geographical, political, and social challenges: acquiring enormous territories amid growing provincial differences; maintaining loyalties to Empire while developing a New World identity; reconciling new and diverse cultural communities; and mobilizing for war.

CROSS-LISTING: CANA 2209.03

### **HIST 2210.03: Many Canadas: Canada, 1930 to the present.**

This course explores the remaking of Canada, including the shift from imperial to continental and nationalist politics, the rise and transformation of third-party political movements, and the emergence of new ideas about the rights and responsibilities of the liberal individual subject.

FORMAT: Lecture / tutorial

CROSS-LISTING: CANA 2210

### **HIST 2211.03: Social History of Canada before 1870.**

This class examines the social history of pre-Confederation Canada through such topics as social control, violence and protest, women and domestic life, regionalism and marginal peoples, and the transformation of the economy.

INSTRUCTOR(S): Staff

CROSS-LISTING: CANA 2211.03

EXCLUSION: HIST 2210X/Y.06

### **HIST 2212.03: Social History of Canada since 1870.**

This class examines the social history of Canada since Confederation through such topics as the impact of industrialization, social classes, conflict, the role of women, the state and social development, and relationships among the wide variety of social groups in Canada.

INSTRUCTOR(S): T. McCallum

FORMAT: Lecture/tutorial

CROSS-LISTING: CANA 2212.03

EXCLUSION: HIST 2210X/Y.06

### **HIST 2221.03: Rough Justice - Order, Disorder and Canadian Popular Culture to the 1890s.**

This class investigates the character of popular culture, investigating forms of community control and ideas of order among different classes and cultures, beginning with aboriginal societies at the time of contact, through the revolutionary era, to the Victorian period and the first decades of Canada's nationhood. The sexual tensions of frontier towns, drunken revelry and riot, the smallpox, religious and revolutionary passions, and other sources of disorder (and the evolution of the means of making order) feature in this exploration of Canadian history's most dramatic passages.

INSTRUCTOR(S): S. Tillotson

FORMAT: Lecture/tutorial

EXCLUSION: HIST 3241.03, 3242.03, 3280.03, 3281.03

### **HIST 2222.03: Rough Justice - Order, Disorder and Canadian Popular Culture, 1890s to the Present.**

This class continues the themes explored in History 2221, setting out the context within which legislation related to popular culture and leisure pastimes evolved from the 1890s into the present. Included are the regulation of alcohol, drug and tobacco consumption, sexual mores, pulp fiction and comics, sporting cultures, gambling, organized crime, and the use and abuse of animals in our redefinition of appropriate forms of recreation. Approved with Canadian Studies.

INSTRUCTOR(S): R. Bleasdale

FORMAT: Lecture/tutorial

EXCLUSION: HIST 3241.03, 3242.03, 3280.03, 3281.03

### **HIST 2231.03: The Making of Modern Canada: Canadian Political History, 1896 to the Present.**

This course surveys the major political developments in Canadian history since 1896. Topics to be examined include: regionalism and the emergence of third-party movements; French-English relations; federal-provincial relations; and the transformation of the liberal state in the post-1945 era.

FORMAT: Lecture/discussion

CROSS-LISTING: CANA 2231.03

EXCLUSION: HIST 2230

### **HIST 2235.03: History of Canadian Culture.**

This course explores the history of Canadian culture since the mid-nineteenth century, including art, architecture, music, literature, sport, and mass media. Themes include creating a "national" culture amid regional differences, and the relationship between popular culture (heavily influenced by the United States) and "high" culture cultivated by the state.

FORMAT: Lecture/discussion

CROSS-LISTING: CANA 2235.03

### **HIST 2250.03: History of the Canadian West.**

The prairie west is one of the most beautiful places in Canada, but also one of the most overwhelming in its expanse and bewildering in its complexity. Our simple image of the prairie – golden wheatfields and enormous skies – hides a dramatic history of exploration and discovery, war and protest, and struggles to mature as a region within Canada. This course will ask: What makes the prairie west different? How has it shaped modern Canada?

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture/tutorial

CROSS-LISTING: CANA 2250.03

### **HIST 2261.03: True Believers 1914 to Present - The Left and the Right in Canadian Politics.**

The class will study the ideas and practices of Canadian political movements of the Left and the Right. We will attempt to understand why such movements have arisen and declined, and what significance they have had for Canadian politics and society. Topics will include: the Progressive movement; the CCF and NDP; Communism and Fascism; Social Credit; the radical right and the New Left; the Reform Party.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

### **HIST 2271.03: Atlantic Canada to Confederation: The Northeast in the Age of Empire, 1450-1867.**

A survey of the history of Atlantic Canada (the Maritimes and Newfoundland) from the origins of human habitation to the early 1860s. Emphasis is placed on the pattern of change and conflict which, over time, forged a series of "limited identities" that gradually became elements of an emerging regional personality.

INSTRUCTOR(S): J. Bannister

FORMAT: Lecture/discussion

CROSS-LISTING: CANA 2271.03

EXCLUSION: HIST 2270X/Y.06

### **HIST 2272.03: Atlantic Canada since Confederation: Regionalism, Identity, and Development, 1867-2000 .**

A survey of the history of Atlantic Canada (the Maritimes and Newfoundland) from the 1860s to the present. Emphasis is placed on how episodes such as the "age of sail", industrialization, class and gender conflict, war, the struggle for human rights and a chronic effort to play "catch-up" with the rest of the nation have defined this region's identity.

INSTRUCTOR(S): J. Bannister

FORMAT: Lecture/discussion

CROSS-LISTING: CANA 2272.03

EXCLUSION: HIST 2270X/Y.06

### **HIST 2331.03: Creation of an American Republic: The United States, 1580-1865.**

This class studies the first example of a major theme of modern history: how colonial societies become nations. When British colonization of the Americas began in the late sixteenth century, no one involved in the process intended or expected the result to be an independent republic on the other side of the Atlantic. Yet during the following two centuries of colonial history many of the crucial and distinctive features of what became the United States took shape: aggressive displacement of indigenous peoples, thoroughgoing privatization of economic resources, racial slavery, ethnic diversity, popular sovereignty, and religious pluralism. The republican revolution of 1776-1783 institutionalized these features in the new United States of America. But migration and growth, new technologies, ongoing conflict with First Nations and European states, and a new middle class culture of commerce, industry and reform increasingly strained the Union. By the mid-nineteenth century the United States faced the fate of so many post-colonial nations: irreconcilable sectional divisions.

INSTRUCTOR(S): P. Riley

FORMAT: Lecture

EXCLUSION: HIST 2330X/Y.06

### **HIST 2333.03: The Politics of Reform in Twentieth-Century America.**

This class traces the domestic political history of the United States from the turn of the century to the Reagan era. Particular emphasis is placed on broad trends of change in those years: specifically, the growth of modern reform movements on American political culture. Some of the reform movements examined in the course are Populism, Progressivism, the New Deal, the civil rights movement, the women's movement, and the new student movement.

RECOMMENDED: A survey class in U.S. history

INSTRUCTOR(S): S.J. Corke

FORMAT: Lecture

EXCLUSION: HIST 2330X/Y.06

### **HIST 2335.03: Modern American Culture.**

American culture is so ubiquitous today that it seems almost timeless. But it has a long and tumultuous history, one that both reflects and challenges the modern history of the United States. Ranging from high culture to mass culture, this course focuses on how major changes in American history have affected American literature, American cinema, and the everyday lives of American people. Documentary and feature films supplement the lectures.

RECOMMENDED: HIST 1300X/Y.06

INSTRUCTOR(S): P. Riley

FORMAT: Lecture/tutorial

RESTRICTION: Restricted to students in their second year or higher

### **HIST 2340.03: Cold War [Hi]stories.**

The course is designed to introduce students to the [Hi]stories of the Cold War. The Cold War - or the period of intense conflict between the United States and the Soviet Union - manifested, some argue, in the post World War Two era and continued unabated until approximately 1989 or 1991.

INSTRUCTOR(S): S. J. Corke

FORMAT: Lecture

EXCLUSION: HIST 2336.03

### **HIST 2381.03: Latin America.**

This survey course offers an introduction to Latin America's history, peoples, and politics from pre-colonial times to the present day. The course builds a foundational understanding of Latin America and its past, focusing on a broad range of Latin American countries. We will pay particular attention to issues of race, class, faith, and gender.

INSTRUCTOR(S): B. Cowan

FORMAT: Lecture

EXCLUSION: HIST 2386, HIST 2387

### **HIST 2382.03: Central America to 1979.**

See class description for SPAN 2069.03 in the Spanish section of this calendar.

### **HIST 2383.03: Area Studies on Mexico and Central America.**

See class description for SPAN 2070.03 in the Spanish section of this calendar.

### **HIST 2384.03: Cuba from Colonial Times.**

See class description for SPAN 2109.03 in the Spanish section of this calendar.

### **HIST 2385.03: The Cuban Cultural Revolution.**

See class description for SPAN 2110.03 in the Spanish section of this calendar.

### **HIST 2386.03: Colonial Latin America.**

This lecture course offers an introduction to Latin America's colonial period. Stretching from pre-colonial times to independence, this course examines the peoples, politics, and cultures that comprised Latin America between the fourteenth and early nineteenth centuries. It pays particular attention to issues of race, gender, class, and faith.

INSTRUCTOR(S): B. Cowan

FORMAT: Lecture

EXCLUSION: HIST 2381.03

### **HIST 2387.03: Latin America Since Independence.**

This lecture course introduces Latin America's postcolonial history. Moving from the independence period in the early nineteenth century through until the present day, this course considers the peoples, politics, and cultures that came to define contemporary Latin America. This course pays particular attention to issues of race, class, and gender.

INSTRUCTOR(S): B. Cowan

FORMAT: Lecture

EXCLUSION: HIST 2381.03

### **HIST 2388.03: Latin American Dictators: From Fact to Fiction.**

See class description for SPAN 2130.03 in the Spanish section of this calendar.

### **HIST 2392.03: Introduction to Caribbean History (1450 to the Present).**

This course provides a survey introduction to the history of the Caribbean basin with special emphasis on Cuba, Jamaica, and Saint-Domingue/Haiti. It covers the period from the mid fifteenth century to the present day. Themes covered include: European conquest, the emergence of plantation economies, African slavery, revolutionary movements, abolition and emancipation, multi-ethnic and interracial relations, relations with the US, nationalism, race, religion, and music.

FORMAT: Lecture

PREREQUISITE: none; but HIST 1501.03 and HIST 1502.03 are recommended

EXCLUSION: HIST 3392.03

**HIST 2425.03: Africa Before 1900.**

Modern historians of Africa continually battle popular misconceptions and myths about the African past. This class explores both the patterns of change within the continent and the means by which our knowledge of these has developed. Themes of particular interest include: dynamics along the desert-Sudan frontier, the Atlantic and Oriental slave trades, Indian Ocean connections, the spread of Islam, and the early stages of colonial rule.

INSTRUCTOR(S): P.S. Zachernuk/G. Kynoch

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2410.03 and 2421.03

**HIST 2426.03: Africa Since 1900.**

This class examines the nature of African states, societies and economies from the colonial period to the present, seeking the historical context for contemporary African dynamics. Some questions of interest include: How have development projects changed Africa? What are the myths and realities of neo-colonialism? How have Africa's political traditions supported quests for national stability? How have all these affected men's and women's lives?

INSTRUCTOR(S): G. Kynoch/P.S. Zachernuk

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2422.03

**HIST 2502.03: The Ottoman Empire and Its Legacy in the Middle East, 1299-1923.**

This class offers a survey of Ottoman history. It pays particular attention to the last two centuries of Ottoman rule and examines movements of reform, nationalism and resistance to European imperialism. Ottomanism, Pan-Islamism, Arabism and the emergence of Zionism are some of the issues covered. The course ends with World War One and the dissolution of the Ottoman Empire, two events considered the prelude to the making of the modern Middle East.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

**HIST 2503.03: Classical and Medieval History of Islamic Civilization.**

This course will introduce students to the Perso- Levantine world at the time of Muhammad's prophecy in the 7th century, and how the Arabian Peninsula was impacted by the creation and emergence of an Islamic society in Medina and Mecca. With the displacing of Byzantine control in the Holy Land and the collapse of the Sasanian Empire in Persia, the Arab-centric society of Mecca and Medina had become an empire of unprecedented size and ethnic complexity. The class will examine the respective Umayyad and Abbasid dynasties, as well as the slave states of the Saljuqs and Mamluks. The final portion of the course will focus on the gunpowder empires of the Ottomans, Safavids, and Mughals. The central theme of this course will be an examination of the Islamic community, or umma, from its earliest days and how it interacted over the next thousand years with different surrounding traditions and cultures in the Mediterranean, the Iranian Plateau, the Caucasus, the Steppe, India, and Southeast Asia. Another important theme will be the study of how various Islamic societies understood and resolved the age-old dynamic between tribal nomadism and hierarchical urbanism.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture

CROSS-LISTING: RELS 2503.03

EXCLUSION: First-year students and HIST 2501.03

**HIST 2504.03: A History of the Modern Middle East.**

This class will focus on contemporary history of the Middle East from World War One onwards. It will pay particular attention to the Mandate period of the 1920s and 1930s, and the subsequent creation of the state of Israel in 1947. Other topics will be covered: Arab Nationalism, the Ba'ath parties, the rise of political Islam, and the Arab-Israeli wars.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

**HIST 2505.03: Turbans and Berets: A Modern History of Iraq.**

This course is a survey of the history of Iraq from late Ottoman history until the present. It discusses monarchial rule, the rise of the Baath, the regime of Saddam Hussein, the Gulf Wars and the American invasion of Iraq and its aftermath. It pays particular attention to the role of the different ethnic and religious groups in Iraqi politics and cultural life.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

**HIST 2510.03: Modern History of South Asia.**

This course will examine the region of South Asia from the mid-19th century - the height of the British Raj - to the present. Areas of concentration will include resistance to British rule, rise of the Congress Party, the 1947 Partition, and subsequent decolonization. The respective histories of modern India, Pakistan, and Bangladesh will be examined against the backdrop of nationalism, communalism, and regional conflict.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture

**HIST 2520.03: Ancient Israel.**

See class description for CLAS 2220.03 in the Classics section of this calendar.

**HIST 2614.03: Making Gender: Women and Men, Sex and Gender in Pre-Modern Europe**

This course examines the diverse and fascinating ways western cultures have shaped what it meant to be a woman or a man. Beginning in the time of the Roman Empire and continuing to the age of the French Revolution, the course examines such topics as eunuchs, fasting saints, female 'popes', changing notions of the physical differences between the sexes, and early struggles for women's rights.

INSTRUCTOR(S): K. J. Kesselring

FORMAT: Lecture/tutorial

CROSS-LISTING: GWST 2300.03

**HIST 2615.03: Making Gender - Male and Female from the American Revolution to the present.**

This class examines the diverse and fascinating ways western cultures have shaped the meanings of gender. The history of women informs us about the once little-known history of femininity. And, as a result, historical changes in definitions of masculinity become visible. The meanings of gender are explored in this class through topics such as: the doctrine of separate spheres, the family wage, the homosexual, imperialism, citizenship, welfare dependency, and infertility.

INSTRUCTOR(S): S.M. Tillotson

FORMAT: Lecture/tutorial

CROSS-LISTING: GWST 2301.03

**HIST 2711.03: Struggles that Shaped the Modern World: 1600-1900.**

European expansion from the 16th century reshaped the global economy, obliging many established societies to confront new challenges. Throughout Asia, the New World and Africa, old conflicts between and within states now had to confront the additional challenge of increasingly powerful European intruders. These encounters—featuring a complex mixture of military, cultural, technological, political and economic interactions—shaped the modern world as diverse groups struggled to pursue their interests through resistance, accommodation, coercion, cooperation and alliance. This course will explore the ways in which select societies navigated these encounters to better understand the intricate patterns of linkage and division that mark our world in modern times.

INSTRUCTOR(S): P. Zachernuk

FORMAT: Lecture

**HIST 2712.03: Freedom Fighters or Terrorists? Revolution, Nationalism and Anti-Imperialism in the 20th Century.**

After World War II, African and Asian nationalists pressed home their claims for independence from colonial rule. During the Cold War, movements for social reform in the so-called Third World combined with these nationalist traditions to create many enduring sites of conflict. This course explores the strategies, successes and failures of these movements of opposition, assessing their impact in shaping the 20th century.

FORMAT: Lecture

**HIST 2750.03: The Pirate and Piracy.**

See class description for EMSP 2480.03 in the Early Modern Studies section of this calendar.

FORMAT: Lecture/discussion

CROSS-LISTING: EMSP 2480.03

RESTRICTION: Restricted to students in their 2nd year and above

**HIST 2985.03: Totalitarianism and Science.**

See class description for HSTC 2205.03 in the History of Science and Technology section of this calendar.

FORMAT: Lecture/tutorial

CROSS-LISTING: HSTC 2205.03

### **HIST 2990.03: Magic, Heresy and Hermeticism: Occult Mentalities in the Scientific Revolution.**

See class description for EMSP 2360.03 in the Early Modern Studies section of this calendar.

FORMAT: Lecture/tutorial

CROSS-LISTING: HSTC 2120.03, EMSP 2360.03

### **HIST 3000.03: Topics in Early Modern European History.**

Topics to be studied and researched will vary from year to year. In some years, the geographical focus may be Britain, while in others it will be western Europe more generally. Topics may include the religious reformations; print culture; political protest; and popular culture. INSTRUCTOR (S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: A class in European or British History

### **HIST 3002.03: The Medieval Church.**

This class ranges far and wide over the history of the church in medieval Europe, adopting a thematic rather than a strictly chronological approach. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, lay-clerical conflict, and “popular” concepts of religion. Each year several topics are examined in detail, with the help of original documents in translation, and using recent periodical literature and/or monographs. Students prepare two versions of a well-researched paper, and class discussions are used to explore related materials and readings in greater depth. Some prior knowledge of medieval European history is essential.

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/discussion

PREREQUISITE: HIST 1004.06 or HIST 1005.06 or HIST 2001.03 or HIST 2002.03 or HIST 2101.03

CROSS-LISTING: RELS 3008.03

EXCLUSION: HIST 3021.03 and 3022.03

### **HIST 3003.03: Celtic Britain and Ireland to 1400.**

This class examines the social, political and cultural history of the Gaelic speaking peoples of the British Isles from c. 400 to the mid-eleventh century, with particular emphasis on the interaction between the peoples of Wales, Scotland, and Ireland on the one hand, and the culture of the English kingdom on the other. The class examines such fundamental Celtic institutions as the family, kinship, the law, and the church down to the end of the first millennium, with a special focus on the various sources, written and unwritten, that inform the early history of the Gaelic speaking peoples and their lands. Classes are conducted in the form of lecture/tutorials, that is, a single lecture once a week is followed by a tutorial in which readings relating to the lecture topic are discussed. In an attempt to appreciate more fully the civilization of the period, the reading of contemporary works (in translation) constitutes an integral part of the class.

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/tutorial

PREREQUISITE: A 1000- or 2000-level class in medieval history

CROSS-LISTING: HIST 5703.03

### **HIST 3006.03: Renaissance and Reformation Europe, 1348-1559.**

A survey of the major themes, subjects, and personalities in western European history from the Italian Renaissance to the beginnings of the Protestant Reformation in the sixteenth century. Topics to be covered include the rise of Italian city-states, Italian humanism, the arts, the emergence of centralized monarchies in northern Europe, religious sentiment, and the reform movement. Although most areas of western Europe will be dealt with, the focus will be on Italy, France, and Germany.

FORMAT: Lecture/discussion

PREREQUISITE: Any first- or second-year European history class

EXCLUSION: HIST 2005.03, 2019.03

### **HIST 3007.03: The European Enlightenment.**

This course examines eighteenth-century European Enlightenment and the continuing controversies over its interpretations and its legacies. Class discussions will focus on Enlightenment debates on religion, gender, science, non-European people, society and government, and the possible impact of the Enlightenment on the French Revolution.

INSTRUCTOR(S): J.T. Pekacz

FORMAT: Seminar

PREREQUISITE: One European history course

EXCLUSION: HIST 3012.03

### **HIST 3013.03: Sex and Gender in Reformation Europe.**

This class looks at the historical development of the norms and practices surrounding sexuality and family relations, with special focus on the changes accelerated by the sixteenth-century religious reformations. It historicizes ideas about what is “natural” in regards to such practices. It examines the motives and results of attempts to regulate sexuality and marriage. Topics include: divorce, adultery, marriage, family and gender roles, and prostitution.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: one previous history class

CROSS-LISTING: GWST 3013.03

### **HIST 3016.03: Meetings between Hellenism and the East to Philo the Jew.**

See class description for CLAS 3016.03 in the classics section of this Calendar.

CROSS-LISTING: CLAS 3016.03, RELS 3018.03

### **HIST 3017.03: Meetings between Hellenism, Judaism, Christianity and Islam until the Renaissance.**

See class description for CLAS 3017.03 in the classics section of this Calendar.

CROSS-LISTING: CLAS 3017.03, RELS 3019.03

### **HIST 3020.03: Fall of the Roman Republic.**

See class description for CLAS 3205.03 in the Classics section of this calendar.

### **HIST 3030.03: Russian Intellectual History.**

This class will examine intellectual developments in modern Russia, from Peter the Great to the late 20th century. Among the possible topics we will cover are: Russian thought and the West, the Russian intelligentsia and its relationship with the people and the state, Russian Orientalism, the roles of literature, arts, and media in Russian politics and society, the nature of dissent and revolutionary movements, as well as the functions of historical memory in Russian thought and culture. Throughout the course we will approach Russia as a multinational country that developed in constant and close interaction with the outside world.

INSTRUCTOR(S): D. Kozlov

FORMAT: Lecture/discussion

PREREQUISITE: Some Russian history required; Recommended are HIST 2021.03 or HIST 2022.03.

CROSS-LISTING: RUSN 3091.03

### **HIST 3040X/Y.06: Culture and Behaviour in France, 1550-1750.**

This class, exploring the characteristics and complexities of elite and popular culture in Early Modern France, focuses primarily on the techniques of historical research. Heavy emphasis is placed on archival sources (translated and transcribed) relating to diverse facets of social, cultural and religious history, and on historical logic. The class also welcomes students from other branches of behaviour studies. No French required.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/discussion

PREREQUISITE: FYP or some background in early modern or medieval history

### **HIST 3043.03: Napoleon Bonaparte.**

The course examines Napoleonic historiography and focusses on selected representations of Napoleon that originated both during his life and after his death, and gained ascendancy at different points in time. The themes draw from a large repository of images and associations, and include: Napoleon as conqueror, as proto-fascist dictator, as the Little Corporal of the people, as heir of the French Revolution, as state builder, and as European visionary and unifier. The course offers an opportunity to develop analytical and critical skills, by discussing historiographical issues, such as the dynamic nature of historical representations, the impact of circumstances in shaping historical representations, and the role of methods employed to examine the past in creating these representations.

FORMAT: Lecture/discussion

PREREQUISITE: One European history course

CO-REQUISITE: Recommended: HIST 3045 The French Revolution and Its Interpretations

### **HIST 3045.03: The French Revolution.**

The seminar will focus on current interpretations of the French Revolution. Each time the seminar is offered, it may focus on a specific theme related to the French

Revolution. This may include: controversy over the origins of the French Revolution since the collapse of the Marxist "consensus" in the 1960s, and the attempts to resolve the controversy in the most recent scholarship; the current interpretations of the Terror in the French Revolution, the legitimacy of revolution as a tool of social and political change, and the legacy of the Terror for modern political culture.

INSTRUCTOR(S): J.T. Pekacz

FORMAT: Seminar

PREREQUISITE: One European history course

CROSS-LISTING: HIST 4045.03, HIST 5045.03

### **HIST 3049.03: The First World War.**

Selected topics on the origins, course and consequences of the First World War, including strategic and political decision-making, the Western Front, Gallipoli and the Middle East, economic mobilization and the home fronts, the Eastern Front, the war at sea, and the peace treaties.

INSTRUCTOR(S): C. M. Bell

FORMAT: Lecture

### **HIST 3050.03: Europe and World War Two.**

Selected topics on the origins, conflict and aftermath of the Second World War as this involved Europe, including Nazi foreign and occupation policies, strategic and political decision-making by the Allied and Axis powers, national resistance movements, and the wartime origins of the Cold War.

RECOMMENDED: HIST 2030X/Y.06, 2062.03, 2081X/Y.06, 2021.03, 2040X/Y.06, 2112.03

INSTRUCTOR(S): C. Bell, J. Bingham

FORMAT: Lecture/discussion

PREREQUISITE: One 2000 level class in European or modern British history

### **HIST 3051X/Y.06: Fascist and National Socialist Movements in Europe, 1900-1945.**

Fascism remains one of the most misunderstood and intriguing curiosities of modern history. At the height of its popularity and influence in the period between the World Wars, virtually every European country had one or more groups that were considered fascist or thought of themselves as such: in Germany and Italy, of course, but also in France, Spain, Hungary, Romania, and elsewhere. This class, structured as lecture/discussion, offers students the opportunity to explore the ideals, experiences, aspirations and political realities of this simultaneously threatening and fascinating historical problem.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/discussion

PREREQUISITE: One European history class or permission of instructor

### **HIST 3056.03: The Holocaust: The Destruction of the Jews of Europe, 1933-1945.**

The destruction of most of European Jewry by Nazism and its helpers during the Second World War is studied in the context of centuries-old religious anti-Semitism, nineteenth-century Jewish emancipation and the emergence of racist ideology, the political and social situation of Jews in eastern and western Europe after World War I, "legal" and bureaucratic persecution of German Jews culminating in mass killing at Auschwitz and other death camps, the response of bystander nations to the perpetration of genocide.

RECOMMENDED: HIST 2030.06, 2062.03, 2081.06, 2021.03, 2040.06, 2112.03

INSTRUCTOR(S): J. Bingham

FORMAT: Seminar

PREREQUISITE: One 2000-level class in European History

EXCLUSION: HIST 1990.06, HIST 3055.06

### **HIST 3059.03: Confronting Fascism.**

See class description for GERM 3450.03 in the German section of this calendar.

FORMAT: Lecture/tutorial

CROSS-LISTING: POLI 3449.03, GERM 3450.03

### **HIST 3073.03: History of Marine Sciences.**

See class description for MARI 4664.03 in the Marine Biology section of this calendar.

### **HIST 3075.03: Science and Religion: Historical Perspectives.**

See class description for HSTC 3200.03 in the History of Science and Technology section of this calendar.

### **HIST 3076.03: Science and Religion: Contemporary Perspectives.**

See class description for HSTC 3201.03 in the History of Science and Technology section of the calendar.

CROSS-LISTING: CTMP 3201.03, HSTC 3201.03, RELS 3201.03

### **HIST 3076.03: Science and Religion: Contemporary Perspectives.**

See class description for HSTC 3201.03 in the History of Science and Technology section of the calendar.

CROSS-LISTING: CTMP 3201.03, HSTC 3201.03, RELS 3201.03

### **HIST 3085.03: The Many Faces of Frederic Chopin: Problems in Modern Biography.**

The seminar examines the process of creating biographical representations in history by focussing on Frederic Chopin (1810–1849) and the appropriations of his life, personality and music, that occurred both during his lifetime and after his death. By analyzing how Chopin's images were construed—and the manner in which he fashioned himself—the course explores broader themes, such as biography in historical writing, nineteenth-century paradigm of biography writing, politics of biography, biography and the construction of the subject, biography as a control of cultural memory and the limits of biographical knowledge.

FORMAT: Seminar

PREREQUISITE: One European history course, permission of instructor

### **HIST 3090.03: Russian Society.**

Basic institutions of 20th century Russian society are considered in their historical context, with special attention to the former role of the Party, official culture and literature, the workings of the economy, and social stratification.

RECOMMENDED: RUSN 1000.06, 2000.06

INSTRUCTOR(S): D. Kozlov

FORMAT: Seminar

PREREQUISITE: Some Russian history. Recommended HIST 2021.03 and HIST 2022.03

CROSS-LISTING: HIST 5090.03, RUSN 3090.03

### **HIST 3092.03: Russian Topics.**

Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevism/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and samizdat) and the press, the Cult of Personality, Khrushchev's "Thaw", Brezhnev, Gorbachev, and Yeltsin.

RECOMMENDED: HIST 2020.06 or RUSN 2022.03/2023.03

INSTRUCTOR(S): D. Kozlov

FORMAT: Lecture/discussion

CROSS-LISTING: RUSN 3092.03

### **HIST 3094.03: Vladimir Lenin and Leon Trotsky: Their Life and Works.**

This class examines the intellectual and political biographies of V.I. Lenin and L.D. Trotsky, the main architects of the 1917 Revolution in Russia. Among the questions to be considered are Trotsky's relationships to Lenin and Stalin, their roles in the Revolution and Civil War, their analyses of the New Economic Policy, Trotsky's leadership of the Left Opposition, and their place in the history of Marxist theory and practice. The class will look at secondary literature on Lenin and Trotsky as well as selections from their writings.

INSTRUCTOR(S): Staff

FORMAT: Seminar

CROSS-LISTING: RUSS 3094.03

### **HIST 3096.03: The History of Ideas in Russia - From Official Nationality to Solzhenitsyn's Neo-Slavophilism.**

This class examines some of the main currents in Russian intellectual history from the middle of the nineteenth century through the 1990s. Topics include classical Slavophilism and early Westernism, Populism and Nihilism, Anarchism, Marxism, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sakharov), and neo-Slavophilism (Solzhenitsyn).

RECOMMENDED: HIST 2020.03

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: RUSN 3096.03

**HIST 3102.03: Seminar in Tudor History, 1485-1603.**

This class examines in depth the major events, personalities, and developments of sixteenth-century England. Topics include the dissolution of the monasteries, formation of the state, the reformations in religion and their broader effects, royal propaganda, political culture, and the achievements of the Elizabethan age. Class discussions will rely on detailed readings of primary sources and historiographical debates. Students will be expected to produce a major, well-researched essay. Some prior knowledge of early modern English history is essential.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous British history class

EXCLUSION: HIST 2104

**HIST 3103.03: Seminar in Stuart History, 1603-1688.**

This class examines in depth the principal events of seventeenth-century English history. Topics include: the fear of Catholicism at home and abroad; the causes and course of the civil war, including the growth of radical political thought; the Cromwellian regime; the importance of Parliament; the Restoration; and the Revolution of 1688. Class discussions will rely on detailed readings of primary sources and historiographical debates. Students will be expected to produce a major, well-researched essay. Some prior knowledge of early modern English history is essential.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous British history class

EXCLUSION: HIST 2105.03

**HIST 3105.03: The English Civil War.**

An advanced class on one of the most tumultuous and eventful periods in British history, leading up to and including civil war and revolution 1642 to 1660. Select primary sources will be used in addition to secondary works. Topics to be studied include the social structure of early Stuart England; the Church and its critics; foreign policy; radical politics; religious sectarianism; and the impact of the war and its aftermath on the populace.

INSTRUCTOR(S): K. J. Kesselring

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 5105.03

**HIST 3107.03: The English Family and Household.**

A number of commentators believe that "the family" is in crisis, its stability threatened by declining marriage rates, rising levels of divorce and single parenthood, and the emergence of alternative family forms. But what does the phrase "the family" actually mean? This class ponders the origins of the modern Western family by tracing the history of household organization, family and sexual relations in England between 1500 and 1800. Historians' attempts to define the family and to identify shifts in patterns of family life over time have often sparked controversy, as those who advocate grand explanatory narratives of change have had their views challenged by others who emphasize continuity and complexity. This class will analyze and assess these ongoing debates while encouraging students to make their own contributions through a careful reading of diaries, autobiographical writings, published court records, plays and other primary source materials.

RECOMMENDED: HIST 2104.03, 2105.03

FORMAT: Seminar

PREREQUISITE: Any second-year class in British or European history

**HIST 3108.03: Topics in the Social and Cultural History of England, c. 1500-1850: Madness and Marginality.**

"Marginality" is a sociological term that describes the situation of groups of people who are excluded or persecuted by the dominant culture. This class will examine such groups as witches, prostitutes, vagrants, and those deemed mentally ill. It will study the processes and politics of exclusion and regulation. It will ask how and why groups become labeled as beyond the boundaries of acceptable society and how such labeling affects practice and experience.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous history class

**HIST 3109.03: Topics in the Social and Cultural History of England, c. 1500-1850: Everyday Life.**

Aspects of daily life are often assumed to be "outside" of History, either unchanging or altered simply by natural forces of progress. This class will challenge such assumptions and look at the historically contingent practices

surrounding such things as death, manners, sport, festivity, medicine, and education as experienced in early modern England. The class will address how and why such daily practices change, and the effects of such changes on the larger society.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous history class

**HIST 3113.03: Britain in the Age of the First World War.**

This class examines in depth major themes in British history from 1906 to the early 1920s, including the origins of the First World War, the experience and impact of war, wartime politics and strategy, the decline of the Liberal party and the rise of Labour, and post-war reconstruction.

INSTRUCTOR(S): C. Bell

FORMAT: Lecture/discussion

PREREQUISITE: One of the following: HIST 2111.03; 2112.03; 3112.03;

3314.03; 3116.03; 2030X/Y.06; 2081X/Y.06.

**HIST 3114.03: Britain in the Age of the Second World War.**

This class examines in depth major themes in British history from the early 1930s to the early post-war years, including the Great Depression, Appeasement and the outbreak of the Second World War, the experience and impact of war, wartime politics and strategy, the welfare state, the post-war Labour government and the transition to peace.

INSTRUCTOR(S): C. Bell

FORMAT: Lecture/discussion

PREREQUISITE: One of the following: HIST 2111.03; 2112.03; 3112.03;

3113.03; 3116.03; 2030X/Y.06; 2081X/Y.06

**HIST 3210.03: Canadian Cultural Landscapes.**

This course explores the origins of one "signature" landscape in each province. Contact with different geographies shaped distinctive regional histories; but at the same time, the story of each place is tied to the national narrative. These landscapes also illuminate how nature has been understood, used, and transformed since the fifteenth century.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture and Discussion

CROSS-LISTING: CANA 3020, GEOG 3210.03

**HIST 3220.03: Youth Culture in Canada, 1950s to 1970s.**

The 1950s and 1960s were decades of often startling social change throughout North America in general and Canada in particular. This class will attempt to understand these changes and their impact on our society. The primary focus of the investigation is the popular youth culture of the time, the culture of "sex, drugs and rock n' roll." The class will look at economic and social factors underlying youth culture, at some of the major thinkers who influenced it (such as Marshall McLuhan and Herbert Marcuse), and the responses of authority to youth culture.

RECOMMENDED: HIST 2222.03

INSTRUCTOR(S): T. McCallum

FORMAT: Lecture/tutorial

PREREQUISITE: One previous history class

**HIST 3222.03: Topics in Canadian Social History, Nineteenth and Twentieth Centuries.**

This seminar will explore major themes in Canadian social development. The topics discussed will vary from year to year but will emphasize such themes as: changing values in Canadian society; the nature of popular cultures; the relationship of order and disorder; the family; gender relations; and social classes. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion or seminar

PREREQUISITE: A class in Canadian History

CROSS-LISTING: HIST 5222.03

**HIST 3223.03: The Caring Society? - Welfare in Canada since 1900.**

This class examines changes over the twentieth century in the ways Canadians have dealt with people's needs, their own or others', whether for income, housing, personal care, or other matters of survival and well-being. Both private and government forms of welfare provision will be studied, with the overall purpose of understanding why Canada came to have the kind of welfare state it does. Among

the topics that may be covered are: changing views on the origins and prevention of dependency; definitions of need; religious and ethnic variations in welfare practices; connections between welfare and women's lives; charitable fund-raising; promoters and opponents of government social programs; financing the welfare state; gender, race, constitutional, and class issues in welfare.

INSTRUCTOR(S): S. Tillotson

FORMAT: Lecture/discussion or seminar

PREREQUISITE: A 1000- or 2000-level class in Canadian history

CROSS-LISTING: CANA 3223.03, HIST 5223.03

### **HIST 3226.03: Law and Justice in Canadian Society, to 1890.**

Discussion begins with an exploration of concepts of law and justice among Native Peoples prior to and during the occupation of the continent by the French and British. The class pursues crime and the criminal law as they relate to broader changes within the society and economy of New France, British North America, and Canada. We analyze shifting patterns and perceptions of crime and punishment; the social, economic, political, and ideological significance of the criminal law; the influence of Britain, France and the United States on legal developments. Approved with Canadian Studies.

RECOMMENDED: One previous history class

INSTRUCTOR(S): R. Bleasdale

FORMAT: Lecture/discussion

EXCLUSION: HIST 3225.03

### **HIST 3227.03: Criminal Law, Crime and Punishment in Canadian Society, 1890 to the present.**

Continuing the approach and themes of HIST 3226.03, this class studies crime, punishment, and the criminal law as they reflect social, economic, political, and ideological developments. As appropriate these are placed within their international context, and in particular linked to the American system of law and justice. We pay attention to the impact of technological change on crime, detection of crime, enforcement mechanisms, and alternative means and methods of punishment. Approved with Canadian Studies. RECOMMENDED: One previous history class

INSTRUCTOR(S): R. Bleasdale

FORMAT: Lecture/discussion

EXCLUSION: HIST 3225.03

### **HIST 3245.03: French Canada.**

Given in English for English-speaking students, this class studies the development of French-Canadian nationalist politics in their social, cultural, philosophic and economic contexts. While the emphasis is on Quebec-Canada relations, French-Canadians in the Maritimes, Ontario and the West will also be studied.

INSTRUCTOR(S): S.M. Tillotson

FORMAT: Lecture/discussion

PREREQUISITE: One class in Canadian history, or instructor's consent

CROSS-LISTING: CANA 3245.03

EXCLUSION: HIST 2240.03

### **HIST 3260.03: History of the Canadian West.**

This class takes a thematic approach within a chronological framework, exploring social, economic and political topics in the development of Western Canada. Among the themes considered are Native economies, political dissent, labour radicalism, ethnic relations, and federal-provincial relations. Approved with Canadian Studies.

FORMAT: Seminar or lecture/discussion

PREREQUISITE: A class in Canadian history

EXCLUSION: HIST 2250.03

### **HIST 3273.03: Nova Scotia: Pre-Confederation.**

An exploration of character and circumstances in the history of provincial society, from the era of European "invasion" to the debate over entry into British American union. Approved with Canadian Studies.

FORMAT: Seminar

PREREQUISITE: One Canadian History class or instructor's consent

EXCLUSION: HIST 3270.06

### **HIST 3274.03: Nova Scotia: Post-Confederation.**

This class surveys the history of Nova Scotia from the 1860s to the present. Topics include the debate over Confederation, the nature of Victorian society, the world wars, economic upheavals of the 1920s and 1930s, aboriginal and black communities, heritage and tourism, and Nova Scotia's political and intellectual relationship with the rest of Canada.

FORMAT: Seminar or lecture/discussion

PREREQUISITE: One Canadian History class or instructor's consent

EXCLUSION: HIST 3270X/Y.06

### **HIST 3282.03: Public History.**

This course explores major issues and debates in the practice of history outside the academy. Against such theoretical concepts as the usable past and the challenge to the national narrative, we will examine critically the presentation and politics of history in the arts, media, historic places, memorials and state policy.

FORMAT: Lecture/discussion

PREREQUISITE: One second-year course in history

EXCLUSION: HIST 3222.02 in 2005-2006

### **HIST 3293X/Y.06: The Political Economy of the Car: Fordism and Post-Fordism in International Perspective.**

This class examines the emergence and transformation of the global economic system known as Fordism, beginning with Henry Ford's revolutionary marriage of mass production with mass consumption in 1914. Topics to be explored include: technological change in the workplace; the relationship between industrial unionism and radical political movements; the gender, racial and religious politics of Fordism; and the growth of mass culture in the era of mechanical reproduction. NOTE: Credit can only be given for this class if X and Y are completed in

consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): T. McCallum

FORMAT: Seminar

PREREQUISITE: At least one previous History credit; second-year standing or better

EXCLUSION: HIST 3292

### **HIST 3300.03: Topics in the History of the Americas, 1450-1870.**

This course examines aspects of the historical development of the Americas from the beginnings of European imperialism in the fifteenth century to the emergence of nation states in the nineteenth century. It explores topics such as relationships between Aboriginal and European peoples; religion and socio-economic development; popular culture and gender; imperialism and the slave trade; the development of slavery; the rise of revolutionary ideologies; the American and Haitian Revolution; and the impact of civil wars.

INSTRUCTOR(S): J. Bannister

FORMAT: Lecture/discussion

PREREQUISITE: Any one of HIST 2331, HIST 2006, HIST 2007, or permission of instructor

### **HIST 3333.03: The American Archives.**

This course is designed to introduce students to the use of American historical archives. It will be taught only as a summer course and students will spend one week working at the Kennedy archives in Boston or the National Archives in Washington DC. During the course students will be researching a paper they have already completed on America in the Sixties. It is expected that by the end of the course students will be able to send their papers to an undergraduate journal for publication.

The archives can only accommodate a maximum of 12 students at a time. Students will need to have registered for this course, purchased their tickets, and secured accommodation by April 20th. Check with instructor for a confirmation about the location to be visited this year.

FORMAT: Seminar

PREREQUISITE: Students must have written a third year history paper on some aspect of America in the Sixties.

### **HIST 3350.03: Family and Community in North America, 1600-1900.**

The family in North American society, from when the family was a model for social relations to the time when it was idealized as a private refuge. Among the topics considered are the role of the family in rural and urban communities, the demographic transition from high fertility and mortality, the reduction of the family's economic and educational autonomy, the role of ideology in shaping sex roles and child rearing, and the relations of family and community according to ethnic group, class and economic setting.

RECOMMENDED: A class in the sociology or social anthropology of the family

FORMAT: Lecture/discussion

CROSS-LISTING: GWST 3300.03

### **HIST 3358.03: Slavery, Gender, and Power: Women in Nineteenth Century America.**

This course studies the tangled histories of slavery and gender in nineteenth century America. Principal topics include the lives of female slaves, the cult of domesticity, the rise of early feminism, the role of women in the destruction of slavery, and the tension between gender and race.

FORMAT: Seminar

CROSS-LISTING: GWST 3358.03

### **HIST 3360.03: Enslavement and Emancipation: African-Americans in the U.S. South to 1900.**

This class examines slavery as a system of racial subordination and economic exploitation. Attention is given to the social, familial, and cultural life of the slaves, the role of slavery in shaping southern nationalism and national racial beliefs, and to reconstruction after the Civil War.

RECOMMENDED: HIST 2332.03

INSTRUCTOR(S): P. Riley

FORMAT: Seminar

PREREQUISITE: One second-year United States history class

### **HIST 3361.03: The American Civil War and Reconstruction.**

The Civil War, occasioned by the formation of the Southern Confederacy and the Union government's refusal to recognize the existence of a separate southern nation, was a pivotal moment in the history of the United States. This class will examine the causes of the war, the forces behind slave emancipation, the military fortunes of the two combatants, and the efforts undertaken by the victorious society to alter the polity of the defeated South.

RECOMMENDED: HIST 2332.03

INSTRUCTOR(S): P. Riley

FORMAT: Seminar

### **HIST 3365.03: Vietnam War [Hi]stories.**

This course is designed to introduce students to the impact of American involvement in the war in Vietnam. It will cover the major issues of the war including the political and social conditions in Vietnam; the reasons for American involvement; the development of United States policy toward Indo-China; the military conflict itself, and the legacy of the war. Rather than concentrating on the events as they unfolded, however, this course will focus on questions of interpretation and methodology. Toward this end, classes are designed to introduce students to both the historiography of the period under question and to some of the theories historians have used to think about and/or interpret the American experience in Vietnam.

CROSS-LIST: 5365.03

INSTRUCTOR(S): S.J. Corke

FORMAT: Lecture/discussion

PREREQUISITE: Any 1000 or 2000 level North American history course

### **HIST 3367.03: The History of Modern Intelligence in War and Diplomacy.**

Intelligence, or accurate up-to-date information about unfolding world events, is crucial to the successful conduct of foreign policy. Nations survive or prosper based on their ability to gather, evaluate, understand and use information about the world. This class is designed to introduce students to the study of intelligence and how various intelligence systems function. The goal of the class is to enhance students' understanding of national intelligence communities in Britain, Canada, Russia and the United States. By examining the history of four different intelligence communities, we will begin to think critically about how intelligence fits into the policy process and how it is managed and controlled by the various governments.

INSTRUCTOR(S): S.J. Corke

FORMAT: Lecture/seminar

### **HIST 3369.03: America in the 1960s.**

The "long sixties" – a period from the mid-fifties through the early seventies – was an extraordinary time in American history when a number of different groups attempted to transform American society. In many ways they were successful, and we are still living with the legacy of the sixties today. This course is designed to introduce students to the numerous issues, conflicts, and problems that confronted Americans in the 1960s. The course will focus on the various movements of social reform that characterized this period. We will also discuss the rise of the "new left" and the "new right" and what these ideological movements meant for American political culture. The overall goal of the course is to encourage students to think about how individuals adjust their values to fit a particular political and

cultural climate. Why do some people conform to political and social values, while others do not? Students will come at these questions from a variety of perspectives. Art, film, fiction, and music will be used throughout the course.

INSTRUCTOR(S): S.J. Corke

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2340.03 or HIST 3367.03 or HIST 3372.03 or instructor's permission

### **HIST 3370.03: North American Landscapes.**

This course is an introduction to the history of landscapes in North America from the fifteenth century to the present day. Each week we will explore how nature has been understood, used, and transformed in a variety of different places across the continent, and how the history of these landscapes tie into the larger histories of Canada and the United States.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture/seminar

CROSS-LISTING: HIST 5370.03

### **HIST 3372.03: The Cuban Missile Crisis.**

This course is designed to introduce students to the history of the Cuban Missile Crisis. In the class students will examine both Russian and American primary and secondary sources. The goal is to provide students with the necessary skills to think critically about how scholars historicize the past.

INSTRUCTOR(S): S. J. Corke

FORMAT: Lecture/seminar

### **HIST 3373.03: Spying on the World: The CIA in American History.**

This course is designed to introduce students to the History of the Central Intelligence Agency. Over its history the CIA developed into one of the most infamous government agencies in American history. During the course students will examine topics such as the history of US Propaganda, political warfare, covert operations, spying, counter-intelligence and cryptography.

FORMAT: Lecture

### **HIST 3374.03: The Objectivity Question in American History**

This course is designed to introduce students to the historiographical trends in American history. By examining some of the major historical topics of the last century including the Civil War, World War One, Progressivism, World War Two, the Holocaust, The Cold War and The Vietnam War. The course examines whether American historians have been successful in their quest for objectivity.

FORMAT: Lecture/Discussion

PREREQUISITE: A second year history course

### **HIST 3380.03: Slavery and Freedom in the Americas.**

This course will take a broad perspective on slavery by examining some of the defining features of forced labor throughout the Americas over the course of four centuries (with occasional examples from elsewhere in the world). To complicate the overly simplistic slave-free dichotomy and develop a more nuanced understanding of the denial of freedom, we will investigate not only chattel slavery but other systems of free and unfree labor that existed in the Americas, such as the *encomienda*, convict labor, debt bondage, *serfdom*, pauper apprenticeship, poorhouse and prison work, indentured servitude and wage labor. We will consider definitions and justifications of slavery (including racist ideology) that have been used by past and present theorists. To better understand the extent to which the working environment shaped the lives of the enslaved, we will compare the living and working conditions of laborers in a range of historical settings. We will conclude with a survey of the rise of free labor ideology, the impact of emancipation in the Americas and a glance at forced and free labor systems in the new millennium.

INSTRUCTOR(S): J. Roberts

FORMAT: Seminar

### **HIST 3390.03: Latin America: Revolution and Repression.**

This class explores the experiences of revolution and repression in post-colonial Latin America. Focusing on twentieth-century Chile, Guatemala, and Mexico, we will explore the making and unmaking of revolutionary political projects, paying particular attention to matters of race, class, and gender.

INSTRUCTOR(S): B. Cowan

FORMAT: Lecture/discussion

PREREQUISITE: Any second-year history class or permission of the instructor

EXCLUSION: HIST 3391.03, HIST 3392.03



### HIST 3393.03: Indigenous Movements in Latin America.

This course considers the historical experiences of Latin American indigenous peoples. We explore four periods in postcolonial Latin American indigenous history: the early republican era (1800s-1910); the rise of pro-indigenous policies and activism (1920s-1930s); the submersion of indigenous issues to a class-based agenda (1940s-1970s); and the return of indigenous movements (1973-present).

INSTRUCTOR(S): B. Cowan  
FORMAT: Lecture/discussion

### HIST 3394.03: Slavery, War and Piracy in the Early Caribbean.

The Caribbean was a world of rapid riches, constant brutality and death and it was the central interest of European powers as they expanded to the Americas. This course will explore the politics, economics societies and cultures on the islands within the Caribbean Sea and the mainland territories bordering on it during the early modern era. It will conclude by examining how this world was changed by the dismantling of the slave system and the age of revolutions. The course will demonstrate exactly why this region became the most important, economically, within the Americas and why European powers were so intent on defending it.

FORMAT: Seminar/Lecture

### HIST 3430.03: The Making of Colonial Africa, c. 1850 - 1930.

European colonial rulers and business interests laid out the framework of the sub-Saharan African colonial order from about 1850 to the 1920s, seeking ways to exploit African labour and natural resources. But imperial plans were limited and sometimes frustrated by African interests, and by historical dynamics within Africa, such as the rise of new merchants and Islamic revolution. This class assesses how the realities of Africa intersected with European imperial ambitions to profoundly change African society during this early colonial period.

INSTRUCTOR(S): P. Zachernuk

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 5430.03

### HIST 3431.03: Struggles in The City: Labour, Migration and Urban Life in Colonial Africa.

There were many important urban centres in pre-colonial Africa; however, colonialism and industrialization changed both the pace and nature of urbanization. Old cities grew and new cities and mining settlements were established. Africans came to labour in these colonial cities for a host of reasons - some were forced off their homesteads when settlers and colonial governments appropriated vast tracts of land, others needed to enter the cash economy to pay colonial taxes; women and men sought new opportunities and adventure. This movement to the cities transformed the lives of millions of Africans. This course will focus on the lives of these urban dwellers, the development of urban cultures, the gendered character of urbanization, the creation of new social, political, economic and criminal networks, conflict and cooperation amongst urbanites, and the nature of colonial oppression and control in the cities.

INSTRUCTOR(S): G. Kynoch, P. Zachernuk

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 5431.03

### HIST 3435.03: The Rise and Fall of African Slavery.

Many African societies, like pre-industrial societies elsewhere, used slaves as well as other forms of labour for a variety of purposes. The rise of external slave trades after 1700 — notably across the Atlantic and Sahara — transformed many African societies into specialized slave exporters. As external slave trades declined in the 19th century, many African economies used extensive internal slave labour to produce exports, a pattern colonial governments were slow to change in the 20th century. This class examines these changes in African slavery, and how they affected such issues as gender relations and class structure.

INSTRUCTOR(S): P. Zachernuk

FORMAT: Lecture/discussion

### HIST 3451.03: Southern Africa to 1860.

Examines the history of Southern Africa before the coming of the mineral revolution. The class focuses on South Africa, but with a regional perspective. Themes include the nature of Khoi and San societies, the expansion of Bantu-speakers, Dutch settlement and administration of the Cape area, the rise of the Zulu, Shaka's empire and the mfecane, the British takeover from the Dutch, the impact of the humanitarian movement and the Great Trek, African states and kingdoms in the nineteenth century, and the formation of the Boer Republics.

INSTRUCTOR(S): G. Kynoch

FORMAT: Lecture/discussion

### HIST 3452.03: South Africa since 1860.

The class examines not only the changes in race relations and politics, but also the effects of mining and other industries on rural and urban societies after the discoveries of diamonds and gold. Themes will include a regional perspective on British policies and the "imperial factor", the growth of Afrikaner and African nationalism, the Boer War and unification, the development of apartheid and South Africa's relations with the wider world.

RECOMMENDED: HIST 3451.03

INSTRUCTOR(S): G. Kynoch

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 5452.03

### HIST 3470.03: Wars and Revolutions in Nineteenth-Century Africa.

Africa in the nineteenth century was profoundly reshaped by a complex set of events. Muhammed Ali undertook to modernize Egypt. New Islamic states founded in the west developed plantation economies of unrivaled size. On the Atlantic coast, merchant princes made their fortunes supplying tropical goods for Europe's Industrial Revolution. In Central Africa the search for slaves and ivory both wreaked havoc and stimulated new states. In the south, the rise of Zulu power generated waves of conquest and consolidation. This class assesses the extent to which Africa was reshaped in the revolutionary century before colonial partition.

INSTRUCTOR(S): P. Zachernuk

FORMAT: Lecture/discussion

PREREQUISITE: Any 2000-level African history class or permission of the instructor

### HIST 3471.03: Wars and Revolutions in Twentieth-Century Africa.

Africa as portrayed in the Western media is a continent plagued by bloody conflicts. All too often these conflicts have not been carefully explained, rather they have been written off as "tribal" squabbles or incomprehensible episodes of barbarism. This course will examine several types of conflicts throughout the twentieth-century and will seek answers to such questions as: What initiated these conflicts? What were the combatants fighting for? How did these conflicts influence wider social, economic and political developments? In what ways did colonial policies and the colonial legacy influence African conflicts? What role has the international community played in African conflicts? What roles have African elites or local communities played in these conflicts? Grappling with these questions will allow us to move beyond simplistic explanations to acquire a better understanding of the wars and revolutions that have so marked twentieth-century Africa.

INSTRUCTOR(S): G. Kynoch, P. Zachernuk

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 5471.03

### HIST 3500.03: Topics in Global History.

This is a special course dedicated to those topics that comprise multi-regional, global themes in the early modern and modern eras. Topics will vary, but possible course themes include: History of Slavery from a Global Perspective, Rise of Early Modern world-systems, and Colonialism and Ideology in Asia and Africa.

FORMAT: Lecture

PREREQUISITE: Instructor permission

### HIST 3502.03: Thucydides and the Greek World at War.

See class description for CLAS 3502.03 in the Classics section of this calendar.

FORMAT: Seminar

CROSS-LISTING: CLAS 3502.03

### HIST 3509.03: Arab Caliphs, Turkish Commanders, and Persian Viziers: Islamic History, 750-1200.

The focus of this class will be the different manifestations of Islamic civilization as it reached its zenith under a series of caliphates and sultanates across Spain, North Africa, the Levant, Iran, Central Asia, and South Asia between 750 and 1400. Emphasis will be placed on the role of heterodoxy and the emergence of numerous Islamic communities and movements (shi'ites, Sufis) as the `Abbasid empire (750-1258) struggled to maintain political and doctrinal unity. There will also be a discussion of the Turkic migrations and the corresponding rise in Turkic Islamic sultanates such as the Saljuqs and the Ghaznavids in the East, and how such developments were mirrored by the establishment of a number of Crusader

states in the Holy Land. Lastly, we will examine the invasions by the Mongol khans and their devastating effect on the central Islamic world. This class will also discuss the incorporation of Hellenistic culture during the Abbasid period and the rise of Mutazilite ('rationalist') thought, notably in physical sciences, political studies, and philosophy, and how such syncretism was also reflected in terms of mysticism, art, architecture, and literature in the East as Islamic culture interacted with Zoroastrian, Buddhist and Hindu culture in Iran, Central Asia, and India.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2501.03 or HIST 2503.03 or CLAS 1010.06

CROSS-LISTING: CLAS 3601.03

### **HIST 3510.03: Sultans and Shahs: Politics and Religion in the Islamic Gunpowder Age (1500 - 1800).**

Until the devastating Mongol invasions of the 13th century, the principal centers of Islamic power, culture, and thought had been based in Cairo and Baghdad. This class will examine the post-Mongol Islamic world, and how politics and religion were irrevocably changed with the annihilation of the Sunni Abbasid caliphate. Religious heterodoxy, combined with the power vacuum left by Chingiz Khan and his descendants, allowed for the emergence of a number of unique Turkmen states in Western Asia, the most famous being the Ottoman Turks of Anatolia. By 1500, innovations in military technology and the paper-making industry allowed for the emergence of centralized and bureaucratically-sophisticated 'gunpowder' empires in western and south Asia. This class will discuss the three most significant of these: the Ottoman Turks (based in Istanbul), the Safavid Persians (based in Isfahan), and the Mughal Indians (based in Delhi). Areas of focus will include: issues of political legitimacy, use of military 'slave' corps, orthodox and popular religious movements, tensions between nomadic and sedentary segments of society, innovations in cultural expression (poetry, art, architecture), scientific and philosophical development, and the penetration and impact of the Portuguese, English, Dutch, and French 'world economies' into Asia and the Indian Ocean. This course will also examine different debates regarding the 'decline of the East', and introduce the theoretical implications of how the Islamic world is approached by contemporary scholarship.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2501.03 or HIST 2502.03 or HIST 2503.03 or HIST 2504.03 or CLAS 1010.06

CROSS-LISTING: COMR 3510.03, HIST 5503.03, RELS 3510.03

### **HIST 3511.03: Ancient and Medieval History of the Persianate World.**

This class is dedicated to studying those periods from antiquity to the medieval age where parts of Asia were influenced and defined by the Persian language and culture (i.e. Iran, the Caucasus, the Steppe, Mesopotamia, Central Asia, Anatolia, South Asia). This class will begin with examining the Aryan invasions of the 2nd Millennium B.C.E., and the eventual establishment of the Median and Achaemenid empires in the 7th – 6th centuries B.C.E. The Persian Wars between the Persians and the Greeks, culminating with Alexander the Great's invasion and the establishment of a Perso-Hellenistic state in the 4th century B.C.E. will be studied along with various issues associated with ancient Iran and Central Asia (Zoroastrianism, Manicheanism, Nestorian Christianity, Buddhism) during the Achaemenid, Seleucid, Parthian, and Sasanian periods. This course will also examine the impact of the Arab Muslim invasions on Iran and Central Asia in the 7th, 8th, and 9th centuries, and the contribution of Persian civilization to the growth and success of Islam during the Abbasid period (750-1258). Strong emphasis will be placed on examining various aspects of Persianate culture, namely poetry, literature, art, architecture, philosophy, and mysticism in the medieval period.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2501.03 or HIST 2503.03 or CLAS 1010.06

CROSS-LISTING: CLAS 3602.03

### **HIST 3512.03: Modern History of Iran.**

This class will examine Iran from the 19th to the 21st centuries. It will begin with an examination of the Qajar dynasty and its responses to the imperial ambitions of Russia and England in the late 19th and early 20th centuries. In terms of Iranian domestic politics, we will look at the Constitutional Revolution of 1906, the rise and establishment of the Pahlavi regime, and the course of Iranian politics in an era of burgeoning nationalism as seen in the Mosaddegh period and the subsequent CIA-orchestrated coup d'état in 1953. Particular focus will be placed on Reza Shah's monarchy, and the implications of the Revolution in 1979, not only in Iran, but throughout Afghanistan, Pakistan, and the Gulf Region. This

course will continue with the impact of the Islamic Republic of Iran in terms of the Iranian culture, religion and politics.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2502.03 or HIST 2503.03 or HIST 2504.03

EXCLUSION: First-year students.

### **HIST 3513.03: From Cairo to Cape Town: Religious Revival, Identity and Colonialism in Muslim Africa.**

This course aims at introducing students to a number of themes and issues related to the history of Islam in nineteenth and twentieth century Africa.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

EXCLUSION: HIST 3551.03 in 2006-07

### **HIST 3515.03: Food for Thought: History and the Culinary Cultures of the Islamic World.**

The symbol and meaning of food transcend pleasure and necessity. This course explores aspects of Islamic history through the lens of the culinary cultures in Muslim societies. It treats food as an essential factor in creating and shaping identities, social space and political discourses.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

### **HIST 3551.03: Topics in Modern History.**

This class will explore major themes in the history of the 19th and 20th centuries. Topics discussed will vary from year to year, but the class will involve an in-depth examination of a selected subject in modern history, and may include an historiographical, comparative, or interdisciplinary dimension.

FORMAT: Lecture/tutorial or seminar

PREREQUISITE: Permission of the instructor

### **HIST 3750.03: Social History of Seafaring: Maritime Culture in the Age of Sail.**

An examination of our maritime heritage. Within the context of these overlapping periods - the age of discovery, the age of sail, and the age of steam - the focus is on the development of merchant and naval fleets; the roles of the state, capital, and labour; and the features of seafaring culture. Special emphasis is given to the shipping industries and maritime traditions of this region. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: One class in history or permission of the instructor

### **HIST 3920.03: Flesh and Bones in the British Atlantic.**

What is a healthy body? How should we keep sickness at bay? How should we treat a sick body? In the early modern world, people grappled with the same basic questions about health and sickness that we do today. Obesity scares, health fads, quack doctors and alternative medicines are not recent phenomena. They have a long history. In this course we will explore the fascinating ways in which the inhabitants of the early modern British Atlantic understood both their own body and the diseased and healthy bodies they encountered. We will examine the ways in which people in the early modern era interpreted bodily differences and created bodily norms.

FORMAT: Lecture and Discussion

### **HIST 3990.03: In Search of the Philosopher's Stone: The History of European Alchemy.**

See class description for EMSP 3321.03 in the Early Modern Studies section of this calendar.

FORMAT: Lecture/seminar

CROSS-LISTING: HSTC 3121.03, EMSP 3321.03

### **HIST 4001.03: Directed Readings.**

This is a class of individual instruction. Students may only register for this class with the written permission of a Faculty member and the Undergraduate Coordinator.

### **HIST 4003.03: Medieval Civilization.**

Each year several topics are chosen, broad enough to be used as central themes in the context of which medieval civilization may be closely examined; for instance, monasticism, universities, peasants and popular culture. Such topics are studied in some depth, where possible using original sources in translation, and recent periodical literature and/or monographs. Students master the basic work in certain areas, but are also encouraged to develop particular topics more thoroughly. Class

discussions are used to unravel contentious or difficult aspects. Students are required to contribute to such discussions and to write one major research paper. Some prior knowledge of medieval European history is essential.

INSTRUCTOR(S): C.J. Neville

FORMAT: Seminar

PREREQUISITE: HIST 2001.03 or 2002.03 or 3002.03 or 2101.03 or permission of the instructor

CROSS-LISTING: HIST 5701.03

### **HIST 4004.03: Crime and Society in Post-Conquest England.**

This class explores the development of the criminal law in England between 1066 and 1500. After some introductory lectures on the legacy of Anglo-Saxon legal notions and the creation of the royal system of justice known as the "eyre," attention is given to a study of the development of a more sophisticated hierarchy of courts: the local tribunals presided over by justices of the peace and sheriffs, itinerant sessions headed by the justices of assize, and the central court of the King's Bench. The origins and elaboration of particular offences, including treason, felony (murder, rape, arson, burglary, and larceny), and trespass are examined. Emphasis is placed on the social aspects of crime in medieval England, and extensive use is made of recent periodical literature dealing with crime and its effect in this period. Students are required to contribute to weekly discussions of these materials and to write one major research paper. Some prior knowledge of English history is essential.

INSTRUCTOR(S): C.J. Neville

FORMAT: Seminar

PREREQUISITE: HIST 2100.06 or 2101.03 or HIST 3003.03 or permission of the instructor

CROSS-LISTING: HIST 5704.03

EXCLUSION: HIST 3004.03, 3007.03, 3009.03, and 3010.06

### **HIST 4045.03: The French Revolution.**

The seminar will focus on current interpretations of the French Revolution. Each time the seminar is offered, it may focus on a specific theme related to the French Revolution. This may include: controversy over the origins of the French Revolution since the collapse of the Marxist "consensus" in the 1960s, and the attempts to resolve the controversy in the most recent scholarship; the current interpretations of the Terror in the French Revolution, the legitimacy of revolution as a tool of social and political change, and the legacy of the Terror for modern political culture.

INSTRUCTOR(S): J.T. Pekacz

FORMAT: Seminar

PREREQUISITE: One European history course

CROSS-LISTING: HIST 3045.03

### **HIST 4061.03: Prelates, Peasants and Primates: From Italian History to the Behavioral Sciences.**

Prelates Peasants and Primates is a directed readings course with an interest in the social sciences as they apply to historical societies. Weekly readings of classic historical scholarship will be complemented by articles and chapters of books drawn from works of sociology, evolutionary psychology, primate ethology, social psychology, and anthropology.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

PREREQUISITE: Early modern Europe course

CROSS-LISTING: HIST 5061.03

### **HIST 4090.03: Soviet History Seminar.**

This is an advanced seminar on the history of Soviet Russia from 1917 to 1991. We will explore the origins, mechanisms, costs, and outcome of perhaps the most ambitious and tragic historic experiment at creating a modern yet equitable society in a country far from conducive to such an undertaking.

FORMAT: Lecture

CROSS-LISTING: RUSN 4090.03

### **HIST 4104.03: Punishment, Crime, and the Courts in Early Modern England, c. 1550-1850.**

This class explores the nature and development of the English criminal justice system during the period in which it first began to be exported to other areas, and at home had to deal with the turmoil wrought by reformation, war, and industrialization. This class will examine the uses of the law – did it act in the interests of particular people or groups, and if so, how? Historians have argued that the law had both coercive and symbolic purposes – that it served to enforce and legitimize social and economic structures. We will examine these arguments and their implications. Classes will progress thematically rather than

chronologically; some will be devoted to a particular type of punishment, some to the different groups of people involved in the legal process, and others to historical debates.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: Any class in pre-20th-century British History

CROSS-LISTING: HIST 5104

### **HIST 4105.03: The English Civil War: Society, Religion, and Politics, 1603 - 1660.**

An advanced class on one of the most tumultuous and eventful periods in British history, that leading up to and including civil war and revolution 1642 to 1660. Select primary sources will be used in addition to secondary works. Topics to be studied include the social structure of early Stuart England; the Church and its critics; foreign policy; radical politics; the military course of the war; religious sectarianism; and the impact of the war and its aftermath on the populace.

FORMAT: Seminar

PREREQUISITE: Any class in medieval or early modern British history

CROSS-LISTING: HIST 5105.03

### **HIST 4106.03: Topics in Early Modern English History.**

Topics to be studied will vary from year to year, and may include the religious reformations, print culture, political protest, and state formation. The course will offer students the opportunity to examine in depth key features of English history in the sixteenth and early seventeenth centuries.

FORMAT: Seminar

PREREQUISITE: HIST 2106.03

CROSS-LISTING: HIST 5106.03

### **HIST 4110X/Y.06: Rome and the East.**

See class description for CLAS 4535.06 in the Classics section of this calendar.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### **HIST 4117.03: Winston Churchill.**

This course is not designed to examine every aspect of Winston Churchill's life; rather, it focuses on major events in British and world history in which Churchill was a leading actor. Subjects for discussion may include: social reform and the welfare state; the return to the gold standard; Ireland; India, empire and decolonization; appeasement; grand strategy in the two world wars; the Anglo-American "Special Relationship"; and the Cold War. This course will also examine the historiography of these subjects and the impact of Churchill's own extensive writings in shaping the historical records.

INSTRUCTOR(S): C.M. Bell

FORMAT: Seminar

PREREQUISITE: HIST 3050.03 or permission of the instructor

### **HIST 4162X/Y.06: Advanced Seminar in Baroque Culture.**

Taught at the State Castle, Cesky Krumlov in the Czech Republic, this class offers upper-level students in History, Theatre and related disciplines the opportunity to study European Baroque culture while surrounded by its material traces. Topics covered include: seventeenth-and eighteenth-century theatre and opera; historical costume; Baroque court life; and/or the history of Central Europe.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): G. Hanlon, Staff

FORMAT: Lecture/tutorial

CROSS-LISTING: THEA 4735.06

EXCLUSION: THEA 4733.03, HIST 4160.03

### **HIST 4222.03: Topics in Canadian Social History, Nineteenth and Twentieth Centuries.**

This seminar is an opportunity to explore in depth a specific theme or issue in Canadian history. The exact topic will vary from year to year, but will focus on some aspect of social, political or cultural history. The subject may be regional or national in scope. Past examples include cowboys in the North American west, native-newcomer relations, and the social history of health. Weekly discussions and a research paper emphasize historiographical debates as well as its significance to the story of Canada. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: A Canadian History class at the 3000 level or permission of the instructor

CROSS-LISTING: HIST 5222.03

### **HIST 4250.03: Popular Culture in the Atlantic World, 1650-1850.**

This course examines the history of popular culture in the Atlantic world. It focuses on using primary sources, such as diaries and journals, to explore the culture and customs in pre-industrial communities. We will discuss topics such as family relationships, popular ideologies, religious practices, economic culture, the role of gender, and attitudes towards sex. In addition to participating in weekly seminar discussions, students will present drafts of their research papers in class, and a revised version of the paper will be submitted at the end of term.

INSTRUCTOR(S): J. Bannister

FORMAT: Seminar

PREREQUISITE: HIST 2006.03 or HIST 2007.03 or 2271.03 or 3750.03 or permission of the instructor

CROSS-LISTING: HIST 5250.03

EXCLUSION: HIST 4222 (Fall 2004 and Fall 2005)

### **HIST 4255.03: Justice, Freedom, and the State in Twentieth Century Canada.**

Debates about justice and freedom took tangible shape in 20th century Canada as new agencies were created at all levels of government. People who promoted the expansion of government claimed to be building a better Canada, where the challenges of enhancing both freedom and equality would be met by the building of democratic society. In this class, we consider whether or to what extent that was, in fact, what happened.

FORMAT: Seminar

PREREQUISITE: HIST 2231.03 or HIST 2221.03, or HIST 2222.03 or HIST

2261.03, HIST 3223.03 or HIST 3227.03 or permission of instructor

CROSS-LISTING: HIST 5255.03

### **HIST 4260.03: Cowboys in North American History and Culture.**

The cowboy is one of North America's most influential icons. This class examines the history of the ranching industry, and its role in such larger issues as land-use conflicts, models of masculinity, and race relations. We will then explore the representation of the cowboy in political and popular imagery, as in national identities, the arts and media, rodeos and exhibition, in Canada and the United States.

INSTRUCTOR(S): C. Campbell

FORMAT: Seminar

PREREQUISITE: One full credit in Canadian or American history.

EXCLUSION: HIST 4222 in 2007-08

### **HIST 4300.03: Topics in Latin American History.**

This seminar course involves a close examination of a select theme in Latin American history. The specific theme varies from year to year, and themes may be regional or continental. Possible topics include race and nation, gender and sexuality, or political radicalism. The bulk of the work involves preparation of a significant research paper and discussion of weekly readings.

INSTRUCTOR(S): B. Cowan

FORMAT: Seminar

PREREQUISITE: Any Latin American history class

### **HIST 4360.03: Slavery and American Political Culture.**

This course studies the relationship between slavery and American political culture from the Revolution until the Civil War. Major themes will include the expansion of American slavery, the political ideology of slaveholders, racism in American life, and the antislavery arguments of abolitionists and runaway slaves.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P. Riley

FORMAT: Seminar

### **HIST 4400.03: Topics in African History.**

This class will undertake a careful, in depth examination of a select theme in African history. The theme will vary from year to year, but the aim will be to probe the deep complexities of Africa's past that recent scholarship is bringing to light. Themes may be regional or continental, and could include such topics as witchcraft, resistance, urban history, religious change, migration, or nationalism. The core of the work will be a significant research paper and seminar presentations. Classes will also involve the reading, presentation, and discussion of selected readings.

INSTRUCTOR(S): G. Kynoch, P. Zachernuk

FORMAT: Seminar

PREREQUISITE: At least one third-year African history class or permission of the instructor

CROSS-LISTING: HIST 5400.03

### **HIST 4401.03: State Violence, Communal Conflict and Criminality in Modern South Africa.**

South Africa is plagued by one of the world's highest rates of violent crime and social conflict. Despite the unprecedented level of public concern with violence, little attention is paid to the historical origins of this phenomenon. This course explores the changing patterns of crime and violence since the 1890s.

INSTRUCTOR(S): G. Kynoch

FORMAT: Seminar

CROSS-LISTING: HIST 5401.03

### **HIST 4404.03: Crime and Punishment in Modern Africa.**

This course will explore the extent to which state legitimacy and power can illuminate the trajectories of crime, policing and punishment from early colonial era in Africa to the present day.

INSTRUCTOR(S): G. Kynoch

FORMAT: Seminar

### **HIST 4475.03: African Intellectuals and the Modern Experience.**

African thinkers have long pondered the challenges of the modern era, and have established lines of thought with which African intellectuals now address Africa's profound problems. But this engagement with the modern world has moved through different phases, just as the social location of the African intelligentsia has changed over time. This class will explore this intellectual history by setting specific writers in context, and then examining their original writings to ponder such questions as: What were the roots of "African Christianity"? How did African intellectuals respond to "scientific" racism? What was the appeal of Pan-Africanism? What was Negritude? How socialist was African socialism? How do postmodern insights about the invention of identity affect the idea of being "African"?

INSTRUCTOR(S): P. Zachernuk

FORMAT: Seminar

CROSS-LISTING: HIST 5475.03

EXCLUSION: HIST 3475.03

### **HIST 4500.03: Topics in Modern History.**

This seminar is intended specifically for students in the 20-credit Major and Honours degree programs in History. The specific content of the seminar varies from year to year, but generally involves examination of a subject in history in some depth, and may include an historiographical, comparative, or interdisciplinary dimension.

FORMAT: Seminar

PREREQUISITE: Permission of the instructor

CROSS-LISTING: HIST 5500.03

### **HIST 4510.03: Topics in Islamic and Middle East History.**

This is a special course dedicated to a topic dealing with the Islamic world/Middle East from the medieval era to the present. Topics will vary, but possible course themes include: political thought in Islam, slavery in Islamic civilization, Nationalism and Ethnicity in the Middle East, and Women in the Islamic world.

FORMAT: Seminar

### **HIST 4545.03: Scripture and Statecraft: History of Islamic Political Thought.**

This class is dedicated to understanding how Arab-centric tribal relations and networks initially defined Islamic politics in 7th-century Arabia, and how these definitions were later influenced by external 'imperial' and 'kingly' traditions (from Byzantines, Iranians, Indians). Muslim concepts of authority, however, were and still are defined by prophetic genealogies and charisma, and parts of this course will examine the shi'ite doctrine of imamate and the growth of millenarian thought. This class will also focus on the changes in political philosophy as a result of the violent arrival of the Mongols, and how traditional sunni notions of authority and state were displaced by the rise of Shi'ism and Sufism. Discussions will also focus on Muhammad ibn 'Abd al-Wahhab and Jamal al-Din al-Afghani and the extent to which Islamic political thought retooled and reappraised in the wake of European hegemonic imperialism. The remainder of the class will examine the rise of Islamism, its radicalization following World War Two, and the implications of Islamism and its opponents against the backdrop of the Islamic

Revolution in Iran and other religio-political movements in the Middle East, Africa, and South Asia.

INSTRUCTOR(S): C. Mitchell

FORMAT: Seminar

PREREQUISITE: Any 3000-level course in Middle East history or permission of the instructor

CROSS-LISTING: HIST 5545.03

### **HIST 4550.03: Orientalism and Occidentalism.**

This seminar is intended for senior undergraduate and graduate students interested in discussing how scholarship has historically approached non-Western and non-Christian areas of the globe. Dating back to Herodotus, Plato, and Isocrates, the description of "the Other" has been a consistent theme in European literary and academic traditions. Whether or not it was the apologetic theological rivalry between Islam and Christianity in the Middle Ages, or the Humanist mania for non-European languages and ethnography, Occidental scholarship has historically been attracted to understanding and depicting the non-Occident. This course will examine the different European intellectual traditions of early modern Europe and how they laid the foundation for subsequent 19th and early 20th century characterizations of the Islamic world. Concurrently, however, there is evidence that a discourse of "Occidentalism" emerged among Muslim scholars and literati, and the ensuing dialectic between West and East framed the introduction of a number of political and religious ideologies to the Middle East, Iran, Central Asia, and India. There will be readings and discussions of a number of different scholars and theorists - Foucault, Chakrabarty, Said - who have commented on these discourses. Equal attention will be given to those Muslim scholars - Shayaghan, Soroush, al-Ahmad - who have written and commented on these dynamics between Western and Islamic civilization.

INSTRUCTOR(S): C. Mitchell

FORMAT: Seminar

PREREQUISITE: Any 2000 or 3000-level class in Middle East history or permission of the instructor

### **HIST 4555.03: A Dream Palace or a Bitter Reality: Arab Intellectuals and Their Ideologies in the Modern Period.**

From Ottoman reforms to European colonialism, from the creation of the state of Israel to the invasion of Iraq, Arab intellectuals have been constantly evaluating the weight of the past, the burdens of the present and the prospects of the future. This course examines the ideas and ideologies of Arab intellectuals of Muslim, Christian and Jewish background and those who reside in the Arab world as well as those who have made their careers in the West.

FORMAT: Seminar

PREREQUISITE: Any 2000 or 3000 level course in Middle East history or permission of the instructor.

### **HIST 4600.03: Topics in Late Nineteenth- and Twentieth-Century American and British History.**

This class will, depending upon the staffing in any particular year, examine a selection of themes in late 19th and 20th century British and American history, including, for instance, labour/labour history, political history (including state formation), cultural history, and history of race and national identity. Depending upon staffing, this class may concentrate upon the history of one country or may offer a comparative aspect. It will be intended for graduate or senior undergraduate students with some background in either British, American or Canadian history. Evaluation will be through research papers and, possibly, a final exam.

FORMAT: Seminar

PREREQUISITE: 3000-level class in modern British, American or Canadian history

CROSS-LISTING: HIST 5600.03

### **HIST 4613.03: Women's Suffrage from the French Revolution to World War I.**

The question of women's participation in representative government first emerged during the French Revolution but by 1914, only two European countries had granted women the right to vote. This seminar explores the suffrage movement in the nineteenth century and the obstacles in the process of women's enfranchisement.

INSTRUCTOR(S): J. Pekacz

FORMAT: Seminar

PREREQUISITE: A modern European history course above the introductory level.

### **HIST 4614.03: Topics in the History of Sexuality.**

This seminar is intended for senior undergraduates. The specific content of the course varies from year to year, with a general focus on comparative, historiographic, and theoretical issues relating to the history of sexuality. Topics may include: the rise and fall of schools of sexology as embodied by Ellis, Freud, and Kinsey; sexual violence and harassment; the commodification of sexuality; the history of the body; sexuality and colonialism; gay and lesbian subcultures; and the intersection of class, race, and gender in sexual experiences, discourses, and communities.

INSTRUCTOR(S): B. Cowan, T. McCallum, St. Tillotson

FORMAT: Seminar

PREREQUISITE: HIST 2614.03 or GWST 2300.03 or HIST 2615.03 or GWST 2301.03 or HIST 3350.03 or GWST 3300.03 or HIST 3013.03 or GWST 3013 or permission of the instructor

CROSS-LISTING: GWST 4330.03

### **HIST 4639.03: Britain, Appeasement, and the Origins of the Second World War.**

This course examines Britain's response to the rise of expansionist regimes in Germany, Italy, and Japan during the 1930s. Topics of discussion will include: the historical "roots" of appeasement; Neville Chamberlain and the Munich Conference; the Foreign Office; the Treasury; the armed services and British rearmament; the press and public opinion.

INSTRUCTOR(S): C.M. Bell

FORMAT: Seminar

PREREQUISITE: One previous British history class

### **HIST 4986X/Y.06: The Varieties of History.**

This class, reserved for fourth-year Honours students in History, is a seminar that examines questions concerning the nature and value of historical enquiry that have occupied thinkers since ancient times. Through a series of wide-ranging readings it explores the meaning of history in the context of European and non-European societies and the paradigms by which, through the ages, scholars have approached the study of the past.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Undergraduate Coordinator

FORMAT: Seminar

PREREQUISITE: Concurrent enrolment in HIST 4990X/Y, or instructor's permission

### **HIST 4987.03: The Historiography of American Foreign Relations, 1776-1945.**

This course is designed to introduce students to the history of American foreign policy from the Revolutionary War until World War Two. However, special emphasis will be given to events in contemporary American history, focusing on questions of interpretation and methodology. Toward this end, the seminars are designed to introduce students to both the historiography of the event under question and to some of the "theories" historians have used to interpret American foreign policy. The goal of the course is to provide students with the necessary tools to think critically about various forces at work in the development and execution of contemporary US policy.

INSTRUCTOR(S): S.J. Corke

FORMAT: Seminar

PREREQUISITE: A third-year 20th Century American History class

### **HIST 4988.03: The Historiography of American Foreign Relations Post-1945.**

This course is designed to introduce students to the history of American foreign policy from the Origins of the Cold War to the demise of the Soviet Union. Rather than concentrating solely on the events as they unfolded, however, this course will focus on questions of interpretation and methodology. Toward this end, the seminars are designed to introduce students to both the historiography of the event under question and to some of the "theories" historians have used to interpret American foreign policy. The goal of the course is to provide students with the necessary tools to think critically about various forces at work in the development and execution of contemporary United States policy.

INSTRUCTOR(S): S.J. Corke

FORMAT: Seminar

PREREQUISITE: A third-year 20th Century American History class.

## HIST 4990X/Y.06: Honours Essay in History.

All History Honours students and those in combined Honours programs in which History is their principal subject must write a substantial essay on a topic to be chosen in consultation with the undergraduate coordinator and an individual faculty supervisor.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Honours Essay

PREREQUISITE: Admission to History Honours Programme

# History of Science and Technology

Location: University of King's College  
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## Director

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## I. History of Science and Technology Program

The natural and human sciences play a central role in shaping fundamental aspects of our contemporary intellectual and material culture - how we live and the ways we think and talk about how we live. And this has been true, in varying ways, for a very long time. The History of Science and Technology (HOST) Program explores that long history and as such contributes to student's understanding of their contemporary world through understanding this vital aspect of our intellectual past. Our program is truly interdisciplinary in that we encourage students to cut across the sciences and the humanities by drawing on historical, philosophical and sociological disciplines. HOST courses are open to any student registered either at Dalhousie University or the University of King's College. We also welcome visiting students (attending on a Letter of Permission) from other universities.

Our three "core" classes (mandatory for the Combined Honours degree) cover in depth the key ideas, questions, figures and developments in the history of science for the historical periods of ancient and medieval, the early modern and the modern, respectively, always with an eye to how the study of nature has been situation within broader historical contexts. Our numerous electives branch out in a myriad of questions and topics throughout these periods, such as the relationship between science and religion, the representations of science in the media, and the role of technologies in shaping human experience.

HOST will be of interest to many kinds of students. In particular, students with interests and strengths in both the sciences and the humanities are especially at home. If you are a science student, gaining historical perspective will help you step back from your studies as well as encourage you to think critically. If you are an arts student, you will gain a humanities-based conceptual literacy about science that will become a vital aspect of your arts degree. Whatever stripe of student you are, learning about the history of science and technology will prove invaluable for helping you gain an informed, balanced and critical appreciation of science and its place in our past, our present, and maybe even our future.

## II. Degree Options

Students registered in the BA or BSc degree at either King's or Dalhousie have two options for pursuing a degree in the HOST program: (a) as a Combined Honours degree; and (b) as a Minor. Students in the BJH program may pursue the Combined Honours or take electives in HOST.

### A. Combined Honours

The Combined Honours BA or BSc degree in HOST is offered jointly by Dalhousie University and the University of King's College. Pursuing an honours degree requires of students a higher quality of work than is required by the other

undergraduate programs (such as the 20 credit Major). Able and ambitious students are urged to take the Combined Honours in HOST, particularly if you want to leave open the possibility of doing graduate work in the future; adjudicating bodies in graduate schools (for both scholarships and program admission) tend to look more favourably on students with Honours-level degrees. In some cases the Honours degree is a requirement. In any case, choosing the Combined Honours degree is a positive statement concerning your seriousness and abilities as a student.

The Dalhousie departmental offerings within the History of Science and Technology Program include the other honours subject, a number of possible electives, and certain cross-listed classes. The other honours subject must be selected from the following list of Dalhousie departments and Programs: Classics, Creative Writing, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Religious Studies, Russian Studies, Sociology, Social Anthropology, Spanish and Latin American Studies, Theatre, Biochemistry, Biology, Chemistry, Computing Science, Earth Sciences, Economics, Marine Biology, Mathematics, Microbiology and Immunology, Neuroscience, Physics, Psychology, and Statistics. Electives may be taken in any of the above-mentioned departments and programs as well as in the following: Canadian Studies, Contemporary Studies, Early Modern Studies, Music, and Oceanography.

Students who are eligible to take an honours degree should apply to the History of Science and Technology Office and the other department or program concerned as early as possible, normally before registering for the second year. All students must meet the degree requirements for the College of Arts and Sciences as detailed in the Degree Requirements section of this calendar, page 131. Because it is an honours program, the quality of work required in the program is higher than that required in a 15 credit or 20 credit major program.

Applications for admission must be made to the Dalhousie department concerned and to the History of Science and Technology Office at King's on forms available from the Registrar at Dalhousie or King's. Students should apply to the program and seek advice on class selection before registering for the second year. If this is not done, it may be necessary to make up some work not previously taken. For each individual student, the entire degree program, including elective classes, is subject to supervision and approval by the Dalhousie department concerned and by a member of the History of Science and Technology teaching staff.

All History of Science and Technology students are encouraged to acquire (through appropriate classes) competence in languages which are relevant to their degree, interest and future plans.

The joint Dalhousie/King's History of Science and Technology Combined Honours Program is based on the general requirement that the full credits needed to graduate include:

1. In the case of a Combined Honours BSc degree, a minimum of 11 and a maximum of 14 credits beyond the 1000 level in the two honours subjects, but not more than nine and no fewer than five full credits being in either of them. The larger number of honours credits must be in the science subject. In the case of a Combined Honours BA degree, a minimum of 11 and a maximum of 14 full credits beyond the 1000 level in the two honours subjects, with no more than eight and no fewer than five credits in either.
2. Two to four - depending on the number selected in the Honours subject - elective credits.
3. The three "core" classes in History of Science and Technology: HSTC 2000.06, HSTC 3000.06, HSTC 4000.06.
4. One credit in a writing class (See Writing Class, page 131 in the Degree Requirements section of this calendar).
5. One credit in a **single** language/humanities subject (Degree Requirements section 1, page 131).
6. One credit in a **single** social science subject (See Degree Requirements section 2, page 131).
7. One credit in a **single** life or physical science subject (See Degree Requirements section 3, page 131).
8. One credit in a **single** language for Bachelor of Arts (see Degree Requirements, page 131).
9. One credit in math for a Bachelor of Science (See Degree Requirements, page 131).
10. No more than three full credit equivalents of the first five credits taken may be in a single subject.
11. An honours qualifying examination (see Degree Requirement: BA, BSc Combined Honours (4 Year)). History of Science and Technology students

may choose to acquire this additional grade in either honours subject. In the History of Science and Technology Program, completion of the Honours Seminar (HSTC 4500.06) fulfils the requirement of the honours qualifying examination; or, with the approval of the director, an honours thesis (HSTC 4550.06) may also serve to fulfil the requirement of the honours qualifying examination. **For a Combined Honours BSc, the larger number of credits must be in a science subject.**

Students will be eligible to take an "Independent Reading" class only when they reach their third or fourth year. There will be six options for this class, but only one full credit or the equivalent may be taken in a year. No more than two full credits of this type may be taken during the class of study. The permission of a member of the teaching staff and the Director of the Program is necessary in order to take one of these classes, and their availability is strictly limited.

## B. Minor

The Minor in HOST can be combined with any type of BA or BSc program (eg. Major, Double-Major, Honours) offered by the Faculties of Science or Arts and Social Sciences at Dalhousie. If you are a Dalhousie student and include a Minor in HOST in your studies, your degree is granted by Dalhousie University and the University of King's College or by Dalhousie in association with King's.

Including a Minor in HOST with your degree is an indication of a more limited specialization in this field than the Combined Honours. Although it does not have the same academic stature as the Combined Honours degree, it nevertheless will be a valuable enrichment to your transcript, and will indicate your willingness to diversify your students and to tackle subject matter that crosses the "two cultures" divide between the sciences and the humanities.

The course requirements for the Minor in HOST are as follows:

1. Any one of the following courses:
  - HSTC 2000.06
  - HSTC 3000.06
  - HSTC 4000.06
  - HSTC 2200.06 (or cross listed as SCIE 2000, HIST 2074 and BIOL 3503)
2. Any other two full credits (or four half credits) selected from HSTC classes (or cross listed with HSTC classes) numbered 2000 or above.

## III. Classes offered at the University of King's College

All classes in the History of Science and Technology, excluding HSTC 1200, require students to have completed at least one year of university study (maximum five credits) prior to enrolment.

Note: Many of the following classes are not offered every year. Please consult the current timetable.

### HSTC 1200X/Y.06: Introduction to the History of Science.

This class is a broad introductory survey of the central developments in the history of science, open to first and higher level students whatever their fields, and may be an introduction to further study in the history of science. It examines the most revolutionary figures from the Greeks to the modern period. The work of each of these had such a profound influence upon their own era and upon subsequent times that students in the humanities will find this class clarifies the nature of science and its cultural importance. Students in the sciences will recognize that their contributions have been permanently woven into the fabric we call science. In uncovering the sources and character of each of these transformations in the theory and practice of science, the class will challenge conventional views about the nature and place of science. This class may be taken as an arts or science credit.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, G. McOuat

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2074X/Y.06, HSTC 2200X/Y.06, BIOL 3503X/Y.06, SCIE 2000X/Y.06

EXCLUSION: HSTC 2201.03, BIOL 3502.03, HIST 3072.03, HIST 3074X/Y.06, SCIE 4000.03

### **HSTC 1800.03: Technology and Engineering: from the Stone Age to the Industrial Age.**

Through case studies from the history of major engineering disciplines, this course examines the reciprocal influences of technology and engineering practice and social, political, and economic institutions from ancient times to the first industrial revolution.

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/tutorial

### **HSTC 1801.03: Technology and Engineering: from the Industrial Age to the Cybernetic Age.**

Through case studies this course examines the influence of the development of technology on our social political and economic institutions in the past 200 years and how this has shaped the roles and responsibilities of modern engineers.

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/tutorial

### **HSTC 2000X/Y.06: Ancient and Medieval Science.**

This class treats the study of nature in the ancient and medieval West by a combination of both thematic and chronological approaches. It considers the most general views of nature and science as well as specific developments within these general understandings. For the purposes of the class, the ancient and medieval West is divided into four time periods: the ancient, the Hellenic, the Hellenistic and Roman, and finally the medieval. Through the reading of selected works, developments in respect to the following are treated: I. Concepts of nature, II. Mathematics and Astronomy, III. Material and Elemental theories, IV. Biology and the Soul, V. The meaning of "techné".

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): I. Stewart

FORMAT: Lecture/seminar

### **HSTC 2011.03/HSTC 3011.03/HSTC 4011.03: The Lecture Series.**

In some years a lecture series class is offered. Students are allowed to take up to three such classes, one for each year of upper-level study. Each class will consist of six bi-weekly evening lectures given by specialists from Atlantic Canada and beyond, and a weekly two-hour seminar. The lecturers will offer students reflections on a number of contemporary issues and themes. Each year a different theme will be explored.

INSTRUCTOR(S): Staff

FORMAT: Seminar/evening lectures

### **HSTC 2105.03: The Life, Science and Philosophy of Albert Einstein.**

In 1999, *Time Magazine* named Albert Einstein "Person of the Century" for the impact his scientific work had not only on physics, but also on culture in general. In this class, we will explore how Einstein's proof of the existence of atoms, his belief in light particles (the photons), and his application of the famous principle of relativity revolutionized both modern physics and philosophy. We will also pay attention to the main events of Einstein's life (his divorce, the rise of Nazism in Germany, etc., Einstein's pacifism and Zionism, his attitude toward religion and his personal relationships with other scientists (Poincaré, Bohr, etc.) in order to better understand the personal, social and cultural contexts in which these revolutionary theories were developed.

NO prior knowledge of physics, mathematics, or philosophy is expected. This class is for everyone with interest in science, but is not a science class (mathematics will be kept at a minimum).

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/discussion

### **HSTC 2120.03: Magic, Heresy and Hermeticism: Occult Mentalities in the Scientific Revolution.**

The 'scientific revolution' is ordinarily construed as the triumph of reason over superstition, of science over sorcery. This course argues that the rhetoric of 'enlightenment' conceals a deep continuity between Modern science and the occult traditions of the Middle Ages and the Renaissance. The prototype of the experimental scientist is the Faustian magus. We investigate the role of Hermeticism, magic and the occult in the scientific revolution and the persistence of these esoteric currents in later movements, from German *Naturphilosophie* to Jungian psychology.

INSTRUCTOR(S): K. Fraser

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2990.03, EMSP 2360.03

### **HSTC 2200X/Y.06: Introduction to the History of Science.**

This class is a broad introductory survey of the central developments in the history of science, open to first and higher level students whatever their fields, and may be an introduction to further study in the history of science. It examines the most revolutionary figures from the Greeks to the modern period. The work of each of these had such a profound influence upon their own era and upon subsequent times that students in the humanities will find this class clarifies the nature of science and its cultural importance. Students in the sciences will recognize that their contributions have been permanently woven into the fabric we call science. In uncovering the sources and character of each of these transformations in the theory and practice of science, the class will challenge conventional views about the nature and place of science. This class may be taken as an arts or science credit.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, G. McOuat

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2074X/Y.06, HSTC 1200X/Y.06, BIOL 3503X/Y.06, SCIE 2000X/Y.06

EXCLUSION: HSTC 2201.03, BIOL 3502.03, HIST 3072.03, HIST 3074X/Y.06, SCIE 4000.03

### **HSTC 2202.03: The Beginnings of Western Medicine: the Birth of the Body.**

This class will look at how the body was viewed in ancient scientific theory and practice. Western medicine as a rationalized scientific practice finds its origins in the ancient Greek philosophical and medical texts attributed to "Hippocrates".

Through a close reading of selected ancient medical texts, this class will explore ideas of how the human body is constituted, how it relates to the Cosmos as a whole, what the role of the physician was seen to be, and how illness and healing were seen as changes in the balance of the components of the body.

INSTRUCTOR(S): I. Stewart

FORMAT: Lecture/seminar

### **HSTC 2204.03: The Darwinian Revolution.**

Arguably, the Darwinian Revolution marks the greatest revolution in our conception of nature and our place within it, deeply challenging received views on chance, teleology, history, the soul and nature. This class opens up the historical and philosophical background to the Darwinian revolution, the main episodes of that revolution and the consequences for contemporary moral, scientific and social theory. Emphasis will be placed on reading contemporary primary texts.

INSTRUCTOR(S): G. McOuat

FORMAT: Lecture/seminar

### **HSTC 2205.03: Totalitarianism and Science.**

The question of who has authority over funding, direction and priorities of modern science is a central political concern. This class considers the case of totalitarian states (USSR and Nazi Germany) and consists of two parts. Part I analyses the essential features of totalitarian regimes. Part II concentrates on the fortune of particular sciences (medicine, biology, physics) under them.

INSTRUCTOR(S): G. Levit

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2985.03, CTMP 2205.03

### **HSTC 2206.03: Bio-Politics: Human Nature in Contemporary Thought.**

To what extent do biology and culture determine what it is to be human? Drawing on theorists ranging from Foucault to Steven Pinker, this course will examine the recent political, moral and existential issues raised by attempts to answer that question. Topics will include socio-biology, evolutionary psychology, the construction of human kinds and the problem of free will.

INSTRUCTOR(S): G. Levit

FORMAT: Lecture

CROSS-LISTING: CTMP 2203.03

### **HSTC 2208.03: Science and Medicine in Islamic Societies, 700-1500.**

Through a combination of primary and secondary source readings, this class explores some of the major trends and debates within science and medicine in Islam from the seventh century till the early modern period. A special emphasis is placed on situating these developments within the larger political, social and institutional structure of Islamic societies.



INSTRUCTOR(S): Staff  
 FORMAT: Seminar  
 CROSS-LISTING: RELS 2208.03  
 EXCLUSION: HSTC 3610.03 and RELS 3610.03 for the 2010/11 academic year only  
 RESTRICTION: Restricted to students in their 2nd year and above

### HSTC 2310.03: Women and Gender in Early Modern Science.

This class will explore the roles of women, and questions about women's nature, in the development of Early Modern science. The class will consider several interrelated aspects of scientific culture in the sixteenth, seventeenth, and eighteenth centuries: first, we will look at the place of women in the scientific institutions of the time. Although women were, for the most part, excluded from universities and scientific academies, some women were able to do scientific work through their participation in salons and craft guilds. The second part of the class will look at the contributions of some particular women to the fields of physics, astronomy, botany, and medicine. We will then examine how science interpreted sex and gender. We will pay special attention to the biological sciences and their treatments of sex differences, conception, and generation. We will consider how these biological theories were influenced by, and at the same time used to uphold, various political and social structures. Finally, the class will explore the ways in which gender and nature were portrayed in the broader cultural context. We will, for example, discuss the ways in which women were depicted as scientists and as symbols of science in art and literature.

INSTRUCTOR(S): K. Morris  
 FORMAT: Lecture/seminar  
 CROSS-LISTING: EMSP 2310.03, GWST 2310.03

### HSTC 2340.03: The Origins of Science Fiction in Early Modern Europe.

In 1500, literate Europeans lived in a bounded, geocentric universe. By 1800, the sun had replaced the earth at the centre of a limited planetary system situated in infinite space. These changes prompted early modern philosophers, scientists and writers to consider the possibility that the universe might contain a plurality of worlds. This course will explore the ways in which the "plurality" theme was developed in some of the earliest works of science fiction. We will consider this theme as it appears in stories of intergalactic voyages, utopian societies, and encounters with extraterrestrial beings, paying special attention to the ways in which early modern writers used these tales to speculate on philosophical, political, and scientific issues.

INSTRUCTOR(S): K. Morris  
 FORMAT: Seminar  
 CROSS-LISTING: EMSP 2340.03  
 EXCLUSION: EMSP 2330.03

### HSTC 2400.03: Science and the Media.

From the first Babylonian astronomical records on cuneiform to the public understanding of science on television, the various media have long been crucial to the success and spread of science. This course provides a history of science in the media from the ancient and medieval use of geometrical diagrams, astronomical figures and anatomical illustration through early modern printed texts, popular broadsheets and color botanical plates all the way to the ubiquity of science in literature, cinema and on the Internet. This expanding presence of science in the media is examined against the backdrop of three revolutions: literary and artistic (ancient and medieval worlds), mechanical (early modern period) and electronic (contemporary age). Specific themes considered include the increasing accuracy of scientific illustration, the rise of scientific journals, public scientific demonstrations, science in poetry and prose fiction, science and art, radio and television documentaries, the advertising and marketing of science, scientific apocalypses and techno-utopias, bioethics, Soviet era technological iconography, environmentalism and science-religion relations in the journalistic press, science fiction from H.G. Wells' *War of the Worlds* to *Star Wars* and *Jurassic Park*, and science in computing and cyberspace.

INSTRUCTOR(S): S. Snobelen  
 FORMAT: Lecture/seminar  
 CROSS-LISTING: JOUR 2400.03

### HSTC 2500.03: Science Fiction in Film.

This course studies portrayals of science and technology in science fiction film. Themes examined include the "mad" scientist; science as malevolent versus science as salvation; the survival of humanness in a technological world and the contrary trend of dehumanisation in the face of advancing technology; scientific utopias and dystopias; science fiction as self-fulfilling prophecy; voyages into space and inner space; time travel; computers and artificial intelligence; nuclear

holocaust and environmental apocalypses; alien life; genetic engineering; imagined technocracies; and science fiction as a vehicle for social and political commentary. Films screened will include classics of science fiction such as *Metropolis* (1927), *The Time Machine* (1960), *Solaris* (1972), *Bladerunner* (1982) and *The Matrix* (1999). These feature films will be supplemented with footage from civil defence films, government celebrations of science and technology along with science documentaries. Films will be accompanied in class by discussion and criticism and students will also read scholarly treatments of cinematic science fiction. Evaluation will be based on participation, written work and a final examination.

INSTRUCTOR(S): S. Snobelen  
 FORMAT: Film screening/Discussion

### HSTC 3000X/Y.06: The Scientific Revolution.

This class examines the origins and meanings of the "Scientific Revolution", the term now used to describe the spectacular changes in world view in the 16th to 18th centuries when the sciences both reinterpreted and broke away from the received ancient and medieval world views. Surveying traditional and revisionist historiography, this class will explore the new conceptions of mechanism, the body, matter and motion that emerged in this period, along with the new methods of experiment and mathematical reasoning; the discoveries in astronomy, biology and physics; and the rise of public and commercial science in the 18th century. The result of individual innovation, internal reform, the impact of other fields of thought and the appropriation of non-Western ideas and technologies, these shifts in outlook will be examined against the backdrop of the broader transformations that took place in culture, society, politics, religion and philosophy. Emphasis will be placed on reading the primary texts of notable figures such as Copernicus, Galileo, Descartes and Newton, as well as the activities of men and women who existed on the peripheries of science, either by virtue of marginalization or by belonging to anti-science oppositional cultures.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): S. Snobelen  
 FORMAT: Lecture/seminar

### HSTC 3120.03: Distilling Nature's Secrets: The Ancient Alchemists.

This course explores the scientific and esoteric currents which contributed to the rise of alchemy in the late Ancient World. This 'sacred science' of transmutation was a cultural synthesis of Greek natural philosophy, late pagan mysticism, and Near Eastern metallurgic technologies. The physical processes enacted in the alchemical laboratory - where metals were decomposed, purified and transformed - were experienced inwardly by the alchemist himself as a spiritual drama of death and resurrection, analogous to the rites of initiation in the mystery cults. Alchemy was thus a form of ritual technology, aimed simultaneously at the purification of self and cosmos. The texts studied in the course range from technical manuals preserved on papyrus, to the highly esoteric and visionary works of the Hermetic philosopher Zosimos (circa 300CE). The relation between these technical and occult dimensions will be of central concern.

INSTRUCTOR(S): K. Fraser  
 FORMAT: Lecture/seminar

### HSTC 3121.03: In search of the Philosopher's Stone: The History of European Alchemy.

This course traces the development of alchemical theories and practices in the Medieval Latin West up to the emergence of early modern chemistry. It employs a multi-disciplinary approach which treats the scientific, technological, esoteric and iconographic dimensions of alchemy as interdependent. The entire development of European alchemy is covered from the transmission of the Greek and Islamic alchemical traditions in the 12th century up to Newton, whose alchemical theories represent a point of transition to early modern chemistry in one direction, and to a more spiritualised occult philosophy in the other.

This course is independent of HSTC 3120.03. All students interested in the intersections of science, magic and mysticism are welcome.

INSTRUCTOR(S): K. Fraser  
 FORMAT: Lecture/seminar  
 CROSS-LISTING: HIST 3990.03, EMSP 3321.03

### HSTC 3130.03: The Origins of Chemistry: From Alchemy to Chemical Bonds.

This course explores the scientific and social development of modern chemistry from the work of 17th-century alchemists to the chemical revolution of Lavoisier and Dalton, the beginnings of organic chemistry and biochemistry, the development of the periodic table, and the modern understanding of atomic structure and chemical bonds.

Notes: There is no science pre-requisite for the course.

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/seminar

### HSTC 3150.03: Nature and History.

In the nineteenth and twentieth centuries, the study of the natural world and historical thought have been closely linked. Participants in the seminar will read texts which helped to define ideas of history in the era after the Enlightenment and consider how these ideas influenced, and were influenced by, developments in scientific thought. The seminar will consider how nature and history are related in idealism, historical materialism and the thinking of the evolutionists, and how this connection is rejected by Nietzsche, Freud and Foucault.

INSTRUCTOR(S): G. Levit

FORMAT: Seminar

CROSS-LISTING: CTMP 3250.03

### HSTC 3200.03: Science and Religion: Historical Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the early modern period. From an examination of the biblical view of nature, ancient Babylonian astrology and divination and Plato's *Timaeus*, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo's controversy with the Church and instances where religious belief inspired scientists like Boyle and Newton. Claims that certain confessional traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion relations are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic and witchcraft. This course employs examples from Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

INSTRUCTOR(S): S. Snobelen

FORMAT: Lecture/seminar

CROSS-LISTING: EMSP 3330.03, HIST 3075.03, RELS 3200.03

### HSTC 3201.03: Science and Religion: Contemporary Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the rise of Darwinism in the early nineteenth century to the contemporary postmodern age. From an examination of nineteenth-century "Scriptural geology" and the religious impact of Darwin's *Origin of Species* (1859), this course moves on to such contemporary topics as the religious interpretations of quantum mechanics, the Big Bang, the anthropic principle, medical science, bioethics, evolutionary psychology, chaos theory, aesthetics in nature, science fiction and extra-terrestrial life (including SETI). Case studies of "conflict" emanating from Darwinism, the Scopes Trial and the on-going Creation-Evolution debates are contrasted with examples of harmony and interdependence between science and religion in the careers of 19th and 20th century scientists, along with phenomena like the new Intelligent Design (ID) movement. The religious scope of the course is intentionally wide-ranging, and examinations of science-religion interaction within native American, African and the New Age spirituality are added to treatments of traditional eastern and western religion. Special features include a focus on primary texts, the use of film and guest lectures by scientists.

INSTRUCTOR(S): S. Snobelen

FORMAT: Lecture/seminar

CROSS-LISTING: CTMP 3201.03, RELS 3201.03, HIST 3076.03

### HSTC 3205.03: Knowledge is Power: Francis Bacon and the Birth of Modernity.

Francis Bacon (1561-1626) helped shape our modern assumptions that natural knowledge (science) will lead to both human flourishing and political power. By reading some of his works in their late Renaissance context we will reflect on the birth of those assumptions, thus gaining a new perspective on their modern form.

INSTRUCTOR(S): I. Stewart

FORMAT: Seminar/lecture

CROSS-LISTING: EMSP 3340.03

### HSTC 3212.03: The Biosphere: Global Perspectives in Science and Philosophy.

Intended for both science and humanities students interested in ecology, this course will focus on the historical, philosophical and methodological aspects of central concept of "biosphere" in order to provide a picture of the history and actual state of affairs in the study of global ecology. We will address both purely scientific and philosophical topics such as the holism vs. reductionism debate; the compatibility of the global approaches with the most influential version of contemporary Darwinism (STE); pre-Socratic precedents for the notion of biosphere; modelling nature in the modern global ecology and many others.

INSTRUCTOR(S): G. Levit

FORMAT: Lecture/tutorial

### HSTC 3250.03: Going Wild: Exploring the Animal Nature of Humans.

The major concentration of this class is the question of how and to what extent evolutionary sciences can explain the brilliance and insanity of the "moral animals" including the current course of the Western civilization. We will discuss the evolutionary foundations of romantic(!) love, suicide, sports, diets, and sexual self-identification.

INSTRUCTOR(S): G. Levit

FORMAT: Seminar

EXCLUSION: HSTC 3615.03

### HSTC 3310.03: Hidden Worlds: Microscopy in Early Modern Europe.

Microscopes were introduced into Europe at the beginning of the seventeenth century. In the words of Robert Hooke, the microscope opened up a "new visible World" to the understanding -- a strange new landscape populated by vast numbers of new creatures. This class will explore the influence the microscope, and the micro world that it opened up, in the development of early modern science. In the first part of the class, we will take a close look at early microscope technology and its evolution in the seventeenth, eighteenth, and early nineteenth centuries. The second part of the class will explore the role of the microscope in the evolution of early modern science. We will, for example, consider the role of microscopy in the emergence of the new mechanical philosophy and the new experimental science. We will also discuss the histories of some scientific theories (for example, of contagion and generation) that made particular use of observations made with microscopes. Finally, the microscope's revelation of "new worlds" raised conceptual difficulties that puzzled scientists and philosophers alike. In the final part of the class we will consider the challenges that new kinds of experience raised for early modern philosophy, as well as the possible influence of philosophical debates on the acceptance of the new technology.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/seminar

CROSS-LISTING: EMSP 3310.03

### HSTC 3331.03: History of the Marine Sciences.

Oceanography did not take definable form until late in the 19th century. Its roots lie not in the *Challenger* Expedition of the 1870s, the popular stereotype, but partly in ancient cosmologies and geography. In this class, the history of marine sciences, including oceanography, is traced from the ancients to the 20th century. The cosmologies of the ancient world, voyages of discovery from the 15th through the 18th centuries, the scientific revolution of the 17th century, the development of biology, physics, chemistry and geology in the late 18th and 19th centuries, all contributed to a gradual enlargement and transformation of human interest in the oceans.

Since the late 19th Century, biological, physical, chemical and geological aspects of the marine sciences have grown nearly independently. The scientific, institutional, and social setting in which these nearly autonomous sub-disciplines developed is emphasized.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

CROSS-LISTING: HIST 3073.03, BIOL 4664.03, MARI 4664.03, OCEA 4331.03/5331.03, SCIE 4001.03

### HSTC 3411.03: Feminism and Science.

Science has been the subject of intense scrutiny by contemporary feminist theorists. The course will examine the various feminist critiques of natural science, as well as the positive proposals that feminism has brought to science and scientific culture. Questions that will be addressed include: Is the style of science gendered? Has feminism influenced the content of various sciences? How has science contributed to gendered constructions of nature? Is there such a thing as value-free scientific research? How do feminist theories of knowledge differ from

traditional understandings of scientific knowledge and scientific objectivity? The readings for this course will include work by Donna Haraway, Sandra Harding, Evelyn Fox Keller, Helen Longino, and Hilary Rose.

INSTRUCTOR(S): K. Morris

FORMAT: Seminar

CROSS-LISTING: GWST 3215.03, CTMP 3215.03

### **HSTC 3412.03: Hypatia's Daughters: Women in Science.**

From Hypatia to Hildegard von Bingen, from Mary Somerville to Marie Curie, this course surveys the scientific contributions made throughout history by some of the most important women scientists and natural philosophers while examining how their respective social context shaped their philosophical and scientific practice.

NOTE: This course complements but is distinct from EMSP 2310: Women and Gender in Early Modern Science, which focuses on the work of early modern women scientists, and from GWST 3215: *Feminism and Science*, which focuses on questions from feminist epistemology which will only be indirectly discussed in this class.

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/tutorial

CROSS-LISTING: GWST 3412.03

### **HSTC 3430.03: Experiments in the Mind: Thought Experiments in Physics.**

Einstein's elevator, Schrodinger's cat, Maxwell's demon; the history of physics is full of these instructive fictions that are thought experiments. This course examines the historical contexts of many thought experiments in order to understand the different roles they have played in the conceptual development of physics from Antiquity to the present.

INSTRUCTOR(S): M. Frappier

FORMAT: Lecture/discussion/seminar

### **HSTC 3501.03: The Nature of Time I.**

This class will consider views of time beginning with Mesopotamian notions of narrative, Egyptian conceptions, and the encounter between linear and circular time in Judaic thought. The vision of Greece will be brought out through epic narration, in Pre-Socratic thought, in Greek historical texts. The course will treat some central texts, in Plato on the concept of time in the soul, in Aristotle, where time becomes the measure of motion, in the willed totality in Stoic and Epicurean thought, in Plotinus, where time is grounded in a pretemporal duration. The class will then take up the relation of this duration and time to revelation, creation and conversion in Medieval Christian, Islamic and Jewish thought.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### **HSTC 3502.03: The Nature of Time II.**

This class will consider time as it is viewed in periods of the west from the Renaissance to the present. The early modern conceptions of time and fortune will be considered along with Renaissance notions of the temporality of the human and the heavens. The revolution in the philosophy of nature meant a change in the techniques of measurement, and in the very notions of time, culminating in the conceptions of Descartes, Newton and Leibniz. Time became a different kind of social reality through the enlightenment, a middle ground of progress between the human and the natural, a ground disclosed most fully in the thought of Kant and Hegel. The nineteenth century gives to time, not a mediating role but an otherness: in Darwin, Marx, Nietzsche. Is it an overriding direction, as disclosed in the second law of thermodynamics, or is it the illusion bound up with indifferent necessity? Does relativity leave us with a coherent concept or is time left a presentation of the phenomenon, a way of being, as for Husserl, Merleau-Ponty and Heidegger? The course will end in considerations of time and chaos theory, of the first three minutes and of the last.

INSTRUCTOR(S): Staff

FORMAT: Seminar

### **HSTC 3610.03: Studies in Ancient and Medieval Science.**

Topics vary each year. Some of the topics are "Causation", "History of dissection", "Mesopotamian science", "Sciences and cultures in antiquity", "The mangle of praxis", "Ptolemy", "Ancient Method", "Embryology", "Posterior analytics", etc. For descriptions of the current year's studies topics, please contact the History of Science and Technology Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 3610.03 (for the 2010/2011 academic year only)

### **HSTC 3611.03: Studies in Early Modern Science (1500-1800).**

Topics vary each year. Some of the topics are: "Science and Society", "Popularization of Science", "Science and Religion", "Technology and Scientific instruments", etc. For descriptions of the current year's studies topics, please contact the History of Science and Technology Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### **HSTC 3615.03: Studies in Science and Nature in the Modern Period.**

Topics vary each year. Some of the topics are: "The Century of the Gene", "Cybernetics", "Nazi Science", "The Political Economy of Science, etc. For descriptions of the current year's Studies topics, please contact the History of Science and Technology Program.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### **HSTC 4000X/Y.06: Science and Nature in the Modern Period.**

This class examines the history and culture of science in the post-Newtonian period and the attempts to come to terms with contemporary science and its notions of "scientific method" and natural law, the rise of globalized "technoscience" and a scientific way of life. The class will examine the themes of the "historicisation" of nature culminating in the Darwinian revolution, the rise of "big" science, probabilistic accounts of the world, the triumph of the "new physics" of quantum mechanics and relativity theory and the construction of notions of gender and human nature in modern biology and psychology. These issues will be examined in the broader cultural and philosophical transformations of the modern period.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): G. Levit, M. Frappier

FORMAT: Lecture/seminar

### **HSTC 4102.03: Topics in Ancient Natural Philosophy.**

Through the close reading of one selected ancient work, this class seeks to explore fundamental problems in ancient natural philosophy, such as: How did the ancients see the validity of their approaches to the natural world? What sorts of phenomena were seen as "natural" in antiquity? What are the limitations to textual evidence for ancient science? How did theories about the natural world inform how the ancients saw their place in the Cosmos? How did ancient social values affect views of nature?

INSTRUCTOR(S): Staff

FORMAT: Seminar

### **HSTC 4120.03: Artefacts: The Material Culture of Science and Technology.**

The history of science and technology is not just about ideas, it is also about things. Through the creation of their own exhibit, students will learn how to 'read' artefacts, discuss the current material culture literature, study artefacts conservation, and explore the challenges faced by today's science museums.

INSTRUCTOR(S): R. Brooks

FORMAT: Seminar

### **HSTC 4200.03: Philosophies of Technology I. From Techne to Technology.**

This half-year class will explore the history, structure and associated problems of our coming to be technological, beginning with an elaboration of the concept of "techne" in the ancients and its modification in the technical arts and instrumental reasoning of the Enlightenment and of 19th-century industrial ideology. Post-Enlightenment critiques polarized around the place of the machine and alienation in Karl Marx and the "question concerning technology" in Martin Heidegger will then be examined, leading up to an examination of the present state of

technological discourse. In each case, we shall mark the importance of contextualising the debate by exploring the actual historical evolution of technology. Lectures will be devoted to presenting a social and historical background to the development of modern technologies whilst seminars will focus on the reading of primary texts in the field.

INSTRUCTOR(S): Staff

FORMAT: Seminar

CROSS-LISTING: CTMP 4200.03

### **HSTC 4201.03: Philosophies of Technology II: The Questions Concerning Technology.**

This half-year seminar will explore in detail the implications of powerful contemporary debates concerning the meaning and place of technology. What do we mean by technology? Can there be a philosophy of technology? What are the political and cultural ramifications of going technological? Topics will include: technological determinism in history, feminist critiques, technology and development, the meaning of expertise, technology, art and the “lifeworld”, “social construction” versus “actor-network” theory, Donna Haraway’s concept of cyborg culture and the “modern technological sublime”. The class will be conducted in seminar format with particular emphasis placed on the elucidation of historical and contemporary case-studies. Whenever possible, guest lecturers from the “real world” of technology will be invited to participate in the class.

INSTRUCTOR(S): Staff

FORMAT: Seminar

CROSS-LISTING: CTMP 4201.03

### **HSTC 4300.03: Nature and Romanticism.**

Kant’s “Copernican Revolution” in philosophy, ironically, marked a resurrection of a full-blown “idealist” philosophy of nature. This class will investigate the attempts of Kant’s followers to construct a natural philosophy and its engagement with the rival mechanical world picture. It explores the implications of this endeavour for the growth of romanticism, vitalism and our modern picture of “nature”. It begins with an examination of the ambiguous heritage presented by Kant’s writings on nature and proceeds through the attempts to develop a complete program of idealist *Naturphilosophie* and its spread throughout European thought by the medium of romanticist art and natural philosophy.

INSTRUCTOR(S): G. McOuat

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 5004.03, EMSP 4300.03

### **HSTC 4400.03: Newton and Newtonianism.**

This seminar involves a close study of the work of Isaac Newton, along with that of his supporters and detractors. Beginning with an overview of pre-Newtonian science, topics range from Newton’s rejection of Cartesianism through his contributions to mathematics, physics, astronomy and optics, along with his inductive scientific method, laws of motion and calculus priority dispute with Leibniz. Also considered are lesser-known aspects of his career, such as his secretive pursuit of alchemy, his heretical theology, his attempts to unravel the Apocalypse, his role in British statecraft and his autocratic rule of the Royal Society. A taxonomy of the forms of Newtonianism that emerged after Newton’s death also allows an exploration of iconographical and apologetic uses of Newton, and his differing legacies in the Britain and France. This seminar concentrates on primary readings, including Newton’s *Principia* (1687), *Opticks* (1704), alchemical treatises and unpublished theological papers, as well as the Leibniz-Clarke correspondence (1717), anti-Newtoniana and eighteenth-century popularizations of Newtonianism such as Voltaire’s *Philosophical letters* (1733) and Maclaurin’s *Account of Newton’s discoveries* (1748). Attention is paid to the social, cultural and political aspects of Newtonianism and no prior knowledge of science is required.

INSTRUCTOR(S): S. Snobelen

FORMAT: Seminar

CROSS-LISTING: EMSP 4310.03

### **HSTC 4500X/Y.06: Honours Seminar in the History of Science and Technology.**

This honours seminar is specifically intended for students in the Combined Honours Degree in History of Science and Technology and will meet the requirements of the 21st credit.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### **HSTC 4510.03: Independent Readings in History of Science and Technology.**

Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction

PREREQUISITE: Honours registration in History of Science and Technology, permission of instructor and Director of program. Students must complete 60 credit hours before registering in this class.

### **HSTC 4511.03: Independent Readings in History of Science and Technology.**

Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

FORMAT: Individual instruction

PREREQUISITE: Honours registration in the History of Science and Technology Programme, permission of the instructor and the Director of the program. Students must complete 60 credit hours before registering in this class.

### **HSTC 4515.06: Independent Readings in History of Science and Technology.**

Independent reading classes will be offered annually. The student is assigned to a member of the staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected.

PREREQUISITE: Honours registration in the History of Science and Technology Programme, permission of the instructor and the Director of the program. Students must complete 60 credit hours before registering in this class.

### **HSTC 4550X/Y.06: Honours Thesis in the History of Science and Technology.**

In this class the student is assigned to a member of staff for regular meetings to discuss readings and present research for the purpose of completing an honours thesis in the History of Science and Technology. Successful completion of HSTC 4550X/Y.06 gives students both their 20th and 21st credit.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Honours registration in the History of Science and Technology, permission of the instructor and the Director of the program.

# International Development Studies

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Cameron, J., BA (Vind), MA (SFU), PhD (York)

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## Professors Emeriti

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McAllister, R. I.  
Shaw, T. M.  
Sinclair, A. (Economics)  
Thiessen, V. (Sociology & Social Anthropology)  
Winham, G. R. (Political Science)

## Associate Professor

Cameron, J., BA (Vind), MA (SFU), PhD (York)  
Mannathukkaren, N., BA (Bangalore, India), MA (Jawaharlal Nehru, India) PhD (Queen's)

## Assistant Professors

Boutet, Alain, BA, MA (Laval), PhD (UQAM)  
Huish, Robert, BA, MA (Queen's), PhD (SFU)  
Schnurr, Matthew A., BSc (Hons) (Queen's), MA (School of Oriental and African Studies), PhD (UBC)  
Ulicki, T., BA (McGill), MA (SMU), PhD (Sussex)

## Cross-Appointed Faculty

Arthur, P. (Political Science)  
Black, D. (Political Science)  
Chircop, A. (Law/Marine Affairs)  
Corke, S.J. (History)  
Denike, M. (Political Science)  
Dubois, L. (Sociology & Social Anthropology)  
Fierlbeck, K. (Political Science)  
Finbow, R. (Political Science)  
Fitting, E. (Sociology & Social Anthropology)  
Gahagan, J. (Health and Human Performance)  
Gardiner Barber, P. (Sociology & Social Anthropology)  
Harvey, F. (Political Science)  
Hayden, A. (Political Science)  
Jackson, L. (Health & Human Performance)  
Karabanow, J. (Social Work)

Kirk, J. (Spanish & Latin American Studies)  
Kynoch, G. (History)  
Lane, P. (Biology)  
Lesser, B. (Economics)  
McOuat, G. (History of Science & Technology)  
Merritt, B. (School of Occupational Therapy)  
Mopoho, R. (French)  
Murphy, C. (Sociology & Social Anthropology)  
Noble, B. (Sociology & Social Anthropology)  
Oakley, R. (Sociology & Social Anthropology)  
Palerno, F. (Architecture & Planning)  
Ramos, H. (Sociology)  
Rogers, D.M. (Spanish & Latin American Studies)  
Tirone, S. (Health & Human Performance)  
Vander Zwagg, D. (Law)  
Wright, T. (College of Sustainability)  
Yoshida, Y. (Sociology and Social Anthropology)  
Zachernuk, P. (History)

## Adjunct Professors

Barber, B. (NSCAD)  
Franceshet, S. (Calgary)  
Harker, J. (CBU)  
Kamra, O.P. (Dalhousie)  
McAllister, R.I. (Economics)  
O'Malley, A. (SMU)  
Shaw, T.M.  
Tharamangalam, J. (MSVU)  
Veltmeyer, H. (SMU)

## I. Introduction

International Development Studies is an interdisciplinary program involving the study of poverty, inequality, social change and justice in a global context. The IDS program is structured around two broad axes: development theory/practice, and the global/local. Areas of teaching expertise among the core faculty in IDS include development theory, gender, culture, human security, rural development, migration, health, Indigenous peoples, participatory development and global citizenship. However, additional areas of expertise are drawn from over 50 cross-appointed and adjunct faculty members who teach IDS approved classes and/or supervise our honours thesis and graduate students.

The department's areas of expertise include many of the key regions of the developing world, particularly Africa, Asia, Latin America and the Caribbean. We take a broad view of development - including development issues within Canada as well as the developing world.

We offer a diverse set of opportunities for students to participate in experiential learning in both Canadian and international contexts. Experiential learning enables students to focus on skills development in a range of areas: language development, research, writing, managerial, etc. Through our experiential learning opportunities, students can volunteer or intern in Halifax, East Africa, Cuba, and many other locations. Students are encouraged to draw upon international development experiences from over twenty overseas linkage programs through Dalhousie and more than 50 local Halifax community organizations. Halifax is the main Maritime regional centre for official and non-governmental organizations active in international development, thereby offering opportunities for students to become engaged locally in development. Students normally participate in experiential learning programs (whether locally or abroad) in their third year of study.

The IDS program offers a study abroad option in Cuba (Winter) with FLACSO (Facultad Latino Americana de Ciencias Sociales Program Cuba) and the University of Havana as well as a summer program in Cuba.

As an interdisciplinary program, IDS recommends students consider combined degree programs. Students are therefore encouraged to enter the combined honours, double major or minor programs, which provide opportunities that further integrate their IDS studies with those of an approved arts or science field, e.g., IDS and History, IDS and Biology. Double majors and combined honours degrees provide additional opportunities for students to pursue graduate studies in more than one area.

Students with backgrounds in sciences are also welcome in this program as topics in international development cut across all disciplines from anthropology to zoology.

The interdisciplinary nature of the program requires that students take a number of credits outside the IDS department as IDS approved classes in other departments. The first year of study at Dalhousie is dedicated to completing first year requirements. IDS students are encouraged to take a broad range of disciplines in their first year to prepare them for the interdisciplinary format of the program. First year students are encouraged to participate in a range of IDS non-class offerings including the Global Development Seminar Series and numerous student-led organizations related to International Development. Other events and activities are advertised on the IDS website and information can be obtained from the IDS office.

Students are encouraged to acquire competence in a relevant language in addition to English (e.g., Arabic, French, Spanish) and Economics. Research design and basic statistics classes (e.g., POLI 3492/3493 or SOSA 3402/3403) may also be useful skills to acquire throughout the IDS degree.)

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements for College of Arts and Science.

The IDS Department offers the following undergraduate degree options:

### IDS as the second subject of study

1. Minor in IDS (three IDS credits required)
2. Double Major with IDS as the second subject (five IDS credits required)
3. Combined Honours with IDS as the second subject (six IDS credits required)

### IDS as the primary subject of study

4. BA (15 credit) Minor in IDS (three IDS credits required)
5. BA (20 credit) Double Major in IDS as the primary subject (five IDS credits required)
6. BA (20 credit) Major in IDS (six IDS credits required)
7. a) BA (20 credit) Combined Honours in IDS + a second subject: Thesis stream (seven IDS credits required)
- b) BA (20 credit) Combined Honours in IDS + a second subject: Classwork stream (seven IDS credits required)
8. a) BA (20 credit) Concentrated Honours in IDS: Thesis stream - (nine IDS credits required)
- b) BA (20 credit) Concentrated Honours in IDS: Classwork stream - (nine IDS credits required)

### First Year Recommended Classes

To enter any of the IDS undergraduate degree programs, students must have completed five full credits (30 credit hours) and are strongly recommended to fulfill the first year requirements outlined in the Degree Requirement section of this calendar. Students who intend to pursue degrees in IDS are encouraged, but not required, to take first year classes that will both fulfill their first year requirements and contribute to their broad understanding of international development issues. Students are highly encouraged to take INTD 1100.06/CANA 1100.06 (Halifax and the World), which can be used to satisfy either the first year social science or humanities requirement. Students who are considering a double major or combined honours program in IDS and another discipline are also encouraged to take any pre-requisite classes for upper level classes in the other discipline. The following classes provide background to key issues or basic skills related to International Development Studies, but are not pre-requisites for upper level IDS classes:

**Social Science Requirement:** INTD 1100/CANA 1100, ECON 1101/1102; GWST 1010/1015; HIST 1501/1502, HIST 1701/1702; POLI 1010, POLI 1015, POLI 1020, POLI 1025, POLI 1030, POLI 1035, POLI 1100; SOSA 1000, SOSA 1050, SOSA 1100, SOSA 1200; King's FYP.

**Humanities Requirement:** INTD 1100/CANA 1100, HIST 1501/1502, HIST 1701/1702; GWST 1010/1015; RELS 1001/1002; PHIL 1000; ENGL 1000, ENGL 1040, ENGL 1041; RUSN 1020/1070; King's FYP.

**Physical Science Requirement:** SUST 1000, SUST 1001; ECON 1101/1102; ENVS 1000; ERTH 1060; PSYCH 1021, 1022.

**Language Requirement:** French, Spanish, Arabic, Chinese, Italian, Russian, etc.

**Writing Requirement:** HIST 1005; POLI 1103; SOSA 1050; SUST 1000; PHIL 1010; ENGL 1010, ENGL 1020, ENGL 1040, ENGL 1045, ENGL 1050, ENGL 1100; King's FYP.

### Degree options for IDS as the second subject of study

#### 1. Minor in IDS

##### *Advanced Classes Required:*

- INTD 2001.03/2002.03
  - INTD 3002.03 or 3003.03
  - One full credit of INTD and/or IDS approved classes at the 2000 level or above.
  - One half credit at the 3000 level or above.
- In total, three full credits in IDS are required

#### 2. Double Major - IDS as the second subject

##### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or 3003.03
- One half credit INTD class with theory content at the 3000 or 4000 level: that is, any INTD class at the 3000 or 4000 level, excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- One full credit of INTD and/or IDS approved classes at the 2000 level or above (See list of IDS approved classes in Section IV).
- Two half credits of INTD and/or IDS approved classes at the 3000 level or above.

In total, a minimum of five and a maximum of seven full credits in IDS are required; more credits are required in the first subject.

#### 3. Combined Honours with IDS as the second subject

##### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or INTD 3003.03
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- Two full credits of INTD and/or IDS approved classes at the 2000 level or above. At least one full credit of IDS approved classes must be taken from a single department other than IDS (see list of IDS approved classes in Section IV).
- Two half credits of INTD and/or IDS approved classes at the 3000 level or above.

In total, five full credits in IDS are required.

### Degree options for IDS as the primary subject of study

#### 4. BA (15 credit) Minor in IDS

##### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or 3003.03
- One full credit of INTD and/or IDS approved classes at the 2000 level or above.
- One half credit of INTD and/or IDS approved classes at the 3000 level or above.

In total, three full credits in IDS are required.

#### 5. BA (20 credit) Double Major in IDS and a second subject

##### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or 3003.03
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3007, INTD 3109 and INTD 4012.

- Two full credits of INTD and/or IDS approved classes at the 2000 level or above. At least one full credit of IDS approved classes must be taken from a single department other than IDS (see list of IDS approved classes in Section IV).
- Two full credits of INTD and/or IDS approved classes at the 3000 level or above.

In total, a minimum of five and a maximum of eight full credits in IDS are required. A minimum of 10 and a maximum of 14 credits at the 2000 level or above are required in the two major fields.

## 6. BA (20 credit) Major in International Development Studies

### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or INTD 3003.03
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- Two full credits of IDS and/or IDS-approved classes at the 2000-level or above. At least one credit of IDS-approved classes must be taken from a single department other than IDS. (See list of IDS approved classes in Section IV).
- Four half credits of IDS and/or IDS-approved classes at the 3000 level or above.

In total, a minimum of six and a maximum of nine full credits in IDS are required.

### IDS Honours Program

The IDS Honours program is designed for students with a demonstrated aptitude for advanced study in the field.

- Admission to the IDS Honours program is based on academic performance and, in the case of the thesis stream, a thesis proposal. Applicants normally should have achieved an overall Grade Point Average (GPA) of at least 3.30 (B+) or better and a minimum B+/A- in all IDS and IDS-approved classes to be considered for admission. In the case of a combined degree, these same requirements must be met in the second major subject
- The deadline for Honours Applications is January 31 of a student's 3rd year of study. Consult the IDS Department website ([www.dal.ca/ids](http://www.dal.ca/ids)) for information on how to apply to the honours program.

The available options within IDS Honours Program are:

### 7.a BA (20 credit) Combined Honours in IDS and a second subject: Thesis stream

#### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or INTD 3003.03
- INTD 4012 (Honours Thesis Class).
- At least one half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- One half credit of 4000-level INTD seminar class.
- Three full credits of INTD and/or IDS classes at the 2000 level or above. Students must take at least one full credit of IDS approved classes from at least two different departments.
- Two half credits of INTD and/or IDS approved classes at the 3000 level or above.

In total, a minimum of seven and a maximum of eight full credits in IDS are required.

### 7.b BA (20 credit) Combined Honours in IDS and a second subject: Classwork stream

#### *Advanced Classes Required:*

- INTD 2001.03/2002.03
- INTD 3002.03 or INTD 3003.03
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- Two half credits of 4000-level INTD seminar classes.
- Three full credits of INTD and/or IDS classes at the 2000 level or above. Students must take at least one full credit of IDS approved classes from at least two different departments.

- Two half credits of INTD and/or IDS approved classes at the 3000 level or above.

In total, a minimum of seven and a maximum of eight full credits in IDS are required.

## 8.a BA with Concentrated Honours in International Development Studies - Thesis stream

### *Advanced Classes Required:*

- INTD 2001.03 / INTD 2002.03
- INTD 3002.03 or INTD 3003.03.
- INTD 4012 (IDS Honours Thesis class).
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- One half credit of 4000-level INTD seminar classes.
- Three full credits of INTD and/or IDS-approved classes at the 2000 level or above. Students must take at least one full credit of IDS approved classes from at least two different departments.
- Six half credits of INTD and/or IDS approved classes at the 3000 level or above. (See list of IDS-approved classes in Section IV).

In total, a minimum of nine and a maximum of 11 IDS credits are required.

## 8.b BA with Concentrated Honours in International Development Studies - Classwork stream

### *Advanced Classes Required:*

- INTD 2001.03 / INTD 2002.03
- INTD 3002.03 or INTD 3003.03.
- One half credit INTD class with theory content at the 3000 or 4000 level; that is, any INTD class at the 3000 or 4000 level excluding INTD 3002, INTD 3003, INTD 3107, INTD 3109 and INTD 4012.
- Two half credit 4000 level INTD seminar classes.
- Three full credits of INTD and/or IDS-approved classes at the 2000 level or above. Students must take at least one full credit of IDS approved classes from at least two different departments.
- Six half credits of INTD and/or IDS approved classes at the 3000 level or above. (See list of IDS-approved classes in Section IV).

In total, a minimum of nine and a maximum of 11 IDS credits are required.

## Conversions

Students who have completed a 15 credit degree can upgrade to a 20 credit major or double major degree. Students who have completed a Major in IDS can upgrade to an honours degree (pending acceptance to the IDS honours program). The requirements for conversions are as follows:

### BA Major Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15 credit Minor to a 20 credit Major degree may enter this program. Students must complete the full set of 20 credit Major requirements, usually by taking five additional full credits.

### BA Honours Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15 credit minor or a 20 credit major or double major degree to a 20 credit Honours degree may enter this program if they meet the conditions for admission to the Honours program. Students must complete the full set of Honours requirements. Students interested in this program should consult the Undergraduate Advisor.

## III. Class Descriptions

### A. Core Classes

#### INTD 2001.03: Introduction to Development I.

Poverty, inequality and injustice are widespread throughout the contemporary developing world. This course will examine how this situation came to be. It begins by analyzing the different meanings of the term "development" and then examines the major approaches that have shaped practical development initiatives on the ground in the Global South over the past 60 years. The course also

examines the legacies of history for contemporary development efforts in the Global South through specific case studies.

FORMAT: Lectures/tutorial

PREREQUISITE: Completion of five full credits at the 1000 level or instructor's permission

CROSS-LISTING: GEOG 2201.03

### **INTD 2002.03: Introduction to Development II.**

This course builds upon the core concepts and approaches studied in INTD 2001 (i.e. different theoretical approaches to development and the historical creation of underdevelopment). The course examines key contemporary issues in the field of development and analyses the connections between them: debt, global trade rules, foreign aid, hunger and malnutrition, rural and urban livelihoods, population growth. The course also examines the principle actors involved in development and the strategies they have used to promote and resist development, including: governments, non-governmental organizations (NGOs), the World Bank and IMF, and popular social movements in the Global South and North.

FORMAT: Lectures/tutorial

PREREQUISITE: Completion of five credits at the 1000 level or instructor's permission

CROSS-LISTING: GEOG 2202.03

### **INTD 3002.03: Development Practice.**

This course is designed for third year undergraduate students who are interested in a career in international development. The course will introduce students to the internal dynamics of development organizations (both governmental and non-governmental), development planning, methodologies of development practice in the field, ethical issues related to development work, fundraising, project proposal writing and project evaluation. The major assignment will involve the preparation of a development project proposal. Because this is a course in development practice, it will involve both seminar discussions and practical 'hands-on' activities. Different sections of the course may include different thematic emphasis – e.g. rural development, gender and development and community development.

FORMAT: Lecture/seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### **INTD 3003.03: Development and Activism: Methods of Organization, Manifestation and Dissent.**

There are three parts to this course. In Manifestation we explore theories of activism to understand how motivated individuals managed to change their societies. In Organization we wrestle with the legalities of forming a civil-society organization. In Dissent we take our skills to the streets by organizing lawful protests.

FORMAT: Lecture/tutorial

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### **INTD 4012.03: Honours Thesis Seminar.**

The honours thesis class is open to only those students who have been accepted into the thesis stream of the IDS honours program. This class will support students through the writing of their honours theses, from proposals to completion. Issues of research design, method, and ethics will be addressed, and work in progress will be presented.

FORMAT: Seminar

PREREQUISITE: Admission to IDS Honors Program (Thesis Stream)

## **B. Additional IDS Classes**

### **INTD 1100X/Y.06: Halifax and the World.**

This course offers an introduction to both International Development Studies and Canadian Studies by exploring the connections between important global issues and your daily life as a student in Halifax. As you walk across the Dalhousie campus and go about daily life in Halifax, your actions connect you to people around the globe and to the history of the city and world as well as to the many works of literature, art and music that depict these connections.

FORMAT: Lecture, discussion, tutorial and experiential learning outside the classroom

CROSS-LISTING: CANA 1100.06

EXCLUSION: INTD 1101.03/CANA 1101.03

### **INTD 1101.03: Halifax in the World.**

Walking across the Dalhousie campus while drinking a coffee and talking on your phone connects you to people around the world and to the history and literature of Halifax, Canada and the World in ways that you probably never imagined: your coffee connects you to the peasant farmers in Ethiopia or Guatemala who grew the

beans. Your phone call connects you to child soldiers in Africa who fight over coltan – one of the key minerals in cell phones. Your footsteps across campus place you on what was once Mi'kmaq territory and when you walk through Halifax you re-trace the footsteps of key characters in the history and literature of the city and the world. This half-credit summer course explores these and other similar connections as well as the ethical questions that they raise about our daily lives. The course will engage you in both hands on action and academic research to learn about and confront the many connections between our daily lives, our city and the rest of the world.

NOTE: To see the course outline, meet the professors and learn more about the course, see: [www.dal.ca/ids](http://www.dal.ca/ids)

FORMAT: Lectures/seminars/site visits

CROSS-LISTING: CANA 1101.03

EXCLUSION: INTD 1100.06, CANA 1100.06

### **INTD 1201X/Y.06: 2201X/Y.06/3201X/Y.06: International Development Studies through Canada World Youth.**

This class is intended for Canada World Youth participants who wish to use the Canada World Youth experience as a basis for further study- leading to an academic credit. Canada World Youth registrants will receive detailed written course guidelines and a reading package. Tutorials will be available for those able to come to Dalhousie prior to and/or following Canada world Youth field placements. CWY participants are required to keep a journal of their observations and to write a research report drawing upon their experiences on the CWY project both in Canada and overseas. Upon return to Canada, they should communicate with the International Development Studies Office at Dalhousie and should extra guidelines be sought, they inform the Course Instructor at that point. Normally, within 60 days of their return, they should submit their reports (in accordance with detailed guidelines provided by the Instructor) for evaluation. All CWY class participants are encouraged to present talks to local high schools, youth groups, and appropriate community-university organizations. The degree of analysis will be more demanding the higher the level of class taken. In each case, papers may be written in English or French.

RECOMMENDED: High school/university global studies

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Consult the Department for more information

RESTRICTION: Can only be taken once in a student's programme.

### **INTD 2045.03: Indian Society: Change and Continuity.**

The objective of this half-credit class is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an unbroken living civilization of great antiquity. The focus of the class will be on selected, significant aspects of Indian society with particular emphasis on issues of current relevance. Topics discussed include: a historical background, social structure, political and social constraints to economic development, health issues, major religions and philosophy, development and foreign policy since independence, science and technology, disaster relief and development, and literature. This class counts as a half-credit in Sociology and Social Anthropology towards the IDS established discipline requirement.

INSTRUCTOR(S): Staff

FORMAT: Lecture

CROSS-LISTING: SOSA 2045.03

EXCLUSION: INTD 3045.03

### **INTD 2106.03: Africa: An Introduction.**

This course will focus on contemporary Africa. Sterotypical portrayals of Africa will be examined and critiqued with the goal of emphasizing the immensity, diversity and complexity of the continent in order to better understand the opportunities and challenges of African development in the twenty-first century.

FORMAT: Lecture/tutorials

CROSS-LISTING: GEOG 2206.03

### **INTD 3000.03: Seminar in Development Studies.**

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission



### INTD 3001.03: Contemporary Debates in Development Theory.

This seminar class examines key contemporary theoretical debates in International Development Studies and their relevance to the real world of development practice.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3010.03: Seminar in Development Studies.

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3012.03: Sustainability, Development, Economy.

This class offers an introduction to principles of sustainability and equitable distribution of benefits oriented towards issues of economy. The class adopts an interdisciplinary framework of inquiry to explore challenges of appropriate scale (relative to biocapacity), efficient allocation, and inter and intra-generational equity. In addition, the class will consider how these issues apply to managing real world issues in environmental management, and will explore tools to quantify and interpret scale, efficiency, and distributive justice. This course is designed as a one-term introduction to the intersection of sustainability, economic issues and social justice for undergraduate students who have little or no prior exposure to economics, but who have completed one or more classes in international development, ESS, environmental science, or related programs.

FORMAT: Online delivery

PREREQUISITE: INTD 2001/2002 or SUST 2000 or permission of instructor

### INTD 3101.03/3102.03/3202X/Y.06: Special Topics in International Development Studies.

A class on a particular aspect of international development taught by special arrangement between individual IDS major or honours students and individual instructors associated with the program. Available in summers as well as regular sessions.

NOTE: Students taking INTD 3202X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Individual tutorial

PREREQUISITE: INTD 2001.03 and 2002.03 or instructor's permission

### INTD 3104.03: Seminar in Development Studies.

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3106.03: Seminar in Development Studies.

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3107X/Y.06: Experiential Learning: Canada.

Experiential learning is an opportunity for students to reflect on the global/local and theory/practice dynamics of the world around them. Other programs and departments use terms such as internship, volunteer or co-op placements. IDS has adopted the term experiential learning because it reflects the interplay between academic and practical skills development that this program offers. Experiential learning courses are available for both local/Canadian and international placements. The Canadian component of experiential learning focuses on the themes of community development and public engagement. The international component addresses questions of global citizenship. The Canadian component of experiential learning combines classroom learning with volunteer work experience in a community organization in Halifax or other parts of Canada. Students are required to volunteer for a minimum of 60 hours in each term, or approximately 3 hours/week. In addition to this work, students are required to complete a set of readings (to be developed in collaboration with the course

instructor) and three academic assignments (a mid-term report, a reflective paper and an academic paper).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar, discussion and applied work experience with an organization or community group within Canada.

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

CROSS-LISTING: CANA 3107.06

### INTD 3109.03: Experiential Learning: Abroad.

The experiential learning abroad course is open to International Development Studies students who wish to obtain academic credit for an overseas placement, volunteer experience or internship. Students who have already secured a place in an overseas experiential learning program can register for this half credit. Special permission to register for this course is required and an application for this course must be completed prior to registration. Students are required to complete course readings and to write several reports reflecting on the relevant literature and the practical work experience. One half credit is completed over the course of a full academic year.

FORMAT: Seminar

PREREQUISITE: This class is open to non-IDS students with the permission of the instructor.

### INTD 3110.03: Migration and Development.

The purpose of this course is to explore and better understand the connections between migration and development in contemporary societies. Classes will introduce or further explore one main theme or issue, such as development-induced displacement, labour migration, and HIV/AIDS and migration. Each class will centre on one or more discussion questions, exchange insights from relevant experiences of class participants or focus on a case study

FORMAT: Lecture/seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission.

### INTD 3111.03: Popular Culture and Development.

Development does not occur in a vacuum; it is informed by a particular cultural understanding and carried out by a specific mode of politics. Similarly, culture too, unlike the common belief, is not an autonomous realm, but consistently shapes and is shaped by other societal dimensions. This course will seek to understand the connections between culture and development by specifically exploring the dynamics of popular culture and its linkages with capitalist forms of development mainly in the South.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3114.03: Environment and Development.

This seminar investigates the intersections between environmental science and development studies. Our primary focus will be to understand how the non-human environment impacts and constrains development interventions, both in the past and the present. The class is organized into three distinct sections. The first focuses on informal lectures mixed in with discussion and interactive forums, including debates and small group exercises. The second component of the class revolves around student presentations, while the final component consists of a simulated negotiation.

FORMAT: Lecture/seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3115.03: Global Health: Challenges of Global Health Equity in the 21st Century.

By examining global inequities that lead to health injustices, this course explores why healthcare is abundant for some and nonexistent for others. It identifies why some are born to live well, and other are doomed to die quick. It asks, "what are we going to do about it?"

FORMAT: Lecture

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### INTD 3116.03: Contemporary Issues in Gender and Development.

The course critically examines how development processes affect women and men and gender relations. Many development projects and policies have had a negative impact on women. The course provides a theoretical and conceptual grounding in gender/women and/in development, explores the gendered impact of policies and processes and examines issues such as governance, HIV/AIDS, and conflict.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

CROSS-LISTING: GWST 4116.03  
EXCLUSION: GWST 4211.03

### **INTD 3125.03: The French-Speaking World.**

Introduction to the French-speaking world from a political, cultural, social and economic perspective. Study of the organization known as la Francophonie, with an emphasis on its evolution and mandate, as well as on the bilateral and multilateral cooperation between its member countries. The class is designed for students who are not specializing in French. The class format will consist of lectures and in-class discussion of print and audio-visual materials. Student assessment will be based on oral presentations, assignments, exams and written papers. The language of the class will be English.

INSTRUCTOR(S): R. Mopoho  
CROSS-LISTING: FREN 3125.03

### **INTD 3150.03: Aspects de la francophonie/Aspects of the Francophone World.**

Taught in French.

Introduction to the study of the francophone world: political, economic, linguistic, literary and cultural aspects. From year to year the class might emphasize different regions: Western Countries, Sub-Saharan Africa, Pacific Islands, West Indies, Northern Africa.

INSTRUCTOR(S): R. Mopoho  
FORMAT: Lecture  
PREREQUISITE: 2000-level class or consent of instructor  
CROSS-LISTING: FREN 3150.03

### **INTD 3401.03: Seminar in Development Studies.**

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar  
PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### **INTD 3406.03: Seminar in Development Studies.**

This seminar course consists of an intensive examination of a selected issue within International Development Studies. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar  
PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

## **C. The Cuba Semester Program - Offered in the Winter Semester only in Cuba**

### **INTD 3301.03: Spanish Language and Grammar: The Cuban Dialect.**

NOTE: INTD 3301 - 3306 are offered as part of the Cuba Semester program. Only students enrolled in this program may take these courses.  
Spanish Language and Grammar: The Cuban Dialect (prerequisite for the remaining classes).

### **INTD 3302.03: Social Development in Cuba.**

This class examines the situation of women, the family and children in Cuba, and the educational system in theory and in practice.

### **INTD 3303.03: The Political Economy of Cuba.**

Analysis and debate of the forms of politics practiced in the Cuban revolution, as well as State institutions, during the various stages of the revolutionary process. Study of the evolution of the Cuban economy and all its principle strategies, including the economic crisis and Cuba's reinsertion in the international economic arena.

### **INTD 3304.03: Sustainable Development in Cuba.**

The class examines Cuba's experience with sustainable development, including recently introduced agricultural cooperatives and communal environmental education.

### **INTD 3306.06: Field Research Practicum.**

This class involves four weeks of field research under the supervision of a Cuban professor, culminating in the production of a major research paper. Research will be undertaken in one of the following three areas:

\*the environment and sustainable development;  
\*women, family and childhood in the community;  
\*community work and social participation.

INSTRUCTOR(S): Latin American Faculty of Social Sciences (FLACSO)  
University of Havana

FORMAT: Fourteen weeks - University of Havana

PREREQUISITE: Students must be, at least, functional in Spanish (SPAN 1020.06 and SPAN 2020.06).

CROSS-LISTING: SPAN 3301.03, 3302.03, 3303.03, 3304.03, 3306.06

RESTRICTION: Open to students enrolled in 3rd or 4th year of the IDS or Spanish program or comparable programs at other universities

### **INTD 3310.06: Cuban Culture and Society.**

Through seminars, lectures and other activities, students will be introduced to Cuban society and culture. This class consists of briefing and debriefing sessions in Halifax with two weeks spent in Cuba. In Cuba, there will be daily lectures in English at the University of Havana and field visits to sites in and around Havana with opportunities to meet and interact with the local population. Participants will be required to keep a journal, and prepare and present a research paper on an approved topic related to Cuban development. This class counts as a credit in IDS, or Spanish towards the IDS established discipline requirement.

INSTRUCTOR(S): Latin American Faculty of Social Sciences (FLACSO),  
University of Havana, and Staff

FORMAT: Six weeks summer intercession with two weeks in Havana  
PREREQUISITE: INTD 2001.03 and 2002.03 or instructor's permission  
CROSS-LISTING: SPAN 3310.06

### **INTD 4001.03: 4002.03/4003.06: Special Topics in International Development Studies.**

### **INTD 4004.03: Topics in Cuban Development.**

This class will undertake a careful, in depth examination of a select theme in Cuban development. The theme will vary from year to year. These may include such topics as: Issues of Gender & Society, Economic Relations & International Policy, Sustainable Development & Social Participation in Rural Communities & Agricultural cooperatives, Family, Poverty, Social Development and Community Programmes, Social Class Dynamics and Economic Strategies. The class will be taught in Spanish. Classes will involve the reading, presentation, and discussion of selected readings.

FORMAT: Seminar  
PREREQUISITE: Minimum of 2 years of Spanish and/or equivalent and at least one third year IDS course or instructor's permission  
CROSS-LISTING: SPAN 4004.03

### **INTD 4006.03: Global Poverty and Human Rights: From Development to Global Citizenship.**

This course explores contemporary debates from an interdisciplinary cadre of scholars in order to understand why our political and financial systems acquiesce to world poverty. The course will run as a seminar course that will require students to contribute as active participants by generating critical debate out of the assigned readings.

FORMAT: Seminar  
PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### **INTD 4011.03: Advanced Seminar in Development Theory.**

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

### **INTD 4013.03: Environmental Conflict and Security.**

This seminar seeks to unravel the origins of conflict in the Global South. It emphasizes the ecological dimension of conflict, by investigation the intersections between natural resources and political upheaval. We will trace the origins of a diverse set of conflicts evaluating the role the non-human environment plays in triggering upheaval, as well as possible steps to alleviate ongoing conflicts and prevent new ones.

FORMAT: Seminar  
PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

## INTD 4022.03: Advanced Seminar in Development Theory.

## INTD 4100.06: Special Topics in IDS.

## INTD 4211.03: Gender and Development: Theory, Concepts and Methods.

The primary aim of this course is to provide a broad foundation to some of the theoretical perspectives which have informed current thinking in gender and development. The course introduces students to key concepts in the analysis.

FORMAT: Seminar

PREREQUISITE: INTD 2001.03 and INTD 2002.03 or instructor's permission

CROSS-LISTING: GWST 4211.03

## IV. IDS Approved Classes from Other Departments

NOTE: Some classes are not offered every year so please consult the current timetable, in addition to the calendar, when registering.

### 1. Biology

The importance of an understanding of biology for informed contribution to sustainable development cannot be over-emphasized.

- BIOL 3065.03: Conservation Biology
- BIOL 3226.03: Plants and Civilization
- BIOL 3601.03: Nature Conservation
- BIOL 4065.03: Sustainability and Global Change
- BIOL 4160.03: Political Ecology

### 2. Earth Sciences

Geology lies behind many of the environmental problems facing humanity today - while energy and mineral resources provide an underpinning of many of the development plans of Third World nations.

- EARTH 2410.03: Environmental and Resource Geology
- EARTH 3410.03: Environmental Geology

### 3. Economics

A grasp of economic frameworks whereby societies allocate resources (human resources and capital) is a prerequisite for understanding development plans and national prospects, development projects and foreign aid, and the constraints and possibilities for sustainable development.

- ECON 2213.03: Emerging Gants: The Economic rise of China and India
- ECON 2216.03: Economics of Global Warming
- ECON 2334.03: Globalization and Economic Development: Current Debates
- ECON 3310.03: Economic Growth in Historical Perspective
- ECON 3317.03: Poverty and Inequality
- ECON 3330.03: International Trade
- ECON 3331.03: International Finance
- ECON 3332.03: Resource Economics
- ECON 3333.03: Theories of Economic Development
- ECON 3335.03: Environmental Economics

### 4. English, French and Spanish

Language skills are obviously important for effective communication for those wishing to pursue international development studies; but through the study of languages and literature, important insights about culture and development experience are also to be gleaned. The IDS program encourages students minimally to study one additional (relevant) language to English.

#### English

- ENGL 2005.03: World Literature
- ENGL 2090.03: Literature, Migration, and Citizenship
- ENGL 3086.03: Post-Colonial Literatures

#### French

- FREN 3125.03: Le Monde francophone/The French-Speaking World
- FREN 3150.03: Aspects de la francophonie/Aspects of the Francophone World
- FREN 3175.03: Topical Issues in Francophone/Thèmes de la francophonie

**Please note:** Some classes in the French Department's Senegal Semester Abroad Program are likely to be eligible for IDS credit. Consult the undergraduate advisor to determine eligibility.

## Spanish

- SPAN 2069.03: Central America to 1979
- SPAN 2070.03: Area Studies on Mexico and Central America
- SPAN 2109.03: Cuba from Colonial Times to 1961
- SPAN 2110.03: The Cuban Cultural Revolution
- SPAN 2130.03: Latin American Dictators in the Novel
- SPAN 2200.03: Latin American Civilization
- SPAN 3070.03: Contemporary Latin American History
- SPAN 3301.03/3302.03/3303.03/3304.03/3306.06: The Cuba Program at FLACSO (Facultad Latino Americana de Ciencias Sociales  
Programma Cuba), The University of Havana
- SPAN 3310.06: Cuban Culture & Society
- SPAN 3340.06: Mexican Culture

## 5. Environmental Studies

Most environmental scientists have primary expertise in a particular discipline and work cooperatively with specialists from other disciplines to solve environmental problems. Dalhousie now offers a minor in both environmental studies and science. However, current programs that also provide classes emphasizing environmental subjects include Earth Sciences (geology and hydrogeology), marine biology and POLI 3585.03.

- ENVS 3000.03: Environmental Science Internship
- ENVS 3200.03: Introduction to Environmental Law
- ENVS 3220.03: International Environmental Law for Scientists
- ENVS 3400.03: Human Health and Sustainability
- ENVS 3501.03: Environmental Problem Solving I
- ENVS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory.
- EARTH 2410.03: Environmental and Resource Geology
- EARTH 3410.03: Enhanced Environmental Geology
- PHIL 2480.03: Environmental Ethics
- PHIL 2485.03: Technology and the Environment
- POLI 3537X/Y.06: Management and Conservation of Marine Resources
- POLI 3585.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea

## 6. Gender and Women's Studies

It is important to recognize the implications of gender issues and to be sensitive to how these are viewed in different cultural circumstances. Hence, students are strongly encouraged to participate in at least one of the following GWST classes.

- GWST 2053.03: Women and Islam
- GWST 2400X/Y.06: Work and Occupations in a Changing World
- GWST 2800X/Y.06: Comparative Perspectives on Gender
- GWST 3006.03: Comparative Perspectives on Gender and Work
- GWST 3168.03: Issues in Latin American Society
- GWST 3310.03: Gender and Development in Africa
- GWST 4116.03: Contemporary Issues in Gender and Development
- GWST 4211.03: Gender and Development: Theory, Concepts and Methods
- GWST 4320.03: Empowerment, Gender, and Development

## 7. History

Just as people need to know who they are and how they arrived there, groups, races, classes, states and nations need a sense of their own past as part of their culture and to guide their future development choices.

- HIST 2006.03: The Atlantic World, 1450-1650: European Colonization of the Americas
- HIST 2007.03: The Atlantic World, 1650-1800: European Empires in the Americas
- HIST 2020X/Y.06: Imperial and Soviet Russia
- HIST 2021.03: Soviet Russia
- HIST 2388.03: Latin American Dictators in the Novel
- HIST 2381.03: Latin America
- HIST 2382.03: Central America to 1979
- HIST 2383.03: Area Studies on Mexico and Central America
- HIST 2384.03: Cuba from Colonial Times
- HIST 2385.03: The Cuban Cultural Revolution
- HIST 2386.03: Colonial Latin America
- HIST 2387.03: Latin America since Independence
- HIST 2392.03: Introduction to Caribbean History (1450 to present)
- HIST 2425.03: Africa Before 1900

- HIST 2426.03: Africa Since 1900
- HIST 2502.03: The Ottoman Empire and Its Legacy in the Middle East, 1750-1923.
- HIST 2503.03: Classical and Medieval History of Islamic Civilization
- HIST 2504.03: Modern History of Turkey, Iran, Israel, and the Arab-Speaking lands (nineteenth-twentieth centuries)
- HIST 2505.03: Turbans and Berets: A Modern History of Iraq
- HIST 2510.03: Modern History of South Asia
- HIST 2711.03: Struggles that Shaped the Modern World: 1600 - 1900
- HIST 2712.03: Freedom Fighters or Terrorists?
- HIST 3090.03: Russian Society
- HIST 3092.03: Russian Topics
- HIST 3390.03: Latin America: Revolution and Repression.
- HIST 3393.03: Indigenous Movements in Latin America
- HIST 3430.03: The Making of Colonial Africa, c. 1850-1930
- HIST 3431.03: Struggles in the City: Labour, Migration and Urban Live in Colonial Africa.
- HIST 3435.03: The Rise and Fall of African Slavery
- HIST 3451.03: Southern Africa to 1860
- HIST 3452.03: Southern Africa since 1860
- HIST 3470.03: Wars and Revolutions in Nineteenth Century Africa
- HIST 3471.03: Wars and Revolution in Twentieth Century Africa
- HIST 3500.03: Topics in Global History
- HIST 3509.03: Arab Caliphs, Turkish Commanders, and Persian Viziers: Islamic History, 750-1200
- HIST 3510.03: Sultans and Shahs: Politics and Religion in the Islamic Gunpowder Age (1500-1800)
- HIST 3511.03: Ancient and Medieval History of the Persianate World
- HIST 3512.03: Modern History of Iran, Central Asia, and the Caucasus
- HIST 3513.03: From Cairo to Cape Town: Religious Revival, Identity and Colonialism in Muslim Africa.
- HIST 3515.03: Food for Thought: History and the Culinary Cultures of the Islamic World
- HIST 4271.03: The Fisheries of Atlantic Canada's Society and Ecology in Historical Perspective
- HIST 4300.03: Topics in Latin American History
- HIST 4400.03: Topics in African History
- HIST 4401.03: State Violence Communal Conflict and Criminology in Modern South Africa
- HIST 4404.03: Crime and Punishment in Modern South Africa
- HIST 4475.03: African Intellectuals and the Modern Experience
- HIST 4510.03: Topics in Islamic and Middle East History.
- HIST 4545.03: Scripture and Strategy: History of Islamic Political Thought
- HIST 4550.03: Orientalism and Occidentalism
- HIST 4555.03: A dream Palace or a Bitter Reality Arab Intellectuals and their ideologies in the Modern Period
- HIST 4614.03: Sex, Conquest and Power, Sex and Gender in Latin America - 1492 to the present

## 8. Philosophy

Issues in International Development are fundamentally concerned with principles of ethics and justice. Philosophy provides students with the necessary foundation to think about these principles and apply them to international issues in an informed way.

- PHIL 2081.03: Ethics in the World of Business
- PHIL 2160.03: Philosophical Issues of Feminism
- PHIL 2165.03: Philosophy and the Black Experience
- PHIL 2450.03: Democracy, Difference and Citizenship
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2480.03: Environmental Ethics
- PHIL 2485.03: Technology and the Environment
- PHIL 3470.03: Human Rights: Philosophical Issues
- PHIL 3476.03: Liberalism and Global Justice
- PHIL 4700.03: Philosophy of Race

## 9. Political Science

Political Science is critical for individuals who want to know more about the values, laws, institutions and policy mechanisms that govern their lives in society, and, as well, the differences between their systems of government and those in other countries.

- POLI 2300X/Y.06: Comparative Politics
- POLI 2520.03: World Politics

- POLI 2530.03: Foreign Policy in Theory and Practice
- POLI 3302.03: Comparative Development Administration
- POLI 3303.03: Human Rights: Political Issues
- POLI 3311.03: Sport and Politics
- POLI 3315.03: African Politics
- POLI 3350.03: Governance and Globalization
- POLI 3360.03: Politics in Latin America
- POLI 3380.03: Politics of Climate Change
- POLI 3385.03: Politics of the Environment
- POLI 3403.03: Human Rights: Philosophical Issues
- POLI 3520.03: Building Democracy and Peace
- POLI 3525.03: Comparative Foreign Policy Simulation
- POLI 3531.03: The UN in World Politics
- POLI 3535.03: The New International Division of Labour
- POLI 3537X/Y.06: Management and Conservation of Marine Resources (summer only)
- POLI 3540.03: Foreign Policies of Third World States
- POLI 3544.03: Political Economy of Southern Africa
- POLI 3560.03: Human Development/Security at the Start of the Twenty-first Century
- POLI 3567.03: International Organizations
- POLI 3570.03: Canada and the World
- POLI 3581.03: Diplomacy and Negotiation
- POLI 3585.03: Politics of the Environment
- POLI 3587.03: International Political Economy
- POLI 3596.03: Explaining Global Conflict and Violence
- POLI 4302.03: Comparative Development Administration
- POLI 4303.03: Human Rights Political Issues
- POLI 4355.03: Comparative Perspectives on the Development State
- POLI 4569.03: Canadian Foreign Policy
- POLI 4636.03: Nationalism and Statecraft
- POLI 4656.03: Oil, Natural Gas and Government: The Political Economy of Regulation

## 10. Religious Studies

Understanding religion and its influences on human behaviour involves grasping both the meaning of faith in the lives of participants and the critical analysis of outside observers. It has important implications for international cultures and development questions.

- RELS 2002.03: Christianity
- RELS 2003.03: Islam
- RELS 2011.03: Hinduism
- RELS 2013.03: Buddhism
- RELS 2053.03: Women and Islam
- RELS 3009.03: Christianity in the Land of Islam
- RELS 3101.03: The Self and the World in Indian Story
- RELS 3112.03: Buddhism in India and Tibet

## 11. Russian

Russia and the Soviet Union have been important players on the world stage for many centuries. The history and current situation of this region has had profound importance for the development of both Europe and Asia, as well as the developing regions. The study of this region is increasingly important to development theory, practice and planning.

- RUSN 2023.03: Soviet Russia
- RUSN 2346.03: East European Cinema War, Lose, and Revolutions
- RUSN 2081.03: Contemporary Russian Culture - The Seven Deadly Sins

## 12. Sociology and Social Anthropology

Sociology provides a context within which students learn to think critically about their social environment. Social Anthropology aims at generalizations by comparing structures and processes in major institutions within societies (kinship, political, economic and religious) as well as between societies.

- SOSA 2001X/Y.06: Ethnography in a Global Context
- SOSA 2041.03: Describing Social Inequality
- SOSA 2042.03: Explaining Social Inequality
- SOSA 2101.03: Environment and Culture
- SOSA 2102.03: Political Ecology
- SOSA 2190X/Y.06: Comparative Perspectives on Gender
- SOSA 2291X/Y.06: Goblins, Ghosts, Gods, Gurus
- SOSA 2400X/Y.06: Health and Illness Across Cultures
- SOSA 2401X/Y.06: Food and Eating Across Cultures

- SOSA 3006.03: Comparative Perspectives on Gender and Work
- SOSA 3014.03: Rethinking Culture and Class
- SOSA 3015.03: Popular Memory
- SOSA 3060.03: Social Change and Development
- SOSA 3143.03: Health, Illness and the World System
- SOSA 3149.03: Childhood in Cross-Cultural Perspective
- SOSA 3165.03: Peoples and Cultures of the World: Selected Area Studies
- SOSA 3168.03: Issues in Latin American Society
- SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America
- SOSA 3190.03: Social Movements
- SOSA 3206.03: Ethnicity, Nationalism, and Race
- SOSA 3211.03: Continuity and Change in Rural Societies
- SOSA 3214.03: Living in a Globalized World
- SOSA 3215.03: Migration and Identity
- SOSA 3225.03: Culture, Rights & Power
- SOSA 3228.03: Belief Systems: Symbols, Myth and Meaning
- SOSA 3310.03: Indian Society: Change and Continuity
- SOSA 4003.03: Contemporary Perspectives in Ethnography
- SOSA 4004.03: Issues in Economy, Work and Development
- SOSA 4005.03: Issues in Social Injustice and Social Inequality
- SOSA 4210.03: Tourism and Development

### 13. Theatre

- THEA 4932.03: Cross-Cultural Theatres

## Italian Studies

NOTE: Classes in Italian studies are administered by the French Department (page 193).

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### Dean

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### Assistant Professors

Paolo Matteucci, Laurea in Lingue (Torino), MA, PhD (USC)

## I. Introduction

Learning to read and speak Italian offers access to an important world culture. While modern Italy began to emerge in its present-day form in the 19th century, the civilizations that preceded it have exerted a strong influence on the culture of the West. Whether in religion, art, music, or science, Italy's past offers many keys to the present. Through its tradition of global exploration and entrepreneurial endeavors, Italy has played a significant role in world history. Today, it is one of the world's wealthiest democratic nations, and a leader in a variety of fields, including film, design, cuisine, and intellectual life. Classes in Italian literature and culture, building on classes in Italian language, will open up to the student this wide and fascinating array of topics.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA (20 credit) Double Major

A minimum of five full credits (30 credit hours) and a maximum of eight in Italian studies above the 1000 level, combined with one of the Major subjects in the BA program. Within those five credits, students must include ITAL 2010.06 and ITAL 3010.06, and at least one other full credit above the 2000 level.

### B. BA (20 credit) Combined Honours

A minimum of five full credits (30 credit hours) in Italian studies above the 1000 level is required for the Combined Honours program, along with one of the Combined Honours subjects in the BA program. Within those five credits, students must include ITAL 2010.06 and ITAL 3010.06, at least one other full credit above the 2000 level and at least one half credit at the 4000 level.

NOTE: Italian studies can only be the second subject for the Double Major or Combined Honours. It cannot be the primary subject for these programs.

### C. Minor in Italian Studies

Three full credits (18 credit hours) in Italian Studies above the 1000 level, including:

- ITAL 2010.06 (Intermediate Italian)
- At least one of ITAL 3010.06, ITAL 3200.03, ITAL 3300.03, ITAL 3500.03, ITAL 3600.03, ITAL 3700.03, ITAL 4010.03, ITAL 4020.03, ITAL 4040.03.

## III. Class Descriptions

### ITAL 1010X/Y.06: Italian for Beginners.

Introduction to the basic structures of Italian, combined with practical vocabulary for oral and written communication. This class aims to develop all language skills (listening, speaking, reading, writing), by integrating grammar study, oral and written exercises, and situational contexts. The class also includes an introduction to Italian culture. This class fulfills the BA language requirement.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab/tutorial

EXCLUSION: ASSC 1010X/Y.06

### ITAL 2010X/Y.06: Intermediate Italian.

This class is open to students with a sound knowledge of the basics of the Italian language (verb tenses, sentence structure, high frequency vocabulary) and is designed to build on that knowledge. The objective of the course is fourfold: 1) to develop awareness of finer points of usage in writing Italian; 2) to provide practice in listening comprehension of material ranging from texts read aloud to spontaneous dialogue; 3) to provide the practice required for the consolidation and development of speaking skills; 4) to provide the practice required for the consolidation and development of reading skills through texts that will expand awareness of Italian culture and literature.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 1010X/Y.06, or ASSC 1010X/Y.06

EXCLUSION: ITAL 2100X/Y.06

### ITAL 2061.03: Civilization of Baroque Italy.

This is a scaled-down version of 2060X/Y.06, and studies Italy at the time of its greatest influence on Western civilization. The class examines Italy's politics, its vibrant urban and rural societies, the place of Catholicism in its cultural and intellectual life, and the innovative early modern economy, all before the great crisis of the 1620s. Open to first-year students.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2061.03

EXCLUSION: HIST 2060.06

### ITAL 2101X/Y.06: The Origins of Modern Italy.

An introductory survey of Italian history from the late Renaissance to the French Revolution, and Italy's passage from the Western world's pilot economy and culture, to a place on the margins of Europe. Specifically, the class deals with the ecology and the economy, the influence of the Church and the Inquisition, the impact of piracy, banditry, epidemics and the Thirty Years War, the decline of the Spanish Empire, and the evolution from a Baroque sensitivity to the Enlightenment. Open to first-year students. Taught in English.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2063X/Y.06

EXCLUSION: HIST 2061.03

### ITAL 2200.03: Modern Italian Culture.

This course will focus on the transformation of modern Italian culture from the early twentieth century to the present, with discussion of major historical and social events of the period. Topics may include fascism, futurism, neo-realism, the rise of media culture, Italian cinema, and Italy's political role in the European Union.

FORMAT: Lecture

EXCLUSION: ITAL 3150.03

### ITAL 2201.03: Survey of Italian Literature I: from the Origins to 1600.

This course will provide a survey of Italian Literature from the Middle-Ages to 1600. Literature covered may include works of writers such as Dante Alighieri, Francesco Petrarca, Giovanni Boccaccio, Catherine of Siena, Niccolò Machiavelli, Benvenuto Cellini and Veronica Franco. This class will be given in English; readings for Italian major students will be in Italian.

INSTRUCTOR(S): P. Matteucci

FORMAT: Lecture

EXCLUSION: ITAL 2210

### ITAL 2202.03: Survey of Italian Literature II: 1600 to Present.

This course will provide a survey of Italian Literature from 1600 to present. Literature covered may include works by Ugo Foscolo, Giacomo Leopardi, Sibilla Aleramo, the Futurists, Luigi Pirandello, Italo Svevo, Italo Calvino, Natalia Ginzburg, and Dacia Maraini. This class will be given in English; readings for Italian major students will be in Italian.

INSTRUCTOR(S): P. Matteucci

FORMAT: Lecture

EXCLUSION: ITAL 2210

### ITAL 2210.03: Introduction to Italian Literature.

This course will focus on selected topics in Italian literature and criticism. The course will be given in English and readings for Italian minor and major students will be in Italian.

FORMAT: Lecture

EXCLUSION: ITAL 3100.03

### ITAL 2600.03: Survey of Italian Cinema.

Class to be held in English; with part of the course work in Italian for Italian majors. Survey of the Italian Cinema from the origins onwards: Focus: the 'golden age' of Italian silent movies; visual culture under fascism; Italian neo-realism; the impact of television.

FORMAT: Lecture

CROSS-LISTING: THEA 2314.03

### ITAL 3010X/Y.06: Advanced Italian.

This course will focus on spoken and written Italian. Cultural aspects of Italy's past and contemporary history will be the subjects of oral discussion and written composition. Topics such as fine arts, theatre, cinema, music, culinary history, and fashion will be the basis for language practice. The goal of the course is to provide students with conversational and writing skills. Attention will be given to finer points of grammar, particularly Italian morphology and syntax. Students will engage in small group work and individual reporting. The material for the course will be drawn from both specialized workbooks and news/articles from authentic Italian newspapers and websites. Some class time will be devoted to impromptu discussions allowing students to test their thinking and communication skills.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 2010X/Y.06 or permission of instructor

### ITAL 3300.03: Twentieth Century Italian Literature.

This course examines Italian literature in the twentieth century, with references to contemporary Italy's social history and culture. Students will acquire first-hand knowledge of the work of key writers of the Novecento, such as for example Sibilla Aleramo, Luigi Pirandello, Italo Svevo, Natalia Ginzburg, Primo Levi, Elsa Morante, Italo Calvino, Dacia Maraini, or others. The course goals are multi-folded: while strengthening their communicative skills in Italian, students will forge their own tools for critical and argumentative thinking, and use them to engage in a productive reading of the literary texts under consideration. All coursework will be done in Italian.

FORMAT: Lecture

PREREQUISITE: ITAL 2010XY or permission of instructor

### ITAL 3500.03: Topics in Italian Culture.

This course will discuss and critically assess selected topics of Italian culture. The subjects will vary from year to year, and may range from Italy's fine arts tradition to the history of its *commedia dell'arte*, from its political and literary movements to its world-renowned filmmaking practice, from the changing role of women in Italian society to its religious evolution, from its history of migration and exploration to its "Made in Italy" international appeal and marketing. Topics may be added and perspectives changed as the contemporary Italian and European context evolve. The class will be conducted in a seminar setting where students

may report on the specific issue and subject researched. Students will take part in reading and critical evaluation of peer work and individually propose an oral presentation on a selected theme that elicits their interest.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 2010X/Y.06 or permission of instructor

### ITAL 3600.03: Italian National Cinema.

The focus of the course: the Italian cineastes, who received international recognition since the 1960s. Its aim to investigate Italian film production within the social and cultural climate of contemporary Italy.

FORMAT: Lecture/seminar

CROSS-LISTING: THEA 3320

### ITAL 3700.03: Topics in Italian Drama and Spectacle.

This class focuses on Italian drama and performance. The topic will vary from year to year and may include topics such as Italian Renaissance theatre, the Commedia dell'arte, Pirandello's productions and contemporary Italian spectacle. The class will examine the selected topic while placing Italian theatre into a broader European context; students will acquire reading strategies for drama and spectacle and learn to consider the works from a theoretical perspective. The class is held in English but Italian majors will be required to read the texts in the original.

FORMAT: Lecture

CROSS-LISTING: THEA 3914.03

### ITAL 4010.03: Advanced Composition.

This course addresses issues of syntax and grammar, register and style, and advanced vocabulary for both creative and academic writing. It will have both a theoretical and a practical component and will be writing intensive. Students will exercise advanced reading skills, advanced grammar skills (using sophisticated Italian syntax and morphology), and advanced composition skills (from structuring a creative piece of work to essay composition and completion). Compositions will address Italian literary and cinematic works. Students will work both in groups and individually. The class will be given in a workshop format, and student participation is essential to its success. It is recommended that students read Italian as much as possible (texts from mass media, popular fiction as well as academic material). Work in class and at home will include summaries, synopses, bullet-point schemes, writing and re-writing, peer reviewing, and related research.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 3010X/Y.06 or permission if instructor

### ITAL 4040.03: Dante's Inferno.

From Dante's spiritual crisis to his descent into the pit of Hell and encounter with Satan. A journey of self-discovery, the Comedy is one of the world's literature absolute masterworks and a summa of the medieval culture. This class offers a general knowledge of its first section, Inferno, and provides an introduction to medieval culture and history. Each class will involve reading from the text, commentary and discussion of the readings assigned. The course is taught in English. Italian minors and majors students will be required to read the texts in Italian.

FORMAT: Lecture

PREREQUISITE: Any 2000 humanities class or instructor's permission

CROSS-LISTING: CLAS 4460

### ITAL 4060.03: Topics in the Civilization of Baroque Italy.

This course emphasizes the methods and sources historians employ to study Italian history, circa 1570-1740. Topics to be explored include Baroque Italian princely courts, Roman Catholicism, social interaction, social status and display, deviance and punishment, books and learned culture, standards of living, historical ecology and geography. There will be substantial use of translated and transcribed archival sources. A reading knowledge of French is recommended.

FORMAT: Seminar/tutorial

CROSS-LISTING: HIST 4060.03

### ITAL 4998.03: Independent Study.

Individually directed research and writing under the supervision of a member of department.

FORMAT: Seminar

### ITAL 4999.03: Independent Study.

Individually directed research and writing under the supervision of a member of department.

## Journalism

Contact Person: Director and Associate Professor, Kelly Toughill

Location: University of King's College

Telephone: (902) 422-1271 Ext 185

### I. Minor in Journalism Studies

Students may take a Minor in Journalism Studies as part of a Dalhousie or King's four year Major or Honours Arts or Science degree. The goal of the Minor in Journalism Studies is to introduce students to journalism and to basic journalistic methods and techniques.

Students who wish to take a Minor in Journalism Studies must meet the requirements for the Major or Honours program in their chosen discipline and successfully complete the minor in Journalism Studies requirement listed on page 136

#### A. Minor in Popular Culture Studies

##### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

### II. Curriculum

#### A. Core Requirements

Students must complete 1.5 full credits of core classes:

**JOUR 1001X/Y.06: Foundations of Journalism.**

This course gives students both a theoretical and practical introduction to journalism. In one part, students will learn how to read, listen and watch the news knowledgeably and critically. They will look at the history of journalism as it has developed in newspapers, radio, television and internet and examine how the structure of the media influence journalistic principles and practices. The other part of this class teaches students how to write imaginative and interesting prose using correct English and effective story telling methods. Students will be required to write nearly every day and will have their work assessed by professional journalists.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

**JOUR 2000.03: Basic Reporting Techniques.**

Successful reporters need critical thinking as much as technical skills. This course builds on J1001 as it examines how reporters find news, select sources, cut through spin, verify information and avoid errors. Students will be introduced to techniques at the leading edge of the craft.

PREREQUISITE: JOUR 1001.06

**B. Elective Requirements**

Students must complete 21 credit hours in electives from the list below:

**JOUR 2004.03: Introduction to Radio.**

This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to radio such as writing for the ear and to deadline, interviewing for tape and on-air performance. Students will visit a radio news operation and examine policy, broadcast standards and ethical issues.

PREREQUISITE: JOUR 1001.06

RESTRICTION: This class is not available to students in the BJ(H) program.

**JOUR 2400.03: Science and the Media.**

From the first Babylonian astronomical records on cuneiform to the public understanding of science on television, the various media have long been crucial to the success and spread of science. This course provides a history of science in the media from the ancient and medieval use of geometrical diagrams, astronomical figures and anatomical illustration through early modern printed texts, popular broadsheets and color botanical plates all the way to the ubiquity of science in literature, cinema and on the Internet. This expanding presence of science in the media is examined against the backdrop of three revolutions: literary and artistic (ancient and medieval worlds), mechanical (early modern period) and electronic (contemporary age). Specific themes considered include the increasing accuracy of scientific illustration, the rise of scientific journals, public scientific demonstrations, science in poetry and prose fiction, science and art, radio and television documentaries, the advertising and marketing of science, scientific apocalypses and techno-utopias, bioethics, Soviet era technological iconography, environmentalism and science-religion relations in the journalistic press, science fiction from H.G. Wells' *War of the Worlds* to *Star Wars* and *Jurassic Park*, and science in computing and cyberspace.

INSTRUCTOR(S): S. Snobelen

FORMAT: Lecture/seminar

CROSS-LISTING: HIST 2400.03

**JOUR 3002.03: Introduction to Radio.**

This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to radio such as writing for the ear and to deadline, interviewing for tape and on-air performance. Students will visit a radio news operation and examine policy, broadcast standards and ethical issues.

PREREQUISITE: JOUR 1001.06

**JOUR 3003.03: Introduction to Video Reporting.**

This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to video, such as writing to pictures and interviewing and reporting on camera. Students will also examine policy, broadcast standards and ethical issues.

PREREQUISITE: JOUR 2000.03 or JOUR 2001.06 or permission of the Instructor

**JOUR 3122.03: Ethics of Journalism.**

This course will discuss the power - and responsibility - of the mass media in shaping public opinion and public policy. Students will consider the various and conflicting roles of media in contemporary society.

PREREQUISITE: JOUR 1001.06 or permission of the Instructor

**JOUR 3304.03: Through her Eyes: Women and the Documentary Tradition.**

This course will explore the rarely examined historical and contemporary involvement of women in the field of documentary filmmaking. Women documentary makers have produced extensive bodies of engaging work that challenge many societal assumptions about gender, class, race, the function of political power, sexuality and peace-war. They have worked at every level within the process: as directors, cinematographers, editors, sound recordists, producers, writers and fund-raisers. A variety of documentaries made by women from diverse backgrounds will be screened and analyzed along with a close reading of selected critical texts. Students will identify the similarities and differences in subjects, themes, style, aesthetics, and approached to creation, production and distribution.

FORMAT: Film Screening and Seminar

CROSS-LISTING: CTMP 3304.03

**JOUR 3333.03: News Media and the Courts in Canada.**

This class is an introduction to the justice system and the specific laws that govern how journalists do their jobs. The goal is to give students and working journalists an understanding of court structure, legal principles, and criminal and civil procedure. Bans on publication, contempt of court, libel law, media access to the courts, confidentiality of sources and other media-law issues will be examined.

The format combines lectures with forum discussion featuring lawyers, prosecutors, judges and other players in the justice system.

PREREQUISITE: JOUR 1001.06 or CANA 2000.06 or permission of the Instructor

CROSS-LISTING: CANA 3333.03

**JOUR 3440.03: Creative Nonfiction.**

Narrative nonfiction writing includes literary journalism, memoir and essay. In this introductory class, students will learn about the historic development of this genre as well as read and discuss some of the best examples of historical and contemporary narrative nonfiction. The goal is to make students better informed readers as well as to provide them with the tools to produce this kind of writing themselves.

PREREQUISITE: JOUR 1001.06 or permission of the Instructor.

**JOUR 3441.03: Advanced Creative Nonfiction.**

This is a how-to course that focuses on writing - and rewriting - a major piece of narrative nonfiction.

PREREQUISITE: JOUR 3440.03

RESTRICTION: This class is not available to BJ(H) students

**JOUR 3540.03: Feature Writing.**

This class will introduce students to the more creative writing aspects of journalism - the writing of stories behind the breaking news of the day, or the small human dramas that make up the world around us. Students will study feature writing styles and techniques, and experiment with several feature formats, from color stories and personality profiles to substantial background articles. Students will produce a major, term-end feature story and several smaller assignments.

PREREQUISITE: JOUR 2000.03 or JOUR 2001.06 or permission of the Instructor.

**JOUR 3542.03: Business Reporting for Journalists.**

Budgets, stock markets, statistics, polls, securities, mergers and takeovers. This course will give students a working knowledge of how business functions. It will provide students with the tools to analyze and present complex economic situations in clear language.

**JOUR 3550.03: Copy Editing.**

In this class, students will focus on the skills copy editors need to perform the most basic and essential of their tasks - handling stories. Students will edit, on paper and on screen, real stories selected for their potential as well as their problems. They will work on them for tightness, polish, accuracy and style. The goal is to help students develop the copy editor's "double vision" - the ability to see the story as a whole, and line by line, as a collection of parts, to see both the forest and the trees. This class is not only for students who want to become copy editors, but also for students who want to become better editors of their own writing.

PREREQUISITE: JOUR 2000.03 or JOUR 2001.06

**JOUR 3557.03: Introduction to Online Journalism.**

The Internet is still in its infancy as a journalistic medium, which creates opportunities for innovation as well as challenges for finding the best and most appropriate ways to communicate information. Students in this class will not only



learn about the recent evolution of the Internet as a journalistic medium but will also explore for themselves ways of using the Internet to tell journalistic stories.  
PREREQUISITE: JOUR 1001.06 or permission of the Instructor

### **JOUR 3560.03: Great Journalists.**

This course provides an introduction to some of the greatest journalists of all time. Students will discover the beautiful work these journalists created, and learn how and why they did it.

This course also focuses on improving students' writing. By carefully considering great journalists' work, students learn techniques that make them better writers. Amazing characters students will meet include James Cameron, the only journalist to have a ringside seat at three atomic bomb blasts. Students get to know Ida B. Wells, who founded a newspaper exposing lynchings and racism when most media were ignoring the truth. Students will consider the work of Joan Didion, Martha Gellhorn, Peter Gzowski, Seymour Hersh, and many more.

By the end of the course students will have a strong understanding of journalism's honourable legacy. They will know the brilliant qualities of great journalists, how hard they work, and how they changed the world.

FORMAT: Writing Requirement (Dal)

### **JOUR 3660.03: Photojournalism.**

This course will explore visual perception as applied to photojournalism. Students will be taught to "see" photos and explore ideas visually, especially as applied to the essence of news photography. Students will also examine the beginnings of news photography and modern developments in the business. Students must have their own digital cameras to take this course.

### **JOUR 6001.06: Digital Journalism 1.**

This course offers basic instruction in the key skills of digital journalism, from creating multimedia and interactive content to integrating social media and writing search-optimized headlines.

FORMAT: Seminar/lab

### **JOUR 6002.03: Audience and Content Strategies.**

This course examines the nature of community and audience in various formats with an emphasis on social networks and emerging platforms and systems.

Students will identify and research a specific underserved audience and draft a proposal to serve that community in a unique way with an interactive and multimedia approach.

FORMAT: Seminar

### **JOUR 6003.03: Digital Journalism 2.**

This course builds on Digital Journalism 1 to perfect digital journalism skills. Students will develop a specific beat that forms the foundation of their online journalism portfolios.

PREREQUISITE: JOUR 6001.03

### **JOUR 6700.03: Public Records Research.**

Public records are the foundation of investigative journalism. This course reveals how journalists locate, obtain and read records that were created for other purposes, and how they probe connections and patterns of information that are not apparent reading any one record alone.

FORMAT: Seminar

### **JOUR 6701.06: Methods of Investigative Journalism.**

This course covers basic methods and explores how data analysis techniques borrowed from the social sciences provide journalists with ways to investigate complex systems. Students will learn how to acquire and analyze large datasets, how to conduct spatial investigations using mapping software and how to turn data into compelling stories.

FORMAT: Seminar/lab

PREREQUISITE: JOUR6700

### **JOUR 6900.03: Business Fundamentals for Journalists.**

This class introduces journalists to business disciplines and frameworks used to launch and manage a new enterprise, with particular emphasis on tools and concepts specific to journalism and journalism organizations. The course also offers an overview of legal and regulatory structures relevant to the news industry.

FORMAT: Seminar

### **JOUR 6901.03: Managing The Venture Process.**

Managing the Venturing Process is a capstone course that explores the strategic elements required to venture successfully. Delivery is in a seminar format with students taking significant responsibility for their own learning. The constructs of

venture stage, venture process and venture context are used to frame the discussion and a simulation (capstone) is used as a practical way for students to build competence in managing a large venture strategically.

FORMAT: Seminar, tutorial

PREREQUISITE: JOUR 6900

CROSS-LISTING: MGT 4901

### **JOUR 6907.03: New Venture Creation.**

This course exposes students to the issues, problems and challenges of creating new ventures and provides students with the opportunity to explore and develop venture ideas they have been considering or wish to investigate.

FORMAT: Lecture

PREREQUISITE: JOUR 6000

CROSS-LISTING: MGMT 3907

### **JOUR 7001.03: Emerging Business Models in Journalism.**

This class explores how the business model of a media organization influences the content, form and quality of the journalism produced by the organization. Students will understand the strengths and weaknesses of new models as they arise, and be able to predict which models best support the type of journalism they want to practice.

FORMAT: Lecture/discussion

PREREQUISITE: JOUR 6002

### **JOUR 7002.03: Exemplars of Contemporary Journalism.**

This lecture course features leading figures in contemporary journalism. Each lecture will focus on a different aspect of journalism innovation. Particular emphasis will be placed on leading figures in investigative journalism and new venture journalism. This course is delivered through distance learning.

FORMAT: Seminar, lecture

PREREQUISITE: Jour 6001, Jour 6002, JOUR 7001

### **JOUR 7003.03: Mobile Reporting.**

Mobile reporting is a hallmark of contemporary journalism. Students will learn best practices in live reporting, editing and posting through lectures, laboratories and field experience. Students must have a department-approved smart phone and related equipment and must be enrolled in Digital Journalism 1 (JOUR 6001.03)

FORMAT: Lecture/lab/field work

### **JOUR 7701.06: Professional Project in Investigative Reporting.**

Students will plan, organize and execute a major investigative project using tools learned in the Investigative Methods and Public Records Research classes.

Students will work with industry mentors on the project. Students may choose to work in teams, with prior permission. The project does not have to be completed on campus, and may be national or international in scope and location.

FORMAT: Independent Study, tutorial.

PREREQUISITE: JOUR 6001.03, JOUR 6002, JOUR6003.03, JOUR 6700.03, JOUR 6701.06, JOUR 7001.03

### **JOUR 7901.06: New Ventures in Journalism.**

Students will work under the supervision of a mentor to develop a detailed business plan and prototype for a new venture in journalism. Students may choose to work in teams, with prior permission. Some students may have the opportunity to partner with a media organization for the project. The project may be completed off campus and may be national or international in scope and location.

FORMAT: Independent research, tutorial.

PREREQUISITE: JOUR 6001.03, JOUR 6002.03, JOUR 6003.03, JOUR 6900.03, JOUR 6907.03, JOUR 6901.03, JOUR 7001

# Law and Society

Contact Person: Dr. Margaret Denike  
 Location: Department of Political Science  
 Faculty of Arts and Social Sciences  
 PO Box 15000  
 Halifax, NS B3H 4R2  
 Telephone: (902) 494-6298  
 Email: m.denike@dal.ca

Please refer to the Dentistry, Law, Medicine, Graduate Studies Calendar for detailed information on Law programs at the undergraduate and graduate levels.

## I. Minor in Law and Society

The Minor in Law and Society is a four credit (24 credit hour) Minor taken in conjunction with a 20 credit Major BA, 20 credit BSc, or BMGT program. The minor provides choices among a broad set of classes from different disciplines that touch on legal studies, and that address historical, philosophical, and political applications of law and legal inquiry.

### A. Required Classes

- LAWS 2500.06: Introduction of Law passed with a minimum of B-

#### LAWS 2500X/Y.06: Introduction to Law.

This class, offered by the Law School exclusively to undergraduates, is designed to introduce students to the workings of the Canadian legal system, and to the basics of several fundamental areas of law. The focus of the class will be the decisions which have been made by courts in Canada. There will be discussion of what the law should be, which will occur in a context of understanding how courts reason, and the principles that they bring to bear in reaching their decisions. The class will look in particular at introductory case law concerning tort law (wrongs by one person against another), personal property, criminal law, and the law as it relates to Aboriginal peoples.

Enrolment is limited to students in their second year of undergraduate studies and beyond.

INSTRUCTOR(S): S. Coughlan, D. Darling

FORMAT: Lecture/discussion 3 hours

### B. Elective Requirements

Three full classes (18 credit hours) or equivalent from the approved list below, including at least one half-class (three credit hours) from your choice of three different disciplines (e.g., history, philosophy, political science, sociology, contemporary studies, or international development studies). To count towards the Minor, classes must be passed with a minimum of B-.

- CTMP 3321: Representations of the Holocaust I
- CTMP 3322: Representations of the Holocaust II
- CTMP 4125: Hanna Hrendt: Terror, Politics, Thought
- HIST 2006.03: The Atlantic World 1450-1650
- HIST 2007.03: The Atlantic World 1650-1800
- HIST 2221.03: Rough Justice - to the 1890s
- HIST 2222.03: Rough Justice - 1890s to the Present
- HIST 3226.03: Law and Justice in Canadian Society, to 1890
- HIST 3227.03: Criminal Law, Crime and Punishment, 1890 - present
- HIST 3501X/Y.06: Fascist and National Socialist Movements in Europe
- HIST 4004.03: Crime and Society in Post-Conquest England
- HIST 4255.03: Justice, Freedom and the State in 20th Century Canada
- INTD 2001: Intro to Development I
- INTD 2002: Introduction to Development II
- INTD 4006: Global Poverty and Human Rights
- PHIL 2020.03: Legal Thinking
- PHIL 2160.03/GWST 2500.03\*: Philosophical Issues in Feminism
- PHIL 2450.03: Democracy, Difference and Citizenship
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2490.03: Social, Ethical and Professional Issues in Computer Science

- PHIL 3211.03: Philosophy of Law
- PHIL 4470.03: Contemporary Liberalism and Democracy
- POLI 2210.03: Unity and Diversity: Dynamics of Canadian Federalism
- POLI 2220.03: Political Power: Partisan Politics
- POLI 2350.03: Governance & Globalization
- POLI 2520.03: World Politics
- POLI 3206.03: Constitutional Issues in Canadian Politics
- POLI 3208.03: Canadian Provincial Policies
- POLI 3426.03/GWST 3426 Sex and the State\*\*
- POLI 3428.03: Woman as Citizen
- POLI 3440.03 The Politics of Fear
- POLI 3505.03 Human Rights: Institutional Foundations
- POLI 3521.03 The UN in World Politics
- POLI 3567.03: International Organization
- POLI 3581.03: Diplomacy and Negotiations
- POLI 3585.03 Politics of the Environment
- POLI 4303.03: Human Rights: Political Issues
- POLI 4403.03: Human Rights: Philosophical Issues
- POLI 4481.03 Theories of Violence, Persecution and Genocide
- SOSA 2040.06: Social Inequality
- SOSA 2180.06: Sociology of Crime and Criminal Justice
- SOSA 2181.03 Explaining Crime and Criminal Behavior
- SOSA 2182.03 Sociology of Criminal Justice
- SOSA 3185.03: Native Peoples in North America
- SOSA 3225.03: Culture, Rights, Power
- SOSA 3275.03: Crime and Public Policy
- SOSA 3281.03: Youth Crime
- SOSA 3285.03 Sociology of Law
- SOSA 3286.03: Sociology of Criminal Law
- SOSA 3295.03: Society and the Police

\*fulfills the PHIL requirement even if taken as GWST 2500

\*\*fulfills the POLI requirement even if taken as GWST

#### Other Approved Electives

- COMM 2603: Legal Aspects of Business
- ENVS 3200.03: Environmental Law
- JOUR 3333.03: News Media and the Courts
- LAWS 2122.03/2123.03: Canadian Legal History
- PSYO 3224.03: Forensic Psychology
- PSYO 4000.03: Senior Seminar (on a forensic topic)

# Linguistics

Location: 6135 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-1440  
Fax: (902) 494-1957

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Dalhousie Coordinator

Rogers, D. M., BA (Waterloo), MA (Western Ontario), PhD (Toronto)

## Dalhousie Faculty

Barnstead, J., Russian Studies, Associate Professor  
Deacon, H., Psychology, Assistant Professor  
Furrow, M., English, Professor  
Hymers, M., Philosophy, Associate Professor  
Milicevic, J., French, Associate Professor  
Mopoho, R., French, Associate Professor  
Yoon, M., Psychology, Adjunct Professor

**Note: New admissions to the Linguistics Program at Dalhousie have been suspended. This information is for current Linguistics students only.**

## I. Halifax Interuniversity Program in Linguistics

Halifax area universities offer a joint program in linguistics. Students enrolled in this program take classes from Dalhousie and Saint Mary's University to fulfil the requirements for the degree (A letter of permission to do so should be secured from the Registrar's Office at Dalhousie prior to enrolling in such classes. See Academic Regulations 7.6, page 33).

An undergraduate degree in linguistics gives students opportunities to study the formal, functional and systemic nature of language and languages. This is achieved through the study of linguistic theory and through training in methods of linguistic analysis.

Linguistics degrees have many practical applications. Linguistics is directly concerned with the question "what does it mean to know a language?" Linguistics provides the groundwork for teaching languages: linguists write the descriptions language teachers use and linguistics provides methods for understanding language learning processes and disorders. Linguistics also provides relevant background for research into sign languages and the development of computer languages. It forms the basis for understanding bilingualism, for language planning in multilingual countries, for developing programs for increasing literacy, and for enhancing the efficiency of translation services. Linguistics informs literary and cultural studies, and is central in the developing cognitive sciences. It is, of course, also a discipline in its own right which may be studied for its own sake.

The study of language as both a cognitive and social phenomenon entails cognate relationships with an extremely wide array of disciplines. Some of these are suggested by the interdisciplinary nature of the program. Faculty from Social Anthropology, English, French, Gender and Women's Studies, Political Science, Philosophy, Psychology, Russian, and Sociology are participants. Many students will elect to combine linguistics majors with majors in the other areas in which cross-listed and recommended classes are offered.

"Core" classes are offered by the Linguistics Program through Modern Languages Departments at Saint Mary's and the Department of French at Dalhousie.

Some of the classes include: The English Language, Philosophy of Language, Psycholinguistics, Neurolinguistics.

## II. Degree Programs

Although the Linguistics program is offered jointly by several universities, the degree is granted by the student's home University. Students must meet the general requirements set by the University in which they are registered.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

## Core Program Requirements

- A two semester (full credit equivalent) Introduction to Linguistics, which can be taken at any of the three institutions:
  - SMU LIN 1200.0 Introduction to Linguistic Analysis
  - DAL FREN 3020.06 Linguistics or FREN 2020.03 (Introduction to Linguistics) plus FREN 3021.03 (Syntaxe) or FREN 3022.03 Sémantique (taught in French)
- Two to four of the following half-credit classes (or equivalent), depending on the specific degree:
  - SMU LIN 2310.1(2) Phonology
  - SMU LIN 2320.1(2) Morphology
  - SMU LIN 2330.1(2) Syntax
  - SMU LIN 2340.1(2) Semantics

## A. BA with Honours in Linguistics

An honours degree is strongly recommended for students who plan to do graduate work in linguistics. Students must have a GPA of 3.0 or better for admission to the honours program, and must maintain a GPA of 3.0 or better in classes contributing to their honours degree in linguistics.

All Dalhousie honours programs must include Honours Qualifying Examination; in Linguistics, this usually takes the form of a research paper. Consult the program coordinator.

## Program Requirements

A minimum of 10 credits. These must include:

- A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);
- All four of the half-credit classes (or equivalent), listed under Core Program Requirements (above);
- One credit selected with the advice of the program coordinator. In addition to regularly scheduled classes, special topics / directed readings, computer language classes and / or intermediate level formal logic classes may be recommended here;
- The equivalent of a one-credit second (or foreign) language class at the intermediate level; and,
- Five credits selected from the list of linguistics classes offered at Dalhousie, and neighboring universities (see the list of options below).

## B. Combined Honours in Linguistics

Combined honours programs with Linguistics may be arranged with other departments.

## C. BA (20 credit) Major in Linguistics

Students who may not be eligible for the Honours Program are encouraged to enter the 20 credit Major degree program. Consult the program coordinator.

## Program Requirements

- A minimum of six full credits, at least three credits of which must be at the 3000 level or above. These must include:
- A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);
- Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);
- The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, by second year (intermediate) classes in a language other than the student's first language or in formal logic, or by a computer language class; and,
- Three full credits selected from the list of options below.

## D. BA (20 credit) Double Major in Linguistics

### Program Requirements

A minimum of four full credits, as outlined below. At least two of the four credits must be at or above the 3000 level. These must include:

- A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);
- Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);
- The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics / directed readings classes in linguistics, by second year (intermediate) classes in a language other than the student's first language or in formal logic, or by a computer language class; and,
- One full credit selected from the list of options below.

## E. BA (15 credit) Concentration in Linguistics

### Program requirements

A minimum of four full credits, as outlined below. At least two of the four credits must be at or above the 3000 level.

- A two semester (full credit equivalent) Introduction to Linguistics, listed under Core Program Requirements (above);
- Two of the half-credit classes (or equivalent), listed under Core Program Requirements (above);
- The equivalent of one full credit selected with the advice of the program coordinator. This requirement may be met by regularly scheduled classes listed or cross-listed as linguistic classes, by special topics/directed readings classes in linguistics, by second year (intermediate) classes in a language other than the student's first language or in formal logic, or by a computer language class; and,
- One full credit selected from the list of options below.

## III. Options

Students should plan their programs with attention to the prerequisites for the classes listed below. Some of the classes are offered infrequently. Please consult the relevant university's calendar for class descriptions, prerequisites and this year's current offerings.

### A. Classes Offered at Dalhousie University

#### Contemporary Studies

- CTMP 2304.03: Semiotics
- CTMP 4115.06: Language and Politics: The Linguistic Turn in Contemporary Political Thought

#### English

- ENGL 2201.06: The English Language
- ENGL 3007.06: Old English

#### French

Unless specifically indicated otherwise, all classes are taught in French.

- FREN 3025.03: Linguistics: Introduction to Acadian Dialectology
- FREN 3026.03: Quebec French
- FREN 4001.03: History of French: The Middle Ages
- FREN 4001.03: History of French: The Modern Period
- FREN 4011.03: Lexicology
- FREN 4012.03: Aspects of French Structure
- FREN 4013.03: Pragmatics
- FREN 4014.03: Language and Society
- FREN 4015.06: Advanced Translation into English
- FREN 4016.06: Introduction to Applied Linguistics and Language Teaching (taught in English)
- FREN 4017.03: General Translation
- FREN 4018.03: Electronic Tools and Resources for French (taught in English)

#### Philosophy

- PHIL 3300.03: Philosophy of Language
- PHIL 4510.03: Topics in the Philosophy of Language

### Psychology

- PSYO 3052.03: Sensory Neuroscience II: Hearing and Speech
- PSYO 3093.03: Language & Literacy
- PSYO3190.03: Psycholinguistics
- PSYO 3790.03: Neurolinguistics

### Russian

- RUSN 4000.06: The Structure of Contemporary Standard Russian

### Sociology

- SOSA 3081.03: Sociolinguistics

### Spanish

- SPAN 3090: Phonetics
- SPAN 3095: Evolution of Spanish

## B. Classes offered at Saint Mary's University (SMU)

### Anthropology

- SMU ANT 1290.1(2): Introduction to Human Communication
- SMU ANT 2391.1(2): Introduction to Linguistic Anthropology
- SMU ANT 2392.1(2): Language, Culture and Society
- SMU ANT 3395.1(2): Language Use and Issues in Northern Canada
- SMU ANT 4491.1(2): Ethnography of Communication
- SMU ANT 4492.1(2): Anthropological Analysis of Linguistic Communities

### English

- SMU EGL 2311.1(2): Modern English Language
- SMU EGL 3312.1 (2): Modern English Language in Canada
- SMU EGL 3402.0: History of the English Language
- SMU EGL 2308.1(2): English Prose Style from 1500
- SMU EGL 4490.0: Discourse Analysis

### French

- SMU FRE 3321.1(2): French Phonetics
- SMU FRE 3341.1(2): Linguistic Study of French
- SMU FRE 3305.1(2): Acadian Language and Culture
- SMU FRE 4440.1(2): Canadian French: Sociolinguistic Perspectives

### Linguistics

- SMU LIN 4410.1(2): Directed Readings in Linguistics I
- SMU LIN 4411.1(2): Directed Reading in Linguistics II
- SMU LIN 3431.1(2): Special Topics in Linguistics I
- SMU LIN 4432.1(2): Special Topics in Linguistics II
- SMU LIN 3341.1(2): Advanced Morphology
- SMU LIN 3342.1(2): Comparative Linguistics

### Philosophy

- SMU PHI 402.1(2): Philosophy of Language: Meaning
- SMU PHI 403.1(2): Philosophy of Language: Speech Acts

### Sociology

- SMU SOC 3338.1(2): Language Change and Social Change
- SMU SOC 3366.1(2): Field Methods in Linguistics I
- SMU SOC 3367.1(2): Field Methods in Linguistics II \*
- SMU SOC 4417.0: Seminar on Endangered Languages

### Women's Studies

- SMU WMS/EGL 2326.1(2): Language and Gender
- SMU WMS/EGL 3427.1(2): Language, Gender and Power

# Music

Location: Dalhousie Arts Centre  
6101 University Avenue, Room 514  
PO Box 15000  
Halifax, NS B3H 4R2

Telephone: (902) 494-2418  
Fax: (902) 494-2801  
Email: Music@dal.ca  
Website: <http://music.dal.ca>

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

Bain, J. (494-2418)

## Undergraduate Advisor

Stodola, L. (494-3489)

## Professor Emeritus

Schroeder, D. P., AMus, BA, MA (Western), PhD (Cantab)

## Professors

Servant, G. W., BMus (Dalhousie), MMus, DMA (Hartt), Artist Diploma (Opemhaus Zurich)

Swanston, M., BMus (Lethbridge), PG DipMus, Opera Program (Guildhall School of Music and Drama, London, U.K.)

## Associate Professors

Allen, P., BMus (Mt. A), MMus (Yale)

Bain, J., BMus (Wilfrid Laurier), MA (McGill), PhD (SUNY Stony Brook)

Baur, S., BA (Music) (Loyola Marymount), MA (UCLA), PhD (UCLA)

Blais, J., BMus (McGill), MMus, DMus (Montreal)

Djokic, P., BMus, MMus (Juilliard)

Stodola, L., BMus (Chicago), MMus (Juilliard)

Warwick, J., BMus (Toronto), MA (York), PhD (UCLA)

## Assistant Professor

Joubert, E., BMus, MA (Toronto), DPhil (Oxford)

## Instructor

Martell, M., BMus (Mt. Allison), MMus (Calgary)

## Sessional Lecturers

Reach, D., BMus (Dalhousie)

Mitchell, C.

## Part-Time Instructors

Beeler, N., BME (Acadia), MMus (Manitoba)

Bradshaw, D., BMus, MMus (Toronto)

Brownell, J., BMus (Acadia), MMus (Arizona State)

Crofts, T., BMus (Dalhousie), MMus (New England Conservatory)

Creighton, P., BMus (Toronto)

Feierabend, C., BMus (Toronto), MMus (Juilliard)

Gray, D., BMus, MMus (McGill)

Hayes Davis, L., BMus (Dalhousie), MMus (Westminster Choir College), Opera Studies (The Hartt School)

Hoffman, A., BMus, MMus, (New England Conservatory)

Kasper, M., Artist's Diploma (Toronto)

Lemieux, S., BMus (Ottawa), MMus (Michigan)

Macmillan, S., BMus (Dalhousie)

Mathis, E., BMusEd (UPEI), MM (Northwestern)

McCarthy, E., BMus (Eastman), MMus (Emporia State)

Myalls, T., Dip. Audio Engineer (Rec Arts Canada)

Parker, D., BMusEd (Acadia), MMus (Boston University), Artist Diploma (Toronto)

Rapson, J., BMus (Toronto)

Rothwell, I.

Sheppard, C., BMus (Dalhousie)

Stern, J., BMus, MMus (New England Conservatory)

Torbert, J., BMus (Dalhousie)

Walt, S., BMus (Tel Aviv)

Whynot, S., BMusEd (Dalhousie), Cert. Organ Perf (Int'l Organ Academy), MM (Westminster Choir College)

## Collaborative Pianists

Bradshaw, D., BMus, MMus (Toronto)

Dickinson, A., BMus (Mt. A), MMus (Westminster Choir College)

Enman, E., BMus (Acadia), MMus (Ottawa)

Pritchard, B., BMus (UBC), Lic. Music (Western Board)

Wahlstrom, L., BMus (Brandon), Lic. Piano (McGill)

## I. Introduction

The Music Department provides a wide variety of programs for those whose demonstrated talent and specific pre-university training qualify them for specialization in Music studies. Certain classes and ensembles are available to the non-specialist student who wishes to increase both musical awareness as a listener and involvement as a performer.

The Bachelor of Music Program offers intensive professional music training which prepares students for careers or further study in many areas, including performance, composition, theory, musicology, music criticism or music education. It also offers excellent preparation for professional studies in other areas, such as law or journalism.

The 20 Credit BA in Music, the Honours BA in Music, and the BA or BSc Combined Honours with Music programs provide a strong foundation for various professions where a working knowledge of music is desirable, such as librarianship, media programming and production, music industry commercial studio and electroacoustic work, arts management, recreational and therapeutic work, to name only a few.

Elective classes for non-majors are available, some of which require no musical background or training.

## A. Elective Classes for Non-Majors

- MUSC 1020.03: Listening to Classical Music
- MUSC 1021.03: Listening Beyond the Classics
- MUSC 1003.03: Preparatory Theory and Aural Skills I
- MUSC 1004.03: Preparatory Theory and Aural Skills II
- MUSC 2007X/Y.06: The Guitar: History and Techniques
- MUSC 2008X/Y.06: Modern Guitar
- MUSC 2016.03: Topics in Music and Cinema
- MUSC 2018.03: Popular Music Until 1960
- MUSC 2019.03: The Rock 'n' Roll Era and Beyond
- MUSC 2020.03: The History of Jazz
- MUSC 2022.03: The Art and Science of Drumming
- MUSC 2600X/Y.06: Recording Studio Techniques
- MUSC 3060.03: Introduction to Music and Sound Technology
- MUSC 3061.03: Electroacoustic Music
- MUSC 3314.03: History of Opera
- MUSC 4353.03: Music since 1945
- MUSC 4354.03: Popular Music Analysis
- MUSC 4355.03: Narrative Strategies in 19th-Century Music (cross-listed with GWST 4355.03)
- MUSC 4356.03: Opera Studies
- MUSC 4360.06: Advanced Seminar in Baroque Culture
- MUSC 4361.03/4365.03: Topics in Musicology I
- MUSC 4362.03: Topics in Canadian Music
- MUSC 4363.03/4367.03: Topics in Musicology II
- MUSC 4380.03/4381.03: Selected Composer Studies

Other classes in Music may be taken by special permission of the Department. Applied study (individual studio instruction) may be taken subject to an audition and available space.

## B. Admission Procedures for all Music Programs

All Music programs require that candidates (including transfer students) apply to both the university and Department and audition for Applied Study. See the Department's website at <http://music.dal.ca> for the full application process. Re-audition and testing may be required if enrolment is deferred, if a program is interrupted for a year or more, or if an applied study class is not successfully completed in one academic year.

## C. Ensemble Participation

All students (preparatory year, majors, non-majors and elective students) enrolled in an applied study class (instrument or voice) must participate in ensembles, normally in a minimum of two per year. All wind, brass, percussion and strings students will participate, as appropriate and as needed, in Wind Ensemble, Chamber Orchestra, Symphony Orchestra, Jazz Ensemble, and chamber ensembles.

The Department will monitor the number and types of ensembles for each student. Note that most ensembles require auditions.

The Ensemble requirement is specific to each year of Applied Study and appears on the student's transcript. Students will be given a Pass/Fail grade each year and must complete all required levels with a grade of Pass in order to graduate. The ensemble requirement is non-credit and will not count toward class load, but there is NO TUITION FEE for the Ensemble requirement.

Students must attend regularly and punctually the rehearsals and performances of their required ensembles.

Students should note that ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Since rehearsals and concerts are often in the evening, students are advised not to undertake evening commitments that could conflict with these program and class requirements.

Membership in the various ensembles is open to the university and the community by audition. Please contact the director of each ensemble (listed below) or the Department for further details.

Dalhousie Coro Collegium (M. Martell)  
 Dalhousie Chamber Choir (M. Martell)  
 Dalhousie Wind Ensemble (N. Beeler)  
 Dalhousie Chamber Orchestra (P. Djokic)  
 Dalhousie Jazz Ensemble (C. Mitchell)  
 Dalhousie Percussion Ensemble (D. Gray)  
 Dalhousie Opera Workshop (G. Servant, M. Swanston)  
 Small Ensembles (staff coaches)  
 Collaborative Piano (staff coaches)  
 Dalhousie Symphony Orchestra (P. Allen)  
 Voice Chamber Ensemble (M. Swanston)

## II. Degree Programs

### A. Preparatory Classes

These classes are for those prospective Music-degree program students who demonstrate outstanding potential at their audition, but who require further training before entering first year Music study at the university level.

Students admitted to this level are considered to be in a BA undeclared program and may take a maximum of five full credits.

#### Curriculum

- MUSC 1003.03: Preparatory Theory and Aural Skills I
- MUSC 1004.03: Preparatory Theory and Aural Skills II
- MUSC 1071X/Y.03: Preparatory Keyboard Skills
- MUSC 1100X/Y.06: Preparatory Applied Study
- Required Writing Class (see Degree Requirements, page 131 for a list of writing classes)
- Arts & Social Sciences or Science elective, one full-credit
- MUSC 0022X/Y.00: Ensemble (Prep): (normally two ensembles, as approved by the Department and Applied Study instructor)

#### Special Notes:

1. Preparatory Music classes MUSC 1003.03, MUSC 1004.03, MUSC 1071X/Y.03 and MUSC 1100X/Y.06, although credit classes, cannot be counted

toward a Music degree program; however, they may be counted as electives in other BA or BSc degree programs.

2. Students may be asked to re-test in music theory, aural skills and keyboard skills in order to enter first year classes.
3. The Department may count the final grade in MUSC 1100X/Y.06 as sufficient proof of readiness to enter one of the Department's degree programs, or may require a separate audition or re-audition.

### Standards for Preparatory Classes

Minimum grades for advancement to first year Music degree studies (see Special Notes #2 and #3 above):

MUSC 1003.03	C+
MUSC 1004.03	B-
MUSC 1071X/Y.03	B-
MUSC 1100X/Y.06	B-

## B. Bachelor of Music (BMus)

The BMus is a four year program with 16 out of 20 credits in Music. Upon successful completion of the second year, students in good standing (minimum overall average GPA of 2.7 [B-] in 1000 and 2000-level MUSC classes) may continue with studies in the BMus general degree or may apply for one of three concentrations, Composition, Musicology or Performance: additional requirements for acceptance to the areas of concentration are listed below, including applicable standards. Please also see section 6. Standards for overall BMus grade and other requirements. Students wishing to pursue one of the three concentrations must apply by March 1 of the second year of study.

### 1. Common Curriculum

#### First Year

- MUSC 1000-level Applied Study (MUSC 1101X/Y.06 to MUSC 1121X/Y.06)
- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- MUSC 1352.03: Music History I
- MUSC 1353.03: Music History II
- Arts and Social Sciences or Science elective, one full credit (Writing Class elective)
- MUSC 0122X/Y.00: Ensemble I: (normally two ensembles, as approved by the Department and Applied Study instructor)

#### Second Year

- MUSC 2000-level Applied Study (MUSC 2101X/Y.06 to MUSC 2121X/Y.06)
- MUSC 2221.03: Music Theory III
- MUSC 2222.03: Music Theory IV
- MUSC 2270X/Y.03: Aural Skills II
- MUSC 2271X/Y.03: Keyboard Skills II
- MUSC 2352.03: Music History III
- MUSC 2353.03: Music History IV: Focused Study \*
- Arts and Social Sciences or Science electives, two half credits
- MUSC 0222X/Y.00: Ensemble II: (normally two ensembles, as approved by the Department and Applied Study instructor)

\* Voice students intending to pursue a Concentration in Performance must take MUSC 2175.03 (Lyric Diction for Singers) either in the second or third year of study, depending on the cycle of classes. If they take MUSC 2175.03 in the second year, MUSC 2353.03 (Music History IV) is deferred to year three or four, not omitted.

\* Students intending to pursue a Concentration in Composition may take MUSC 2210.03 (Introduction to Composition) in the Fall semester of their second year. Students taking this option will: 1. Defer their Fall half credit Arts and Social Sciences or Sciences elective to the Winter term of the same year; 2. Not take MUSC 2353.03 (Music History IV) in the Winter term of their second year. Students accepted into Composition will be exempt from 2353.03. Students who are **not accepted** into Composition will take MUSC 2353.03 (Music History IV) in either their third or fourth year.

### 2. BMus General Degree

Students in good standing (minimum overall average GPA of 2.7 [B-] in 1000 and 2000-level MUSC classes) may proceed to a BMus general degree program in their third year. This program choice allows for the greatest flexibility within the

BMus program offerings. It will prepare students well for advanced degrees in Music including the Bachelor of Education, as well as for a wide range of careers in music.

Students must submit a proposal for their intended graduation project (4599.03) by March 1 of the third year of study, according to Department guidelines. Students must achieve a minimum grade of 2.7 (B-) in this credit.

#### **Third Year**

- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3283.03: Modal Counterpoint OR MUSC 3284.03: Tonal Counterpoint
- MUSC 3221.03: Form and Analysis: The Second Viennese School to the Present Day
- two credits of Music electives
- Arts and Social Sciences or Science elective, one full credit
- MUSC 0322X/Y.00: Ensemble III: (normally two ensembles, as approved by the Department and Applied Study instructor)

#### **Fourth Year**

- MUSC 4000-level Applied Study (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 3282.03: Orchestration
- MUSC 4599.03: Graduation Project
- two credits of Music electives
- Arts and Social Sciences or Science elective, one full credit
- MUSC 0422X/Y.00: Ensemble IV: (normally two ensembles, as approved by the Department and Applied Study instructor)

NOTE: Those students who are interested in pursuing a career in classroom teaching of music must complete an undergraduate degree in Music and then complete a Bachelor of Education (BEd) degree at another institution. Students are advised to consult provincial regulations for teacher certification and entrance requirements for their institution of choice, and to meet with the Music Department Student Advisor, in order to ensure optimal class selection within the BMus General degree program.

### **3. Concentration in Composition**

Students in good standing (minimum overall average GPA of 2.7 [B-] in 1000 and 2000-level MUSC classes), along with a minimum overall average GPA of 3.3 (B+) in their Music Theory and Composition classes (MUSC 1201, 1202, 2201 and 2210) may submit a portfolio of original music (normally prepared in the MUSC 2210 Introduction to Composition) by March 1 of the second year to apply for admission to this concentration. Students selected for this concentration will demonstrate outstanding abilities and potential as composers. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 3.3 (B+) in Composition I (MUSC 3210.03) in order to remain in the concentration. Students must achieve a minimum grade of 2.7 (B-) in both MUSC 4210.03 and in MUSC 4299.03.

#### **Third Year**

- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3210X/Y.06: Composition I
- MUSC 3221.03: Form and Analysis: the Second Viennese School to the Present Day
- MUSC 3283.03: Modal Counterpoint or MUSC 3284.03 Tonal Counterpoint
- MUSC 3282.03: Orchestration
- MUSC 4280.03: Contemporary Techniques
- Arts and Social Sciences or Science elective, one full credit.
- MUSC 0322X/Y.00: Ensemble III: (normally two ensembles, as approved by the Department and Applied Study instructor)

#### **Fourth Year**

- MUSC 4210X/Y.06: Composition II
- MUSC 4353.03: Music Since 1945 or MUSC 4362.03: Topics in Canadian Music (replacing MUSC 2353.03 Music History IV)
- MUSC 3660.03: Introduction to Music and Sound Technology
- MUSC 3661.03: Electroacoustic Music
- MUSC 4299X/Y.03: Area Graduation Requirement (Composition)
- Arts and Social Sciences or Science elective, one full credit.
- Music elective, one credit

### **4. Concentration in Musicology**

Students in good standing (minimum overall average GPA of 2.7 [B-] in 1000 and 2000-level MUSC classes) must submit two writing samples by March 1 of the second year to apply for admission to this concentration.

Students selected for this concentration will demonstrate outstanding abilities and potential as musicologists. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 2.7 (B-) in the graduation requirement MUSC 4399.03.

#### **Third Year**

- MUSC 3000-level Applied Study (MUSC 3101X/Y.06 to MUSC 3121X/Y.06)
- MUSC 3221.03: Form and Analysis: The Second Viennese School to the Present Day
- MUSC 3283.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
- MUSC 4353.03: Music since 1945
- MUSC 0322X/Y.00: Ensemble III: (normally two ensembles, as approved by the Department and Applied Study instructor)

#### **Fourth Year**

- MUSC 4000-level Applied Study (MUSC 4101X/Y.06 to MUSC 4121X/Y.06)
- MUSC 4399X/Y.03: Graduation Requirement (Thesis)
- MUSC 0422X/Y.00: Ensemble IV: (normally two ensembles, as approved by the Department and Applied Study instructor)

Also in the third and fourth years (5.5 credits)

- two credits of Music electives (any choice, but students are strongly encouraged to take MUSC 3282.03 Orchestration)
- The equivalent of two full credits to be chosen from Musicology electives as listed below
  - MUSC 3066.03: Women, Gender and Music
  - MUSC 3314.03: History of Opera
  - MUSC 4353.03: Music since 1945
  - MUSC 4354.03: Popular Music Analysis
  - MUSC 4355.03: Narrative Strategies
  - MUSC 4356.03: Opera Studies
  - MUSC 4360.06: Advance Seminar in Baroque Culture
  - MUSC 4361.03/4365.03: Topics in Musicology I
  - MUSC 4362.03: Topics in Canadian Music
  - MUSC 4363.03/4367.03: Topics in Musicology II
  - MUSC 4380.03/4381.03: Selected Composer Studies
- one credit of any introductory language class (X/Y.06). In a case where a student already has a second language, he or she can be directed towards a third language OR to a full credit of literature classes in the second language (e.g., FREN 2021.03: Langue et culture together with FREN 2201.03: Introduction à la littérature for a French-speaking student).
- One of: HIST 1004X/Y.06: Introduction to European History or HIST 1862X/Y.06: North American Experiences

### **5. Concentration in Performance**

Students in good standing (minimum overall average GPA of 2.7 [B-] in 1000 and 2000 level MUSC classes), along with a minimum grade of 3.3 (B+) in their 1000 and 2000 level Applied Study may audition at the end of second year to apply for admission to this concentration.

Students selected for this concentration will demonstrate outstanding abilities and potential as performers. See Department for further details concerning admission procedures.

Students who are accepted in this concentration must achieve a minimum grade of 3.3 (B+) in third year Performance Concentration Applied Study (MUSC 3701.06 to 3721.06) and in the Third Year performance recital (MUSC 3199.03) in order to remain in the concentration. Students must achieve a minimum grade of 2.7 [B-] in their fourth year Performance Concentration Applied Study (MUSC 4701.06 to 4721.06) and in their Fourth Year performance recital (4199.03).

#### **Third Year**

- MUSC-3000 level Performance Concentration Applied Study (MUSC 3701X/Y.06 to MUSC 3721X/Y.06)
- MUSC 3199X/Y.03: Half-Recital (Year III Performance)
- MUSC 3221.03: Form and Analysis: The Second Viennese School to the Present Day

- MUSC 3283.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
- MUSC 0322X/Y.00: Ensemble III: (normally two ensembles, as approved by the Department and Applied Study instructor)

#### ***Fourth Year***

- MUSC 4000-level Performance Concentration Applied Study (MUSC 4701X/Y.06 to MUSC 4721X/Y.06)
- MUSC 4199X/Y.03: Area Graduation Requirement (Performance: Recital)
- MUSC 0422X/Y.00: Ensemble IV: (normally two ensembles, as approved by the Department and Applied Study instructor)

Although not required, students in Performance are encouraged to take MUSC 3282.03, Orchestration, as one of their Music electives.

Also in the third and fourth years, according to idiom:

#### **Voice (six credits):**

- MUSC 3176.03: Principles of Vocal Pedagogy
- MUSC 3177.03: Vocal Literature
- MUSC 3314.03: History of Opera
- two credits Music elective, any choice
- MUSC 2175.03 Lyric Diction for Singers, taken in year two or three, depending on cycle with Pedagogy/Literature
- two full credits Arts and Social Sciences or Science electives (at least one Arts and Social Sciences or Science elective taken over the four year program must be an Introductory Language class: either Italian, German or French)

#### **Piano (six credits):**

- 3.5 full credits Music electives, any choice; however, if offered, students should take:
  - MUSC 3353.03: Chamber Music Literature
- two full credits Arts and Social Sciences or Science electives

#### **Strings (seven credits):**

- four credits Music electives, any choice; however, if offered, students should take:
  - MUSC 3160.03: Conducting
  - MUSC 3353.03: Chamber Music Literature
- two full credits Arts and Social Sciences or Science electives

#### **Guitar (six credits):**

- MUSC 3308.06: Modern Guitar
- MUSC 4170.03: Improvisation Techniques and Practices
- 2.5 full credits Music electives, any choice
- two full credits Arts and Social Sciences or Science electives

#### **Saxophone (six credits):**

- MUSC 4170X/Y.03: Improvisation Techniques and Practices
- MUSC 2020.03: The History of Jazz
- three credits Music electives, any choice
- two full credits Arts and Social Sciences or Science electives

#### **Wind and brass instruments, percussion (six credits):**

- four Music electives, any choice
- two full credits Arts and Social Sciences or Science electives

### **6. BMus Standards**

Students may not enrol in the Bachelor of Music Graduation Requirement classes (MUSC 4199- MUSC 4599) until the fourth year of the Program.

Students must achieve an average minimum overall GPA of 2.7 (B-) in MUSC classes beyond the 1000 level in order to graduate with a BMus degree. Students must achieve a minimum grade of C in 1000 level applied study in order to advance to 2000 level Applied Study. Grades in MUSC classes beyond the 1000 level must be "C" or better in order to count toward the BMus degree.

See also the sections above for specific standards regarding concentrations.

### **C. BA with Combined Honours in Music and Theatre**

The Departments of Music and Theatre offer a highly specialized four-year BA with a Combined Honours in Music and Theatre which blends the principal classes of the Bachelor of Music Minor in Voice with Theatre classes in Acting and Movement. Students must audition for both the Music and Theatre Departments: a maximum of five students will be selected for entrance into the

program each year. The graduate of this program will advance toward a professional career in the performing arts equipped with a foundation in music and theatre.

Students must successfully complete the audition/entrance tests for the first year of the Music Program. Students must also audition for, and be accepted into, the Acting Program. The prerequisite for audition is the successful completion of THEA 1800X/Y.06.

Students planning to take this program must advise the Theatre Department Student Advisor.

To qualify for graduation a student must participate by having a significant role in at least one staged musical production (either an integral part of DalTheatre Productions or the Opera Workshop).

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

NOTE: Students having to withdraw from this Program through failure to achieve the required standards in Theatre classes must re-audition if desiring a degree program in Music. Students having to withdraw from this Program through failure to achieve the required standards in Music classes must re-apply to the Department of Theatre if desiring a degree program in Theatre.

#### ***First year***

- MUSC 1101X/Y.06: Voice I
- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- THEA 1000X/Y.06: Introduction to Theatre [Writing Requirement]
- THEA 1800X/Y.06: Introduction to Acting and Performance
- MUSC 0122X/Y.00: Ensemble I: (normally Chamber Choir/Opera Workshop)

#### ***Second year***

- MUSC 2101X/Y.06: Voice II
- MUSC 2221.03: Music Theory III
- MUSC 2222.03: Music Theory IV
- MUSC 2270X/Y.03: Aural Skills II
- MUSC 2271X/Y.03: Keyboard Skills II
- THEA 2800X/Y.06: Acting II
- THEA 2820X/Y.06: Dance & Movement II
- MUSC 0222X/Y.00: Ensemble II: (normally Chamber Choir/Opera Workshop)

#### ***Third year***

- MUSC 3101X/Y.06: Voice III
- THEA 2012.03: Early Modern Theatre
- THEA 3800X/Y.06: Acting III
- THEA 3820X/Y.06: Dance & Movement III
- Arts & Social Science: One of 1000-level Life or Physical Science, Social Science, or Language Class Requirement (see Degree Requirements, p. 40 of this Calendar)
- MUSC 0322X/Y.00: Ensemble III: (normally Chamber Choir/Opera Workshop)
- MUSC 3314.03: History of Opera

#### ***Fourth year***

- MUSC 4101X/Y.06: Voice IV
- THEA 4800X/Y.06: Acting IV
- THEA 4840X/Y.06: Advanced Performance Techniques
- Arts & Social Science: Two remaining 1000-level Life or Physical Science, Social Science, or Language Class Requirement (see Degree Requirements, p. 40 of this Calendar)
- MUSC 0422X/Y.00: Ensemble IV: (normally Chamber Choir/Opera Workshop)

Honours Music and Theatre students will be awarded the 21st credit for their satisfactory participation in a DalTheatre or Opera Workshop production.



## D. BA (20 credit) Honours in Music

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the College of Arts and Science Degree Requirements section beginning on page 131 of this calendar. Students must successfully complete an audition/entrance tests.

### Departmental Requirements

#### *First year (5.0 credits):*

- MUSC 1000-level Applied Study (MUSC 1101X/Y.06 to 1121X/Y.06)
- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- One full credit Arts and Social Sciences Writing Class
- One full credit Arts and Social Sciences or Science elective
- MUSC 0122X/Y.00: Ensemble I: (normally one ensemble, as approved by the Department and Applied Study instructor)

#### *Second year (5.0 credits):*

- MUSC 2000-level Applied Study (MUSC 2101X/Y.06 to 2121X/Y.06)
- MUSC 2270X/Y.03: Aural Skills II
- MUSC 2271X/Y.03: Keyboard Skills II
- MUSC 2221.03: Music Theory III
- MUSC 2222.03: Music Theory IV
- two full credits Arts and Sciences or Science electives (see Degree Requirements for the College of Arts and Science)
- MUSC 0222X/Y.00: Ensemble II: (normally one ensemble, as approved by the Department and Applied Study instructor)

### Additional Music Requirements

- MUSC 1352.03: Music History I (recommended during 2nd year)
- MUSC 1353.03: Music History II
- MUSC 2352.03: Music History III
- MUSC 4399.03: Graduation Requirement (Thesis)
- five to seven full credits Music electives, at least three above the 2000-level

## E. Bachelor of Arts (Combined Honours Program) Bachelor of Science (Combined Honours Program)

Students may enrol in either of these combined honours programs with the joint approval of the Music Department and the department of the allied subject (in compliance with the Combined Honours requirements detailed in the Degree Requirements section, page 131 of this calendar). Students must successfully complete an audition/entrance tests.

### Departmental Requirements

#### *1000-level*

- MUSC 1000-level Applied Study (MUSC 1101X/Y.06 to MUSC 1121X/Y.06)
- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- MUSC 1352.03: Music History I
- MUSC 0122X/Y.00: Ensemble I: (normally 1 ensemble, as approved by the Department and Applied Study instructor)

#### *Additional Music Requirements:*

At least four credits in Music above the 1000 level, at least two of which must be at the 3000 or 4000 level. Among these, one half-credit additional class in Musicology must be completed (chosen from MUSC 2352.03, 2353.03, 4353.03).

NOTE: Students considering Honours programs must meet with the Music Department Student Advisor as soon as possible in their program, and no later than their second year of studies. For Combined Honours programs, students must consult with Advisors in BOTH departments for application procedures and deadlines. Students may apply for most honours programs before registering for the second year. Application forms are available from departments, at the Registrar's Office, or at <http://www.registrar.dal.ca/forms>.

## F. BA (20 credit) Major in Music

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the College of Arts and Science Degree

Requirements section, beginning on page 131 of this calendar. Students must successfully complete an audition/entrance tests.

### Departmental Requirements

#### *First year (5.0 credits):*

- MUSC 1000 level Applied Study (MUSC 1101X/Y.06 to 1121X/Y.06)
- MUSC 1201.03: Music Theory I
- MUSC 1222.03: Music Theory II
- MUSC 1270X/Y.03: Aural Skills I
- MUSC 1271X/Y.03: Keyboard Skills I
- One full credit Arts and Social Sciences Writing Class
- One full credit Arts and Social Sciences or Science elective
- MUSC 0122X/Y.00: Ensemble I: (normally one ensemble, as approved by the Department and Applied Study instructor)

#### *Second year (5.0 credits):*

- MUSC 2000-level Applied Study (MUSC 2101X/Y.06 to 2121X/Y.06)
- MUSC 2270X/Y.03: Aural Skills II
- MUSC 2271X/Y.03: Keyboard Skills II
- MUSC 2221.03: Music Theory III
- MUSC 2222.03: Music Theory IV
- 2 full credits Arts and Social Sciences or Science electives
- 0222X/Y.00: Ensemble II: (normally one ensemble, as approved by the Department and Applied Study instructor)

### Additional Music Requirements:

- MUSC 1352.03: Music History I (recommended during 2nd year)
- MUSC 1353.03: Music History II
- MUSC 2352.03: Music History III
- three to 5.5 full credit Music electives, at least three above the 2000-level.

## G. BA or BSc (20 credit) Double Major

In addition to the Department requirements below, students must satisfy the requirements outlined in the College of Arts and Science Degree Requirements section, beginning on page 131 of this calendar. The major subject with the most advanced credits appears first on the record.

### Department Requirements

- Music as First Subject: Students must satisfy the department requirements as listed for the 20 credit BA with Major in Music (section F. above), including 1000 and 2000 level applied study. Students must successfully complete an audition/entrance tests. Please consult with the department for details.
- Music as Second Subject: There are no specific department requirements if Music is the second subject in a Double Major program. Applied study may be taken (subject to audition) but is not required. Testing may be required for certain other music classes. Please consult with the department for details.

## H. Interdisciplinary Minor in Popular Culture Studies

### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond
- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## I. Cooperative Degree Programs with the University of King's College

The following degree programs are offered in cooperation with the University of King's College: Bachelor of Music with King's Foundation Year (FYP), Bachelor of Journalism with Music History Option; and Bachelor of Arts combined honours in Contemporary Studies. Students may also pursue a BA (20 credit) and an honours BA through the University of King's College. Please consult the University of King's College (Office of the Registrar) for further information including curriculum and registration details.

## III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine current offerings.

### MUSC 0022X/Y.00: Ensemble (Prep).

A non-credit co-requisite for students in Preparatory Applied Study, MUSC 1100X/Y.06 (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 0122X/Y.00: Ensemble I.

A non-credit co-requisite for students in First Year (1000-level) Applied Study (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 0222X/Y.00: Ensemble II.

A non-credit co-requisite for students in Second Year (2000-level) Applied Study (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 0322X/Y.00: Ensemble III.

A non-credit co-requisite for students in Third Year (3000-level) Applied Study (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 0422X/Y.00: Ensemble IV.

A non-credit co-requisite for students in Fourth Year (4000-level) Applied Study (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see

the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 0522X/Y.00: Ensemble (Advanced).

A non-credit co-requisite for students in Advanced Applied Study, MUSC 4150X/Y.06 (voice or instrument). The number and type of ensemble(s) are selected in accordance with instrument/program requirements and with the guidance and approval of the applied studies instructor. Ensemble participation typically requires regularly occurring rehearsals and scheduled performances. Please see the department for specific guidelines and schedules. Refer to page 187 for further details and a list of ensembles.

### MUSC 1003.03: Preparatory Aural and Theory Skills I.

An introduction to University-level music theory and aural perception for prospective music majors recommended by audition to preparatory level classes in music; also open to non-majors. A knowledge of music reading and rudiments is presumed. This course will place heavy emphasis on learning and drilling the basic concepts of musical structures, from rudiments through to basic harmony. Guided progressive exercise will provide training in sight-singing and dictation. FORMAT: Lecture 3 hours

PREREQUISITE: Permission of instructor

EXCLUSION: MUSC 1001.03, MUSC 1002.03, MUSC 1070.03

### MUSC 1004.03: Preparatory Aural and Theory Skills II.

A continuation of MUSC 1003.03 for prospective music majors recommended by audition to preparatory level classes in music; also open to non-majors. This course will place heavy emphasis on learning and drilling the basic concepts of musical structures, elementary modulation, comparison of tonality, atonality, modality and chromatic tonality, elementary diatonic harmony and four-part writing. Guided progressive exercise will provide training in sight-singing and dictation. FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 1003.03 or permission of the instructor

EXCLUSION: MUSC 1102.03, MUSC 1070.03

### MUSC 1020.03: Listening to Classical Music.

Designed for the interested listener who desires to acquire an informed response to musical experiences. Knowledge of musical notation and terminology is not a prerequisite. The class is a survey of musical styles from the pre-modern era through baroque and classical styles and into the late nineteenth century. We will consider: music and image; music and the related arts; the art and psychology of listening. This class is for non-music majors and cannot be counted as a credit toward a degree in Music.

INSTRUCTOR(S): A. Hoffman

FORMAT: Lecture

EXCLUSION: MUSC 1000.06

### MUSC 1021.03: Listening Beyond the Classics.

Designed for the interested listener who desires to acquire an informed response to musical experiences. Knowledge of musical notation and terminology is not a prerequisite. The class is a survey of musical styles from the late nineteenth century to the present day. We will consider: music and image; music and the related arts; the art and psychology of listening. This class is for non-music majors and cannot be counted as a credit toward a degree in Music.

INSTRUCTOR(S): A. Hoffman

FORMAT: Lecture

EXCLUSION: MUSC 1000.06

### MUSC 1071X/Y.03: Preparatory Keyboard Skills.

An introduction to keyboard proficiency for Music degree program students, to prepare the student for successful training in keyboard harmony.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): D. Bradshaw

FORMAT: Lab 2 hours

PREREQUISITE: Permission of the Department, on the basis of the results of the Entrance Keyboard Proficiency Test

### MUSC 1081.03: Voice Clinic for the Theatre.

A class in the principles of singing as applied to classical actor training. Exercises and repertoire appropriate to this training will be prepared by the students for class performance. No prior instruction in music or singing is presumed.

FORMAT: A twice weekly ensemble class: 1.5 hours plus individual tutorials

EXCLUSION: This class is offered exclusively to students in the third year of the Acting Program

## MUSC 1100X/Y.06: Preparatory Applied Study.

For students in the Preparatory Year. By special recommendation some music majors may be advised by the Auditioning Committee to begin individual lessons at a level prerequisite to first year Applied Study classes.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

CO-REQUISITE: MUSC 0022.00X/Y: Ensemble (Prep)

## MUSC 1000 level Applied Study.

Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website <http://music.dal.ca>. Auxiliary fees apply. Co-requisite ensemble participation is required. Students must achieve a minimum grade of C in first year applied study in order to advance to second year applied study.

- MUSC 1101X/Y.06: Voice I
- MUSC 1102X/Y.06: Guitar I
- MUSC 1103X/Y.06: Piano I
- MUSC 1104X/Y.06: Organ I
- MUSC 1105X/Y.06: Violin I
- MUSC 1106X/Y.06: Viola I
- MUSC 1107X/Y.06: Cello I
- MUSC 1108X/Y.06: Double Bass I
- MUSC 1109X/Y.06: Flute I
- MUSC 1110X/Y.06: Oboe I
- MUSC 1111X/Y.06: Clarinet I
- MUSC 1112X/Y.06: Bassoon I
- MUSC 1113X/Y.06: Saxophone I
- MUSC 1114X/Y.06: French Horn I
- MUSC 1115X/Y.06: Trumpet I
- MUSC 1116X/Y.06: Trombone I
- MUSC 1117X/Y.06: Tuba I
- MUSC 1118X/Y.06: Percussion I

NOTE: Students taking any of the above classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

## MUSC 1201.03: Music Theory I.

In order to fully understand the principles and origins of common-practice tonal music, as studied in MUSC 1202, this course proposes a survey of both pre- and post-tonal music, showing how they relate to each other. The focus will be on melody (modes, phrase structure, cadences and motivic manipulation of the Middle Ages, Renaissance and early 20th century) and counterpoint (exercises in two-part species counterpoint and analysis of short 20th century contrapuntal pieces).

SIGNATURE REQUIRED

FORMAT: Lecture 3 hours

PREREQUISITE: Permission of the Department, based on placement testing, or MUSC 1001.03/MUSC 1002.03

CO-REQUISITE: MUSC 1270X/Y.03, 1271X/Y.03

## MUSC 1222.03: Music Theory II.

An introduction to diatonic and chromatic harmony, developing skills in part-writing and harmonic analysis.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 1201.03 or permission of the Department

EXCLUSION: MUSC 1202.03

CO-REQUISITE: MUSC 1270X/Y.03, MUSC 1271X/Y.03

## MUSC 1270X/Y.03: Aural Skills I.

A class designed to correlate with MUSC 1201.03 and MUSC 1222.03. Melodic, harmonic, rhythmic, textural and stylistic factors are visualized, performed and dictated systematically. Lab work in ear-training and sight-singing is done three times per week. Each student is a member of a small working section.

SIGNATURE REQUIRED

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lab 3 hours

PREREQUISITE: Permission of the Department; MUSC 1001.03/1002.03 or equivalent

CO-REQUISITE: MUSC 1201.03, 1222.03, and 1271X/Y.03

## MUSC 1271X/Y.03: Keyboard Skills I.

The development of basic skills in sight reading, score reading and harmonized accompaniment at the keyboard, for Music degree program students.

SIGNATURE REQUIRED

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): D. Bradshaw

FORMAT: Lab 2 hours

PREREQUISITE: Permission of Department

CO-REQUISITE: MUSC 1201.03, 1222.03, and 1270X/Y.03

## MUSC 1352.03: Music History I.

An introduction to thinking and writing about music. This course will use well-known works to develop an understanding of musical styles and functions, and it will explore such topics as melody, harmony, rhythm, texture and timbre. One of the goals of the course is to acquire university-level research, writing, critical listening and analytical skills. The ability to read musical notation is required.

NOTE: SIGNATURE REQUIRED

FORMAT: Lecture

PREREQUISITE: Permission of the department

## MUSC 1353.03: Music History II.

A survey of Western European art music from antiquity to 1750. The work required will include critical listening, writing, score study and historical research.

FORMAT: Lecture

PREREQUISITE: &#65279;MUSC 1352.03 or permission of instructor

EXCLUSION: &#65279;MUSC 1350.03 and MUSC 1351.03

## MUSC 2007X/Y.06: The Guitar: History and Techniques.

This class will introduce students to the various styles of guitar playing from classical to jazz to folk. The history of the instrument (including lute and other related plucked instruments) and an examination of the key styles and performers will be covered. Practical instruction will be provided in this class, so a guitar will be necessary. Practical instruction will attempt to accommodate the various skill levels of the students enrolled.

SPECIAL NOTE: This class is for non-music majors and cannot be counted toward a music degree.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): D. Reach, S. Macmillan

FORMAT: Lab and lecture 2 hours

## MUSC 2008X/Y.06: Modern Guitar.

A class for students with a serious interest in preparing for studio guitar playing. The class includes jazz, folk, rock and accompanying idioms. Students will receive instruction and participate in ensemble playing in improvisation, score reading, chording, and arranging.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Music majors must register in MUSC 3308X/Y.06

INSTRUCTOR(S): D. Reach

FORMAT: Lab/lecture/2 hours

PREREQUISITE: MUSC 2007.06 or permission of instructor

EXCLUSION: MUSC 3308.03

## MUSC 2016.03: Topics in Music and Cinema.

This course investigates various engagements of music and cinema. Topics vary from year to year and may include: diegetic/non-diegetic music, musical narrativity in film, representation, manipulation, cinema and opera, music or sound as special effect, film-scoring and the use of notable songs/tunes.

INSTRUCTOR(S): E. Joubert

FORMAT: Lab (Screening)/lecture 4 hours

EXCLUSION: MUSC 2015X/Y.06

## MUSC 2018.03: Popular Music Until 1960.

This class focuses on the origins and development of popular music in the twentieth century, tracing a history of rock'n'roll from its roots in minstrelsy and music hall styles of the nineteenth century until the end of rock'n'roll era in the 1950s. While no previous background in music is required, students will be expected to listen closely to selected music and to contribute to class discussions. Students will gain greater knowledge of history, as it affects and is affected by musical activities, and they will appreciate the motives behind the debates that have always surrounded popular music. Above all, students will learn to understand the history of rock'n'roll in terms of changes in both musical techniques and social values, and to recognize music as a site of celebration and struggle.

FORMAT: Lecture/discussion/3 hours

### **MUSC 2019.03: The Rock'n'Roll Era and Beyond.**

This course focuses on the many different kinds of popular music that have proliferated since the 1950s. While no previous background in music is required, students will be expected to listen closely to selected music and to contribute to class discussions. Students will gain greater knowledge of history, as it affects and is affected by musical activities, and they will appreciate the motives behind the debates that have always surrounded popular music. Above all, students will learn to understand the history of rock'n'roll in terms of changes in both musical techniques and social values, and to recognize music as a site of celebration and struggle.

FORMAT: Lecture/discussion/3 hours

### **MUSC 2020.03: The History of Jazz.**

This class is a survey of the origins and development of jazz, concentrating on the historical and social contexts of music and musicians. We will discuss many of the kinds of music that have been called jazz, and we will analyze their roles in twentieth century culture. Knowledge of musical notation and terminology is not required.

FORMAT: Lecture/discussion/3 hours

EXCLUSION: MUSC 2013X/Y.06, MUSC 3313X/Y.06

### **MUSC 2022X/Y.06: The Art and Science of Drumming.**

This class will introduce students to the art and science of music using hand drums. The history of the instrument as well as cultural context and rhythmic structure will be discussed for various styles of drumming. A significant portion of the class will be practical, where students will be taught the rudiments of reading music and playing hand drums. This means that it will be necessary for each student to bring an approved hand drum to each class.

NOTE: This class is for non-music majors only and cannot be counted as a credit in a Music degree program.

FORMAT: Lab/lecture/3 hours

### **MUSC 2000 level Applied Study.**

Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website <http://music.dal.ca>. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 2101X/Y.06: Voice II
- MUSC 2102X/Y.06: Guitar II
- MUSC 2103X/Y.06: Piano II
- MUSC 2104X/Y.06: Organ II
- MUSC 2105X/Y.06: Violin II
- MUSC 2106X/Y.06: Viola II
- MUSC 2107X/Y.06: Cello II
- MUSC 2108X/Y.06: Double Bass II
- MUSC 2109X/Y.06: Flute II
- MUSC 2110X/Y.06: Oboe II
- MUSC 2111X/Y.06: Clarinet II
- MUSC 2112X/Y.06: Bassoon II
- MUSC 2113X/Y.06: Saxophone II
- MUSC 2114X/Y.06: French Horn II
- MUSC 2115X/Y.06: Trumpet II
- MUSC 2116X/Y.06: Trombone II
- MUSC 2117X/Y.06: Tuba II
- MUSC 2118X/Y.06: Percussion II

NOTE: Students taking any of the above classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

### **MUSC 2130.06: Jazz Dance I (Spring Session Only).**

This class is a practical exploration into the Luigi Jazz Dance technique, incorporating the use of space, rhythm, and correct body alignment. Emphasis is on the development of personal expression through the medium of dance. Students are expected to develop an awareness of dance terminology and vocabulary.

FORMAT: Lab/demonstration/lecture

CROSS-LISTING: THEA 2020.06: Jazz Dance I (spring session only)

### **MUSC 2164.03: Special Topics: Applied Study.**

A class for music students to pursue applied study in a secondary idiom as a special topic. Enrolment in this class is at the discretion of the department through approval of the committee on studies and an audition. This class involves an auxiliary fee.

FORMAT: Individual studio instruction

PREREQUISITE: Permission of the department

### **MUSC 2175X/Y.03: Lyric Diction for Singers.**

An introduction to lyric diction and the expression of text in concert and operatic repertoire. A study of the International Phonetic Alphabet and its application to the lyric pronunciation of the four most commonly used languages in Classical singing: Italian, German, English and French. This course cannot satisfy a language requirement in a program.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/lab

PREREQUISITE: Permission of the instructor

EXCLUSION: MUSC 3175.03

### **MUSC 2210.03: Introduction to Composition.**

An introductory composition class in which students will write short pieces for a solo instrument or a small chamber ensemble. Each piece will be written using a different approach, including for example traditional tonality, modes, intervallic organization and 12-tone techniques.

FORMAT: Lecture and Tutorial

PREREQUISITE: MUSC 1222.03 OR permission of instructor

### **MUSC 2221.03: Music Theory III.**

A continuation of Music Theory II, developing further skills in chromatic harmony through part-writing and harmonic analysis.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 1222.03 or permission of the Department

EXCLUSION: MUSC 2201.03

CO-REQUISITE: MUSC 2270X/Y.03, MUSC 2271X/Y.03

### **MUSC 2222.03: Music Theory IV.**

Formal and harmonic analysis of selected 18th- and 19th-century compositions in various styles and idiom.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2221.03 or permission of the Department

EXCLUSION: MUSC 3281.03

CO-REQUISITE: MUSC 2270X/Y.03, MUSC 2271X/Y.03

### **MUSC 2270X/Y.03: Aural Skills II.**

This class provides further practice in melodic and harmonic dictation and sight-singing; it correlates with MUSC 2221.03 and 2222.03. A special component deals with solmization skills in sight reading.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lab 2 hours

PREREQUISITE: MUSC 1201.03, 1222.03, 1270X/Y.03, 1271X/Y.03

CO-REQUISITE: MUSC 2221.03, 2222.03, 2271X/Y.03

### **MUSC 2271X/Y.03: Keyboard Skills II.**

A continuation of MUSC 1271X/Y.03 for Music degree program students.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): D. Bradshaw

FORMAT: Lab 2 hours

PREREQUISITE: MUSC 1201.03, 1222.03, 1270X/Y.03, 1271X/Y.03

CO-REQUISITE: MUSC 2221.03, 2222.03, 2270X/Y.03

### **MUSC 2352.03: Music History III.**

A survey of Western European art music from 1750 to the present. The work required will include critical listening, writing, score study and historical research.

FORMAT: Lecture

PREREQUISITE: MUSC 1352.03 and/or permission of the instructor

EXCLUSION: MUSC 2350.03 and MUSC 2351.03

### **MUSC 2353.03: Music History IV: Focused Study.**

This class provides the opportunity for the advanced study of selected topics in music history. Its specific focus changes each year according to the instructor, but it always develops concepts and methods introduced in Music History I-III, and it challenges students with more in-depth analysis of a genre, composer, period or style. Thus, topics covered will include: the medieval lyric; the works of Beethoven; music in the 1960s; cool jazz.

FORMAT: Lecture

PREREQUISITE: MUSC 1353.03 and MUSC 2352.03

## MUSC 2600X/Y.06: Recording Studio Techniques.

Techniques for creating and recording music in the contemporary recording studio. The class will lay a foundation for contemporary musicians and sound artists to understand and work in the recording studio, both as an “instrument” in its own right, and as an extension of their own instrumental techniques. In addition to technical topics (microphone usage, console and recorder operations, etc.) there is a further emphasis on production techniques: approaches to performing and directing in the studio; proper conduct on both sides of the glass; planning, budgeting and running a session; creative use of technical resources.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab and lecture/3 hours

PREREQUISITE: Interview with the instructor

## MUSC 3000 level Applied Study.

Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website <http://music.dal.ca>. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 3101X/Y.06: Voice III
- MUSC 3102X/Y.06: Guitar III
- MUSC 3103X/Y.06: Piano III
- MUSC 3104X/Y.06: Organ III
- MUSC 3105X/Y.06: Violin III
- MUSC 3106X/Y.06: Viola III
- MUSC 3107X/Y.06: Cello III
- MUSC 3108X/Y.06: Double Bass III
- MUSC 3109X/Y.06: Flute III
- MUSC 3110X/Y.06: Oboe III
- MUSC 3111X/Y.06: Clarinet III
- MUSC 3112X/Y.06: Bassoon III
- MUSC 3113X/Y.06: Saxophone III
- MUSC 3114X/Y.06: French Horn III
- MUSC 3115X/Y.06: Trumpet III
- MUSC 3116X/Y.06: Trombone III
- MUSC 3117X/Y.06: Tuba III
- MUSC 3118X/Y.06: Percussion III

## MUSC 3000 level Performance Concentration Applied Study.

Individual studio instruction for students in the BMus Performance Concentration. Please note that acceptance to the Performance Concentration applied study requires a written application, audition, and permission of the Department.

Auditions take place at the conclusion of the second year of the Bachelor of Music program. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 3701X/Y.06: Voice III (Performance)
- MUSC 3702X/Y.06: Guitar III (Performance)
- MUSC 3703X/Y.06: Piano III (Performance)
- MUSC 3704X/Y.06: Organ III (Performance)
- MUSC 3705X/Y.06: Violin III (Performance)
- MUSC 3706X/Y.06: Viola III (Performance)
- MUSC 3707X/Y.06: Cello III (Performance)
- MUSC 3708X/Y.06: Double Bass III (Performance)
- MUSC 3709X/Y.06: Flute III (Performance)
- MUSC 3710X/Y.06: Oboe III (Performance)
- MUSC 3711X/Y.06: Clarinet III (Performance)
- MUSC 3712X/Y.06: Bassoon III (Performance)
- MUSC 3713X/Y.06: Saxophone III (Performance)
- MUSC 3714X/Y.06: French Horn III (Performance)
- MUSC 3715X/Y.06: Trumpet III (Performance)
- MUSC 3716X/Y.06: Trombone III (Performance)
- MUSC 3717X/Y.06: Tuba III (Performance)
- MUSC 3718X/Y.06: Percussion III (Performance)

## MUSC 3060.03/3660.03: Introduction to Music and Sound Technology.

An introduction to the technologies in common use in music creation, performance and teaching, with particular attention to the way these technologies shape artistic and pedagogical processes. Topics include basic electroacoustic theory, sound recording and editing, sound synthesis, MIDI, and personal computer music applications.

NOTE: Music majors must register in MUSC 3660.03

FORMAT: Lecture and lab

PREREQUISITE: Permission of the instructor

## MUSC 3061.03/3661.03: Electroacoustic Music.

An introduction to techniques and strategies for the creation and performance of electroacoustic and experimental music. The emphasis is on individual student creative works, with collective critiques. Students are encouraged to explore historic, contemporary, cross-disciplinary and experimental strategies in the creation and performance of their work.

NOTE: Music majors must register in MUSC 3661.03

FORMAT: Lab and seminar, 3 hours

PREREQUISITE: MUSC 3060.03, 3660.03, or its equivalent; permission of the instructor

## MUSC 3066.03: Women, Gender and Music.

The class explores the variety of ways in which gender shapes musical discourse. The role of gender in music will be examined through three broad topics: the history of female contributions to music as musicians, composers, patrons and listeners; musical constructions of gender, race, class and sexuality; and feminist criticism in recent musical discourse. Music students will be directed to more technical literature for their assignments and research paper, and will be required to engage in more technical descriptions of the music for all written work.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2222.03, 1352.03, 1353.03, 2352.03

CROSS-LISTING: GWST 2066.03

## MUSC 3130.06: Jazz Dance II (Spring Session Only).

This class is the continued practical exploration into the Luigi Jazz Dance Technique at the intermediate level. Emphasis is on the development of personal expression through the medium of dance. Students must have a basic foundation in dance technique.

FORMAT: Lab/demonstration/lecture

PREREQUISITE: MUSC 2130.06 or permission of instructor (interview)

CROSS-LISTING: THEA 3020.06: Jazz Dance II (spring session only)

## MUSC 3160.03: Conducting.

A practical introduction to the basic techniques of conducting.

SIGNATURE REQUIRED

FORMAT: Lab 2 hours

PREREQUISITE: MUSC 2270.03 and MUSC 2222.03 and/or permission of the instructor

## MUSC 3161.03: Choral Techniques.

Study of the distinctive features of conducting choral ensembles with emphasis on rehearsal technique, score preparation, interpretation and group methods of building vocal tone. Practical experience will be gained in university and community settings.

SIGNATURE REQUIRED

FORMAT: Lab 2 hours

PREREQUISITE: MUSC 2270.03 and MUSC 2222.03 and/or permission of the instructor

## MUSC 3176.03: Principles of Vocal Pedagogy.

An introduction to the classic pedagogies of the Italian, German, French and English schools of singing. Spectograph analysis of vowel formant series and fiberoptic video analysis of laryngeal function will be studied as well. Students will apply the techniques studied through a supervised practicum.

SIGNATURE REQUIRED

FORMAT: Lecture/tutorial

PREREQUISITE: MUSC 2101.03 and permission of the instructor

CO-REQUISITE: MUSC 3101.03/3701.03 or 4101.03/4701.03

## MUSC 3177.03: Vocal Literature.

An introductory survey of Classical song literature from the Renaissance to the modern day covering the historical context, style and vocal performance practice through listening, assigned readings and score study.

FORMAT: Lecture

PREREQUISITE: Permission of the instructor

## MUSC 3199X/Y.03: Half - Recital.

Required for all third-year Bachelor of Music students in the Performance concentration. May also be available to exceptional students in the fourth year of other 20-credit Music degree programs, by audition. Students must have completed all 2000-level theory classes as per Calendar guidelines. Students not in BMus Performance concentration must have a co-requisite of a minimum 4000-

level applied study class. Please note that additional fees will apply for students not in BMus Performance concentration. This performance is a solo recital only. Recital repertoire should consist of 30 to 45 minutes of music. See the Department for further details including audition procedures and deadlines. Exclusions: students in 15-credit degree programs are not eligible.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Performance

PREREQUISITE: Audition and permission of department

### **MUSC 3210X/Y.06: Composition I.**

Open only to students accepted into the BMus., Concentration in Composition. Techniques and approaches of today's music studied through writing of musical works for diverse instruments and ensembles, and through analysis of important works of repertoire. Emphasis will be given to creativity and to practical aspects of musical composition: effectiveness of orchestration, playability, quality of score, and preparation of parts.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): J. Blais

FORMAT: Individual lessons and group courses with other Composition students

### **MUSC 3221.03: Form and Analysis: the Second Viennese School to the Present Day.**

Analysis of selected 20th- and 21st-century compositions.

SIGNATURE REQUIRED

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2222.03, MUSC 2352.03 or permission of the Department

EXCLUSION: MUSC 4281.03

### **MUSC 3282.03: Orchestration.**

A survey of the development of the orchestra and the orchestral instruments with an introduction to acoustics. Technique in the deployment of instrumental combinations is emphasized through practical exercises in scoring for small chamber ensembles and a medium-sized orchestra common in the 20th century.

SIGNATURE REQUIRED

FORMAT: Lecture 2 hours

PREREQUISITE: MUSC 2222.03

### **MUSC 3283.03: Modal Counterpoint.**

Polyphonic techniques of the Renaissance period studied through written exercises in species and free counterpoint, as well as through analysis of works by Lasso, Palestrina, Victoria and others.

SIGNATURE REQUIRED

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2222.03

EXCLUSION: MUSC 3280.03

### **MUSC 3284.03: Tonal Counterpoint.**

A study of tonal counterpoint in the baroque style. A particular emphasis will be made on the instrumental music of its most representative master, J.S. Bach, through analysis of works and writing of stylistic exercises.

SIGNATURE REQUIRED

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2222.03

EXCLUSION: MUSC 3280.03

### **MUSC 3308X/Y.06: Modern Guitar.**

A class for students with a serious interest in preparing for studio guitar playing. The class includes jazz, folk, rock and accompanying idioms. Students will receive instruction and participate in ensemble playing in improvisation, score reading, chording, and arranging.

Music students will be required to complete more advanced assignments and exams.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): D. Reach

FORMAT: Lab/lecture/2 hours

PREREQUISITE: MUSC 1102, MUSC 2102

EXCLUSION: MUSC 2008

### **MUSC 3314.03: History of Opera.**

Consideration of the history of Opera from its origin to the present day. Concepts to be examined include: "high" and "low" styles; national styles; gender and race; and function in contemporary Western society.

INSTRUCTOR(S): E. Joubert

FORMAT: Lecture

PREREQUISITE: MUSC 1353.03 and MUSC 2352.03, or permission of the instructor

EXCLUSION: MUSC 2011.06 and MUSC 3311.06

### **MUSC 3353.03: Chamber Music Literature.**

A study in depth of chamber music from the Eighteenth century to contemporary schools.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2352.03 or permission of the department

### **MUSC 3355.03: The Piano and its Literature.**

A study in depth of the evolution of the piano and its repertoire from the Eighteenth century to the contemporary.

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2352.03 or permission of the department

### **MUSC 3480X/Y.03: Band Instruments.**

A practical introduction to the principal band instruments. Group instruction is offered in flute, oboe or bassoon, saxophone, trumpet or French horn, trombone and tuba, and percussion.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab 2 hours

PREREQUISITE: Permission of the Department, and an interview with the Class Coordinator

### **MUSC 4000 level Applied Study.**

Individual studio instruction. May be taken as elective class subject to audition and available space. Please note that all applied study classes require an audition. Please contact the Department for audition dates or visit website <http://music.dal.ca>. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 4101X/Y.06: Voice IV
- MUSC 4102X/Y.06: Guitar IV
- MUSC 4103X/Y.06: Piano IV
- MUSC 4104X/Y.06: Organ IV
- MUSC 4105X/Y.06: Violin IV
- MUSC 4106X/Y.06: Viola IV
- MUSC 4107X/Y.06: Cello IV
- MUSC 4108X/Y.06: Double Bass IV
- MUSC 4109X/Y.06: Flute IV
- MUSC 4110X/Y.06: Oboe IV
- MUSC 4111X/Y.06: Clarinet IV
- MUSC 4112X/Y.06: Bassoon IV
- MUSC 4113X/Y.06: Saxophone IV
- MUSC 4114X/Y.06: French Horn IV
- MUSC 4115X/Y.06: Trumpet IV
- MUSC 4116X/Y.06: Trombone IV
- MUSC 4117X/Y.06: Tuba IV
- MUSC 4118X/Y.06: Percussion IV

### **MUSC 4000 level Performance Concentration Applied Study.**

Individual studio instruction for students in the BMus Performance Concentration. Please note that acceptance to the Performance Concentration applied study requires a written application, audition, and permission of the Department. Auditions take place at the conclusion of the second year of the Bachelor of Music program. Auxiliary fees apply. Co-requisite ensemble participation is required.

- MUSC 4701X/Y.06: Voice IV (Performance)
- MUSC 4702X/Y.06: Guitar IV (Performance)
- MUSC 4703X/Y.06: Piano IV (Performance)
- MUSC 4704X/Y.06: Organ IV (Performance)
- MUSC 4705X/Y.06: Violin IV (Performance)
- MUSC 4706X/Y.06: Viola IV (Performance)
- MUSC 4707X/Y.06: Cello IV (Performance)

- MUSC 4708X/Y.06: Double Bass IV (Performance)
- MUSC 4709X/Y.06: Flute IV (Performance)
- MUSC 4710X/Y.06: Oboe IV (Performance)
- MUSC 4711X/Y.06: Clarinet IV (Performance)
- MUSC 4712X/Y.06: Bassoon IV (Performance)
- MUSC 4713X/Y.06: Saxophone IV (Performance)
- MUSC 4714X/Y.06: French Horn IV (Performance)
- MUSC 4715X/Y.06: Trumpet IV (Performance)
- MUSC 4716X/Y.06: Trombone IV (Performance)
- MUSC 4717X/Y.06: Tuba IV (Performance)
- MUSC 4718X/Y.06: Percussion IV (Performance)

### **MUSC 4150X/Y.06: Advanced Applied Study.**

By special permission of the department, a student may enroll in an advanced year of applied study, subject to enrolment quotas and budget. Individual studio instruction. Auxiliary fees apply. Co-requisite ensemble participation is required.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: MUSC 41XX or 47XX and permission of the instructor, subject to budget and current studio capacity

### **MUSC 4170X/Y.03: Improvisation Techniques and Practices.**

A studio class in the techniques and performance skills of improvisation as related to the jazz idiom, and other contemporary and non-Western music; students will perform as soloists and in small ensembles.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): C. Mitchell

FORMAT: Studio class

PREREQUISITE: 3000-level applied study class, and the approval of the instructor

### **MUSC 4190X/Y.06: Symphony Apprenticeship.**

A student in the Bachelor of Music Performance Concentration who has demonstrated exceptional aptitude and ability in his/her orchestral instrument, appropriate to the standards for employment by Symphony Nova Scotia, will serve apprenticeship in the Symphony, supervised by his/her Department Instructor. Preference will normally be given to a fourth-year student. Normally the majority or all of the 34-38 services will be played during the First Term. Qualification for this credit will be subject to the needs of the Symphony, nomination by the Department, and a successful audition for the Symphony Artistic Director and relevant Symphony Section Principals. The student will be hired by the Symphony at the current per-service rate, and must be a Member in Good Standing of the Atlantic Federation of Musicians. The student will be graded by his/her supervising Instructor on personal observation and on receipt of a signed evaluation from the Artistic Director of the Symphony. Normally there shall be only one such apprenticeship per season, and it is not renewable.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Placement in Symphony Nova Scotia, 34-38 Services

PREREQUISITE: Nomination by Department; audition with Symphony Artistic Director and relevant Symphony Section Principals

RESTRICTION: Normally limited to a student in the fourth year of the BMus Programme Performance Concentration

### **MUSC 4199X/Y.03: Area Graduation Requirement (Performance: Recital).**

Required of and restricted to all students in the Performance concentration of the Bachelor of Music program. The recital repertoire should consist of 55 to 75 minutes of music.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Permission of the department

### **MUSC 4210X/Y.06: Composition II.**

Open only to students accepted into the BMus., Concentration in Composition. Techniques and approaches of today's music studied through writing of musical works for diverse instruments and ensembles, and through analysis of important works of repertoire. Emphasis will be given to creativity and to practical aspects of musical composition: effectiveness of orchestration, playability, quality of score, and preparation of parts.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Individual lessons and group courses with other Composition students  
PREREQUISITE: MUSC 3210X/Y.06 and permission of the instructor

### **MUSC 4280.03: Contemporary Techniques.**

Some of today's main compositional techniques will be studied in this course. These may include advanced modal and 12-tone writing, interval and texture-oriented procedures, as well as aleatoric strategies. Special attention will be given to problems of notation and instrumentation raised by the afore-mentioned approaches.

SIGNATURE REQUIRED

FORMAT: Lecture 2 hours

PREREQUISITE: MUSC 2222.03, 3283.03 or 3284.03

### **MUSC 4283.03: Early Music Analysis.**

A seminar exploring the various approaches to early music analysis, covering chant, early polyphony and music by significant figures before 1600 including Machaut, DuFay and Josquin.

INSTRUCTOR(S): J. Bain

FORMAT: Seminar

PREREQUISITE: MUSC 3281.03 or permission of the Instructor

### **MUSC 4299X/Y.03: Area Graduation Requirement (Composition Recital).**

A jury-based assessment of the final requirements for the BMus, Composition Programme.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Permission of the department

### **MUSC 4353.03: Music Since 1945.**

This course examines themes in Music since 1945. Topics to be considered include compositional techniques, music and cultural theory, and avant garde and mainstream musics.

FORMAT: Seminar

PREREQUISITE: MUSC 2352, 2353 or permission of instructor

CROSS-LISTING: MUSC 5353

### **MUSC 4354.03: Popular Music Analysis.**

In this class for music majors, we examine various methods and techniques for studying popular music. We consider the central debates of this relatively new field of scholarly inquiry, and we assess the contributions of popular music scholarship to the larger fields of music study.

INSTRUCTOR(S): J. Warwick

FORMAT: Seminar

PREREQUISITE: MUSC 2352.03, 2353.03 or permission of the instructor

CROSS-LISTING: MUSC 5354

### **MUSC 4355.03: Narrative Strategies in Nineteenth-Century Music: Gender, Identity, and Social Politics.**

An interdisciplinary survey of nineteenth-century instrumental music, focusing on the narrative potential of nineteenth-century musical conventions and their relationship to other aspects of nineteenth-century Western culture. Representative musical works will be studied within the context of broader social and cultural issues, including gender, race, class, sexuality, nationality, ethnicity, and identity.

INSTRUCTOR(S): S. Baur

FORMAT: Seminar

PREREQUISITE: Permission of the instructor

CROSS-LISTING: GWST 4355.03, MUSC 5355.03

### **MUSC 4356.03: Opera Studies.**

An examination of current critical issues in opera studies. Specific topics may vary from year to year; examples include 'Opera and Politics' and 'Operas of Mozart on Stage and Screen', 'Women in Opera,' 'Opera on Film.'

INSTRUCTOR(S): E. Joubert

FORMAT: Seminar

PREREQUISITE: MUSC 2352: Open to non-majors by permission of instructor

CROSS-LISTING: MUSC 5356.03

### **MUSC 4360X/Y.06: Advanced Seminar in Baroque Culture.**

This course offers its students a survey of key aspects of seventeenth and eighteenth-century European history and society along with a first-hand view of some of the most important aspects of baroque style and material culture. It takes place in the town of Cesky Krumlov in the Czech Republic. The class introduces students to the socio-political conditions that led to the birth of Baroque

civilization before entering into an exploration of the court life of seventeenth and eighteenth-century Europe. It then examines the cultural and artistic forms most characteristic of this period, with particular emphasis on opera history and on the role of the 'theatrical' in the Baroque arts. As the course proceeds, students will have an opportunity to consider the connections between course material and the evidence of Baroque culture to be found in the Castle Theatre's scenographic machinery, its stock of original scenery and props, and its collection of historical costumes, as well as to witness an experimental Baroque opera performance. Finally, the course will include visits to Prague and other sites of interest to add to students' understanding of the Baroque and its legacy to subsequent periods.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab

PREREQUISITE: Permission of the Departments of Theatre, Music and/or History.

CROSS-LISTING: HIST 4162.06, THEA 4735.06

RESTRICTION: 3rd and 4th year students only.

### **MUSC 4361.03/4365.03: Topics in Musicology I.**

These are intensive studies of selected topics announced annually. Students should check the online university timetable or contact the department for details.

FORMAT: Seminar

PREREQUISITE: MUSC 2353

CROSS-LISTING: MUSC 5361

### **MUSC 4362.03: Topics in Canadian Music.**

This course focuses on one or more of the following topics: Canadian composers, performers and musical institutions. The perspective may be analytical, aesthetic and/or historical.

FORMAT: Seminar

PREREQUISITE: Permission of instructor

CROSS-LISTING: CANA 4362.03

EXCLUSION: MUSC 3362.03

### **MUSC 4363.03/4367.03: Topics in Musicology II.**

These are intensive studies of selected topics announced annually. Students should check the online university timetable or contact department for details.

FORMAT: Seminar

PREREQUISITE: MUSC 2353

CROSS-LISTING: MUSC 5363

### **MUSC 4364.03/4366.03: Topics in Music.**

These are intensive studies of selected topics announced annually.

SIGNATURE REQUIRED

FORMAT: Seminar 2-3 hours

PREREQUISITE: MUSC 1352.03, 1353.03, 2352.03

### **MUSC 4368.03/4369.03: Special Studies.**

Individually directed research and writing under the supervision of an appropriate member of the Department.

SIGNATURE REQUIRED

PREREQUISITE: MUSC 2352.03

### **MUSC 4380.03/4381.03: Selected Composer Studies.**

An intensive study of a single composer, focusing on works and cultural context.

FORMAT: Lecture/discussions

PREREQUISITE: MUSC 2352, MUSC 2353

### **MUSC 4399X/Y.03: Graduation Requirement (Thesis).**

Students must receive Departmental approval to fulfil this graduation requirement. Students must submit the required Thesis Form by March 1 of the third year of study, along with any other requirements specific to their degree program. Please see the department for guidelines and deadlines.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Permission of the department

### **MUSC 4599X/Y.03: Graduation Project.**

Students in the BMus General degree program must receive Departmental approval to fulfil this graduation requirement. Project proposals must be submitted by students no later than March 1 of the third year of study. For more details on project options and application requirements, please consult the Department.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Permission of the department

## **Philosophy**

Location: 6135 University Avenue, Room 1142  
PO Box 15000  
Halifax, NS B3H 4R2

Telephone: (902) 494-3810/494-3510

Fax: (902) 494-3518

Email: dalphil@dal.ca

Website: <http://www.philosophy.dal.ca>

Note: This faculty list is accurate as of January 2013. For current listings, please check Department website.

### **Dean**

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

### **Chair of Department**

MacIntosh, D.

### **Undergraduate Advisor**

Scherkosce, G.

### **Honours Advisor**

Scherkosce, G.

### **Professors Emeriti**

Braybrooke, D., BA (Harvard), MA, PhD (Cornell), FRSC

Campbell, R. M., BA (Harvard), PhD (Cornell)

Sherwin, S. B., BA (York), PhD (Stanford), FRSC (University Research Chair)

### **Professors**

Hymers, M., BSc, MA (Dalhousie), PhD (Alberta)

MacIntosh, D., BA (Queen's), MA (Waterloo), PhD (Toronto)

Schotch, P. K., PhD (Waterloo), Munro Professor of Metaphysics

### **Associate Professors**

Abramson, D., BA (Toronto), MSc, PhD (Indiana)

Meynell, L., BA Hons (York), MA (Calgary), PhD (Western)

### **Assistant Professors**

Borgerson, K., BA (Saskatchewan), MA (Toronto), PhD (Toronto)

Dieleman, S., BA Hons (Waterloo), MA (Memorial), PhD (York)

Fisher, A., BA Hons (First Class) (University of New England), PhD (Syracuse)

Jeffers, C., BA (York), PhD (Northwestern)

Scherkosce, G., BA (Clark), MA (Simon Fraser), PhD (Cambridge)

### **Adjunct Professors**

Baressi, J., BS, (Brown), MA (Southern California), MS, PhD (Wisconsin)

Brett, N. C., BA (N.H.), MA, PhD (Waterloo)

Burns, S. A. M., BA (Acadia), MA (Alberta), PhD (London)

Campbell, R. M., BA (Harvard), PhD (Cornell)

Fenton, A., BA Hons (Acadia), MA (Dalhousie), PhD (U of Calgary)

Gannett, L., BSc, MA, PhD (UWO)

Glazebrook, P., BA (Alta), MA, PhD (Toronto)

Kernohan, A., SB (MIT), MSc (Toronto), MA (Dalhousie), PhD (Toronto)

Maitzen, S. A., BA (NW), MA, PhD (Cornell)

Schellenberg, J., BA, MA (Calgary), DPhil (Oxford)

Sherwin, S. B., BA (York), PhD (Stanford)

Vinci, T., BA (Toronto), MA, PhD (Pittsburgh)

Watkins, M., PhD (Ohio State)

Wein, S., PhD (Waterloo)

### **Cross Appointment**

Baylis, F., BA (McGill), MA, PhD (Western), FRSC (Cross-appointed with the Faculty of Medicine)



## I. Beginning in Philosophy

There are many different ways of beginning in philosophy. The Dalhousie Philosophy Department offers three sorts of classes for beginners: (1) general survey introductions, which will give you a taste of a variety of questions and answers; (2) introductions to special areas; (3) logic, which is the study of the theory and techniques of good reasoning. Students wishing to major in philosophy are encouraged to begin with Introduction to Philosophy (either PHIL 1000.06, or PHIL 1010.06) in which a wide range of philosophical issues are discussed. But any student in any year may begin philosophy with a class that has no prerequisites. These include the 1000 level classes and many of the classes at the 2000 level. Although any of the 2000 level non-prerequisite classes provide the student with a good introduction to philosophical thinking, by far the best introduction is provided by the full year introduction (PHIL 1000 or 1010). Some 2000 level classes have prerequisites which can be met either by a philosophy class or a class in another relevant discipline. The King's College Foundation Year satisfies the requirement of a previous philosophy class. Classes at the 3000 level and beyond usually have further requirements. See the class descriptions below.

## II. Degree Programs

All students planning to take a degree in philosophy are encouraged to talk to an undergraduate advisor; those planning to do an honours degree must consult with the honours advisor. Students who intend to specialize in philosophy should take an honours degree, the normal preparation for graduate study in philosophy.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

Note: In the statement of program requirements and prerequisites, "credit" means one full credit (six credit hours).

Not all classes are offered every year. Please consult the current timetable to determine if these classes are offered.

Detailed descriptions are available from the department website at [philosophy.dal.ca](http://philosophy.dal.ca) and from the departmental office.

### A. BA with Honours in Philosophy

See BA Concentrated Honours under Degree Requirements.

Students interested in Honours Programs are encouraged to apply by the middle of their third year. Please contact Honours Advisor. The Honours application form is available online at <http://www.registrar.dal.ca/forms>.

#### Departmental Requirements

At least 10 credits in Philosophy of which at least nine and no more than 11 are beyond the 1000 level

##### *Select at least one credit from the following:*

Philosophy (logic) half credit: 2130.03, 2660.03, 3160.03, 3140.03, 3165.03, 3900.03

##### *Select at least one credit from the following:*

Philosophy (history) half credit: 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3630.03, 3635.03, 3640.03, 3650.03

- At least four credits at or above the 3000 level including a half-credit in epistemology (3051.03) and a half credit in ethics (3105.03) and at least one credit at the 4000 level
- Honours Thesis

### Honours Philosophy with Emphasis on Cognitive Science

Cognitive Science is the study of intelligence and cognition in human beings and machines (computers). The goal is to come to a fuller understanding of human learning and intelligence and to develop devices that extend human abilities. Students may choose to do an Honours BA with an emphasis on cognitive science. The requirements for this degree are the same as above, except that three philosophy credits and two non-philosophy credits must be in cognitive science related classes. Those who complete the requirements will have the words "With Emphasis on Cognitive Science" on their transcript upon graduation. Contact the Philosophy Department for details.

### B. BA with Combined Honours

See BA Combined Honours under Degree requirements.

### Departmental Requirements

At least five and no more than eight credits in Philosophy beyond the 1000 level, including two credits beyond the 2000 level. Since the requirements for the combined honours degree vary (depending on the program with which philosophy is combined) students must see an honours advisor. An honours thesis (or qualifying exam) in one of the two combined subjects is required.

##### *Select at least one half credit from the following:*

Philosophy (logic) half credit 2130.03, 2660.03, 3160.03, 3140.03, 3165.03, 3900.03

##### *Select at least one half credit from the following:*

Philosophy (history) half credit: 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03, 3650.03

At least two credits at or above the 3000 level including a half credit in epistemology (3051.03) and a half credit in ethics (3105.03)

### C. BA (20 credit) Major in Philosophy

See BA Major (20 credit) under Degree Requirements.

#### Departmental Requirements

At least six and no more than nine credits in Philosophy beyond the 1000 level, including three credits beyond the 2000 level

##### *Select at least one half credit from the following:*

Philosophy (logic) half credit: 2130.03, 2660.03, 3060.03, 3140.03, 3165.03, 3900.03

##### *Select at least one credit from the following:*

Philosophy (history) half credit: 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03, 3650.03

At least three credits at or above the 3000 level including a half credit in epistemology (3051.03) and a half credit in ethics (3105.03 or 3100.06)

### D. BA (20 credit) Double Major

See BA (20 credit) Double Major under Degree requirements.

#### Departmental Requirements

At least five and no more than eight credits in Philosophy beyond the 1000 level, including two credits beyond the 2000 level

##### *Select at least one half credit from the following:*

Philosophy (logic) half credit 2130.03, 2660.03, 3060.03, 3140.03, 3165.03, 3900.03

##### *Select at least one credit from the following:*

Philosophy (history) half credit: 2350.03, 2370.03, 2610.03, 2620.03, 3110.03, 3115.03, 3630.03, 3635.03, 3640.03, 3650.03

At least two credits at or above the 3000 level including at least a half credit in epistemology (3051.03) or a half credit in ethics (3105.03)

### E. BA (15 credit) Minor in Philosophy

See requirements for minor below

### F. Minor in Philosophy

#### Requirements

At least three credits and no more than four and a half credits in Philosophy beyond the 1000 level, including at least one half credit beyond the 2000 level.

##### *Select at least one half credit from the following:*

PHIL 2130 (Logic: Deduction - half credit)  
PHIL 2085 (Reasoning Skills - half credit)  
PHIL 2090 (How to Win an Argument - half credit)  
PHIL 2660 (Logic: Understanding Scientific Reasoning - half credit)

### G. Minor in Applied Ethics

#### Requirements

At least three credits and no more than four and a half credits in Philosophy beyond the 1000 level, including at least one half credit beyond the 2000 level.

**Select at least one half credit from the following:**

PHIL 2130 (Logic: Deduction - half credit)  
PHIL 2085 (Reasoning Skills - half credit)  
PHIL 2090 (How to Win an Argument - half credit)  
PHIL 2660 (Logic: Understanding Scientific Reasoning - half credit)

**Select:**

PHIL 3105 (Ethics - half credit)

**Select at least three half credits from the following:**

PHIL 2805 (Ethics & Health Care: Patient Care - half credit)  
PHIL 2810 (Ethics & Health Care: Social Policy - half credit)  
PHIL 2081 (Ethics in the World of Business - half credit)  
PHIL 2480 (Environmental Ethics - half credit)  
PHIL 2485 (Technology and the Environment - half credit)  
PHIL 2490 (Social, Ethics and Health Care - half credit)  
PHIL 4801 (Topics in Ethics and Health Care - half credit)  
PHIL 4125 (Topics in Ethics - half credit)

## H. Minor in Bioethics

### Requirements

At least three credits and no more than four and a half credits in Philosophy beyond the 1000 level, including at least one half credit beyond the 2000 level.

**Select at least one half credit from the following:**

PHIL 2130 (Logic: Deduction - half credit)  
PHIL 2085 (Reasoning Skills - half credit)  
PHIL 2090 (How to Win an Argument - half credit)  
PHIL 2660 (Logic: Understanding Scientific Reasoning - half credit)

**Select:**

PHIL 3105 (Ethics - half credit)

**Select at least three half credits from the following:**

PHIL 2805 (Ethics & Health Care: Patient Care - half credit)  
PHIL 2810 (Ethics & Health Care: Social Policy - half credit)  
PHIL 2720 (Ethics and the Good Life - half credit)  
PHIL 4801 (Topics in Ethics and Health Care - half credit)

## III. Class Descriptions

NOTE: Many classes are listed as being exclusionary to one another. This means that students may not take both classes so designated.

### PHIL 1000X/Y.06: Introduction to Philosophy.

An introduction to a variety of philosophical problems, such as the relation of mind to body, freedom of the will, the foundation of morality, the existence of God, the nature of personal identity, and the possibility of knowledge based on reason and experience. Sections differ somewhat in approach and requirements. Consult the department to find out which ones especially suit you. This class does not satisfy the Faculty Writing Requirement.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1010X/Y.06, PHIL 2040.03 and PHIL 2050.03

### PHIL 1010X/Y.06: Introduction to Philosophy.

See description for PHIL 1000X/Y.06. This class does satisfy the Faculty Writing Requirement. Since PHIL 1010X/Y.06 consists of sections taught by different instructors, statements about its objectives and approach must be confined to generalizations. Detailed syllabi of all sections are available on our Web site at [www.philosophy.dal.ca](http://www.philosophy.dal.ca).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing Requirement, lecture /discussion

EXCLUSION: PHIL 1000.06, PHIL 2040.03 and PHIL 2050.03

### PHIL 1050.03: Ethics in Science.

An introduction to ethical questions that arise in the practice of science. The class will explore a variety of ethical questions associated with the study and practice of science. Students will learn about the nature of philosophical approaches to ethics and how to employ these insights to the tasks of recognizing and reflecting on ethical issues that arise when engaged in scientific research and practice. One

section of this class is offered as part of the Dalhousie Integrated Science Program, that relate to the specific scientific topics studied within that program where it serves as one-half of the writing requirement for first year students and is available to DISP students only.

INSTRUCTOR(S): L. Meynell, K. Borgerson

FORMAT: Lecture/discussion

EXCLUSION: PHIL 2660.03

### PHIL 2020.03: Legal Thinking.

Should the state prevent people from ending their lives to escape the pain of terminal disease? Shall we leave people free to make up their own minds regarding abortion? Should the law be used to control pornography? Is affirmative action demanded by (or inconsistent with) equality under the law? Legislation enacted in these and other controversial areas will dramatically affect how we live. It thus demands our critical attention. This class examines the role of practical reason in resolving such legal controversies. No previous study of philosophy is presupposed.

INSTRUCTOR(S): G. Scherkoske, C. Jeffers

FORMAT: Lecture/discussion

### PHIL 2040.03: 2050.03: Introduction to Philosophy I and II.

See description for PHIL 1000X/Y.06. A student may take either half-year class, but not both. Neither class satisfies the faculty writing requirement.

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1000X/Y.06 and PHIL 1010X/Y.06

### PHIL 2070X/Y.06: Foundations of Political Thought II: Rights, Rationality, and Democracy.

See class description for POLI 2401.06, in the Political Science section of this calendar.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

### PHIL 2081.03: Ethics in the World of Business.

Business practices are sometimes in accord with moral principles, sometimes at odds with them. By considering cases that illustrate business practices and dilemmas this class studies the application of ethical principles to the world of business in national and international contexts.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### PHIL 2085.03: Reasoning Skills.

Thinking clearly and effectively is something that people can learn to do. Understanding some basic concepts as well as mastering certain practical techniques can help in this. In this class you will learn about classifying concepts and how to define them; about the nature of arguments and the way to bring their structure to the surface by diagramming techniques; about some of the classic fallacies people commit in their reasoning; about some of the basic concepts and procedures of logic. This class does not satisfy the logic requirement for the major or honours in Philosophy.

FORMAT: Lecture

EXCLUSION: PHIL 2090.03

### PHIL 2090.03: How to Win an Argument.

This class is devoted to developing the practical skills involved in evaluating reasoning and producing convincing arguments. Note: this class does not count towards satisfying the logic requirement for the major or honours program.

INSTRUCTOR(S): C. Jeffers

EXCLUSION: PHIL 1080.03

### PHIL 2130.03: Logic: Deduction.

A systematic introduction to the operations of formal deductive logic, with considerable attention devoted to the relation between artificial and natural language and to the philosophical problems that arise from the study of reasoning. No previous study of logic is presupposed.

INSTRUCTOR(S): P.K. Schotch, D. Abramson

FORMAT: Lecture/discussion

### PHIL 2160.03: Philosophical Issues of Feminism.

An exploration and examination of some of the concepts, issues, and arguments underlying feminist claims and perspectives. Such topics as pornography, rape, mothering, the nature of gender, and feminism's responses to racism will be considered.

INSTRUCTOR(S): L. Meynell, S. Dieleman

FORMAT: Lecture/discussion

CROSS-LISTING: GWST 2500.03

### PHIL 2165.03: Philosophy and the Black Experience.

This is an introduction to Africana philosophy, that is, philosophy by and about people of African descent. It will begin with a brief look at philosophical thought in precolonial Africa and then turn to consider philosophical thought produced in the wake of slavery and colonization.

INSTRUCTOR(S): C. Jeffers

FORMAT: Lecture

PREREQUISITE: Successful completion of a 1st year writing requirement course

### PHIL 2170.03: Philosophy of Sex and Love.

Philosophers have long been interested in the nature of intimate human relations. This course offers an examination of key concepts and questions related to love and sexual desire. Topics will include the nature of desire, of romantic love, and of sexual orientation. We will take up questions in sexual ethics and politics, and look at selected concepts such as trust and betrayal, sexual objectification, and perversion.

INSTRUCTOR(S): L. Meynell, S. Dieleman

FORMAT: Lecture/discussion

### PHIL 2205.03: Philosophy of Religion.

Monotheistic religions (such as Judaism, Christianity, and Islam) assert the existence of a single God. This class addresses philosophical problems posed by traditional monotheism. Why care whether monotheism is true? Why care whether belief in God is rational? Does the rationality of belief in God depend on the evidence for and against God's existence? What is the best evidence for and against? What bearing does God have on human morality?

INSTRUCTOR(S): T. Vinci

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 2205.03

### PHIL 2210.03: Crisis and Consent: Foundations of Political Thought: 1651-1778.

See class description for POLI 2410.03, in the Political Science section of this Calendar.

INSTRUCTOR(S): K. Fierbeck

FORMAT: Lecture/tutorial

PREREQUISITE: An introductory class in Philosophy or Political Science

CROSS-LISTING: POLI 2410.03

EXCLUSION: POLI 2400X/Y.06

### PHIL 2220.03: Revolution and Rationality: Foundations of Political Thought: 1789-1900.

See class description for POLI 2420.03, in the Political Science section of this Calendar.

INSTRUCTOR(S): K. Fierbeck

FORMAT: Lecture/tutorial

PREREQUISITE: An introductory class in Philosophy or Political Science

CROSS-LISTING: POLI 2420.03

EXCLUSION: POLI 2270X/Y.06, POLI 2400X/Y.06

### PHIL 2260.03: Philosophy of Art.

Examines questions such as: What is art? What is its place in human life? Can judgements of artistic value be rational and objective? Can fear of fictional objects be real fear? Can music be a language?

INSTRUCTOR(S): P.K. Schotch

FORMAT: Lecture/discussion

### PHIL 2350.03: History of Philosophy: Ancient.

The beginnings of Western philosophy are studied in the writings of the pre-Socratics, Plato, and Aristotle.

INSTRUCTOR(S): P.K. Schotch

FORMAT: Lecture/discussion

### PHIL 2361.03: Ancient Philosophy: from Thales to Plato.

See class descriptions for CLAS 2361.03 in the Classics section of this calendar.

### PHIL 2362.03: Ancient Philosophy: from Aristotle to Plotinus

See class description for CLAS 2362.03 in the Classics section of this calendar.

### PHIL 2365.03: Plato and the Case of Socrates: Philosophy on Trial.

Socrates (469-399 BCE) never wrote a single word, but posed such threat to Athens that a jury put him to death for the alleged ethical corruption and impiety of his thought. This class will explore the revolutionary life and thought of Socrates, and consider whether the jury's decision against him was justified.

FORMAT: Lecture

CROSS-LISTING: RELS 2365, CLAS 2365

### PHIL 2380X/Y.06: Medieval Philosophy.

See class description for CLAS 3380.06, in the Classics section of this calendar.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### PHIL 2381.03: Medieval Philosophy from Augustine to Anselm.

A study of texts, primarily within the Latin tradition from Augustine to Anselm, but including selected writings of the Pseudo-Dionysius. Three works will normally be read in their entirety: Boethius, Consolation of Philosophy; Dionysius, Mystical Theology; Anselm, Proslogion. The main interest is the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.

FORMAT: Lecture

CROSS-LISTING: CLAS 3381.03

EXCLUSION: CLAS 3380X/Y.06; PHIL 2380X/Y.06

### PHIL 2382.03: : Medieval Philosophy from Arabic and Jewish thinkers to Aquinas.

A study of texts which reflect the transformation of the ancient philosophical tradition within the works of medieval Arabic and Jewish thinkers and of the Latin Christians to whom they mediated ancient philosophy. Selections from al-Farabi, Moses Maimonides, Averroes, and Aquinas, among others will be read. Bonaventure The Minds Journey into God will be read in its entirety.

PREREQUISITE: CLAS 3381 or PHIL 2381 or permission of the instructor

CROSS-LISTING: CLAS 3382.03

EXCLUSION: CLAS 3380X/Y.06, PHIL 2380X/Y.06

### PHIL 2450.03: Democracy, Difference and Citizenship: A Survey of Political Philosophy.

This is a survey course in Political Philosophy. This course will give engaged participants a foundation for thinking critically about what these key political concepts mean and why people have long thought these ideals behind these concepts are important. This course aims to show students an analytic and normative survey of the topics; it is not intended either as a historical survey or as an intervention in political science (though it would certainly complement such things)

INSTRUCTOR(S): C. Jeffers

FORMAT: Lecture

PREREQUISITE: Successful completion of a 1st year writing requirement course

CROSS-LISTING: POLI 2450.03

### PHIL 2475.03: Justice in Global Perspective.

In this class, we will explore answers to the central question in philosophical ethics "How should we live our lives and interact with others?" in the context of the international community or "Global Village" in which we now live. The class will involve close concentration on analyses of liberal and non-liberal theorists from around the world on the subjects of: moral rights, the nature of justice, social welfare, human diversity and equality, and the nature of social responsibility. Specific topics may include: the impact of globalization on understanding of moral rights (human rights, labour rights, language rights, etc.), third world responses to western conceptualizations of rights, new conceptions of justice and social transformation including conceptions of restorative justice, conceptualizations of race and ethnicity and sources of personal and communal identity, the nature and importance of autonomy, the importance of different cultural constructions of gender and the problem of sexual violence in a global perspective, and frameworks for understanding shared agency and shared responsibility for poverty and environmental degradation.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### PHIL 2480.03: Environmental Ethics.

This class examines humanity's relation to nature from a philosophical perspective. Of particular importance will be the moral or ethical obligations which humanity may have towards the natural environment. Attention will be

given to the historical sources of the attitudes and values which have given rise to current ecological problems in the environment, as well as to the question of how to remediate our relationship to nature. We will read from environmental holists, biocentrists, ecofeminists, deep ecologists, and others, and discuss issues concerning animal rights, environmental justice, and activism.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### **PHIL 2485.03: Technology and the Environment.**

What is technology and what role does it play in current environmental problems? Can technologies help us find solutions to environmental crises, or are those problems themselves a direct result of seeing the world from a technological point of view? In this course, we will assess the environmental impact of particular technologies (e.g., fossil fuel technologies, pharmaceutical and information technologies) and discuss sustainable alternatives and appropriate technologies in developing as well as developed nations.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: INTD 2485.03

### **PHIL 2490.03: Social, Ethical and Professional Issues in Computer Science.**

Computers can enable people to do things that our present laws and policies were not formulated to cover (hacking, sharing files on the internet, and companies sharing data). In such cases, people need to be able to decide for themselves the best course of action, and defend such decisions. This course aims at developing the ethical reasoning skills and sensitivities that computer professionals will need to make good decisions and to justify them. The course includes a general introduction to ethical theories and their use in making and justifying decisions. We then consider various issues and case studies, illustrating the kinds of problems that can arise from the use and misuse of computers and technology: the responsibilities of computing professionals; ethics on the internet (hacking, computer crime, netiquette); privacy and information; intellectual property; social and political issues (digital divide, computers and work, the internet as a democratic technology).

INSTRUCTOR(S): D. Abramson, A. Fisher

FORMAT: Lecture/discussion

PREREQUISITE: No previous knowledge of computing or of philosophy is assumed. Some familiarity with computers is an advantage.

CROSS-LISTING: CSCI 3101.03

EXCLUSION: COMP 3090.03

### **PHIL 2560.03: Minds and Machines: Introduction to Cognitive Science.**

Could we build a robot (or program a computer) that has a mind? What is the relationship between the mind, brain, body and the world? How can technology assist cognition? In what ways are human cognitive systems similar to and different from animal cognitive systems? The course takes a philosophical approach, introducing assumptions and issues arising in research at the intersections of artificial intelligence, robotics, neuroscience, psychology, linguistics, animal cognition, evolutionary biology, and philosophy. This is a useful complement to a major in any Cognitive Science discipline, as well as a fascinating investigation of cognition for anyone who has wondered about what the human mind is and how it works.

INSTRUCTOR(S): D. Abramson, A. Fisher

FORMAT: Lecture/discussion

EXCLUSION: PHIL 3460

### **PHIL 2610.03: History of Philosophy: The Rationalists.**

The philosophy of Descartes, Spinoza, and Leibniz.

INSTRUCTOR(S): T. Vinci

FORMAT: Lecture/discussion

PREREQUISITE: One previous credit in philosophy or permission of the instructor

### **PHIL 2620.03: History of Philosophy: The Empiricists.**

The philosophy of Locke, Berkeley, and Hume, with an introduction to Kant.

INSTRUCTOR(S): T. Vinci

FORMAT: Lecture/discussion

PREREQUISITE: One previous credit in philosophy or permission of the instructor

### **PHIL 2650X/Y.06: Modern German Philosophy.**

This course provides a survey of the German philosophical tradition from the enlightenment to the present. Students will gain a broad overview of the German intellectual history through focused readings of the theoretical texts.

FORMAT: Lecture and Tutorial

CROSS-LISTING: GERM 2650.06

### **PHIL 2660.03: Logic: Understanding Scientific Reasoning.**

The class is a general philosophical introduction to methods of evaluating hypotheses, experimental tests, and reasoning in science with applications to everyday reasoning as well. The class is divided into discussion of three kinds of evaluation: theoretical hypotheses, statistical and causal hypotheses, and decisions. No background in science or philosophy is presupposed for this class.

INSTRUCTOR(S): L. Meynell

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1050.03

### **PHIL 2705.03: Philosophy in Literature.**

A study of some philosophical themes in modern literature. All readings will be literary works.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

### **PHIL 2710.03: Existentialism.**

The existentialists focus on what is individual and unique about human lives. They emphasize the sense in which we choose projects and lives and even deaths for ourselves and find self-deception in our ways of avoiding choices. Some existentialists argue that whatever meaning our lives have must be invented. Some contend that life is absurd. This class is an introduction to the themes of existentialism through the study of the philosophy and fiction of Dostoevsky, Ortega y Gasset, Sartre, Camus, and Simone De Beauvoir.

INSTRUCTOR(S): P. K. Schotch

FORMAT: Lecture/discussion

### **PHIL 2720.03: The Good Life: Well-Being, Meaning & Happiness.**

This course is a survey of various ethical views in the history of Western Philosophy, concentrating on the issues facing people who are concerned with what human beings should aim for and do if they are to lead lives that are fulfilling.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Lecture/discussion

### **PHIL 2805.03: Ethics & Health Care: Patient Care.**

How much information must health professionals provide to patients? Can they violate a patient's expressed wishes if they judge a patient to be not fully competent? Should doctors be permitted to end the life of patients when the patient requests assisted suicide? In this class we will explore questions of this nature through a combination of lecture and discussions. Students are encouraged to take this class in conjunction with PHIL 2810.03.

INSTRUCTOR(S): K. Borgerson

FORMAT: Lecture/discussion

### **PHIL 2810.03: Ethics & Health Care: Social Policy.**

Should the state regulate access to abortion? Should it permit all innovations in assisted reproduction? What are the key ethical questions regarding embryonic stem cell research, cloning, and genetic manipulation? What principles should govern the use of human and animal subjects in medical research? What criteria should we use to determine a fair allocation of healthcare resources in light of the fact that demand inevitably exceeds supply? In this class we will explore questions of this nature through a combination of lecture and discussions. Students are encouraged to take this class in conjunction with PHIL 2805.03.

INSTRUCTOR(S): K. Borgerson

FORMAT: Lecture/discussion

### **PHIL 3051.03: Epistemology.**

A study of fundamental issues in the contemporary theory of knowledge. The class examines skepticism and investigates the nature of knowledge, belief, meaning, evidence, and truth. Questions are raised about perception and memory and their relation to knowledge.

INSTRUCTOR(S): M. Hymers, T. Vinci, D. MacIntosh, L. Meynell

FORMAT: Lecture/discussion

PREREQUISITE: Two of PHIL 2610.03, PHIL 2620.03, 2130.03 or permission of the instructor  
CROSS-LISTING: PHIL 5051.03

### PHIL 3105.03: Ethics.

A systematic study of the foundation of morality, including readings from Kant, Foundation of the Metaphysics of Morals and Hume, A Treatise of Human Nature.  
INSTRUCTOR(S): D. MacIntosh, G. Scherkoske, K. Borgerson  
FORMAT: Lecture/discussion  
PREREQUISITE: Two previous credits in philosophy or permission of the instructor  
CROSS-LISTING: PHIL 5105.03

### PHIL 3110.03: History of Ethics: Plato to Epicurus.

In this class we will carefully read a number of seminal works in the history of Western Moral Philosophy covering Plato, Aristotle, Stoicism and Epicureanism.  
INSTRUCTOR(S): G. Scherkoske, P. K. Schotch  
FORMAT: Seminar with class discussion  
PREREQUISITE: Two previous credits in philosophy  
CROSS-LISTING: PHIL 5110.03

### PHIL 3115.03: History of Ethics: Kant's Moral Theory.

In this class we will look closely at one of the most seminal thinkers in the history of Western Moral Philosophy. The course will explore Kant's own writing, some of his most important predecessors, and contemporary commentators. The class will aim to develop a plausible understanding of Kantian ethics - including both its normative and meta-ethical commitments. A primary concern will be the relevance of Kant's views for contemporary moral reflection.  
INSTRUCTOR(S): G. Scherkoske, D. MacIntosh  
FORMAT: Seminar with class discussion  
PREREQUISITE: Two previous credits in philosophy  
CROSS-LISTING: PHIL 5111.03

### PHIL 3140.03: Logic: Logical Theory I.

An introduction to non-classical logics from a formal perspective.  
INSTRUCTOR(S): P.K. Schotch  
FORMAT: Lecture/discussion  
PREREQUISITE: PHIL 2130.03  
CROSS-LISTING: PHIL 5140.03

### PHIL 3170.03: Contemporary Feminist Theories.

Contemporary feminism is not a single theory but comprises multiple theoretical perspectives, reflecting both a diversity in women's experience of subordination and a diversity of interests and approaches. This class aims to present some of the richness and variety in feminist theory while offering students the opportunity for sustained critical engagement with influential feminist thinkers.  
INSTRUCTOR(S): L. Meynell, S. Dieleman  
FORMAT: Seminar  
PREREQUISITE: One previous credit in philosophy or in Gender and Women's Studies or permission of the instructor.  
CROSS-LISTING: GWST 3500.03/5170.03, PHIL 5170

### PHIL 3211.03: Philosophy of Law.

Is coercion central to law? How are law and morality related? What justification can be given for punishment? What is the appropriate scope of individual liberty? These and other issues relating to the analysis and evaluation of law will be considered. The class will examine the competing claims of the Positivist, Realist, and Natural Law accounts of law before turning to some normative issues concerning the justification of legal practice.  
INSTRUCTOR(S): Staff  
FORMAT: Lecture/discussion  
PREREQUISITE: Two previous credits in philosophy, permission of the instructor  
CROSS-LISTING: PHIL 5211.03

### PHIL 3300.03: Philosophy of Language.

What does it mean to say that the elements of language have meaning?  
INSTRUCTOR(S): M. Hymers  
FORMAT: Lecture/discussion  
PREREQUISITE: Two previous credits in philosophy including one half credit in logic class, half- or full-year  
CROSS-LISTING: PHIL 5300.03

### PHIL 3361.03: Ethics, Justice, and Economics.

Assumptions of Neoclassical economic theory are critically examined, with a focus on the ethical and distributional consequences of using markets as an

allocation mechanism. We discuss the major conceptions of economic justice, including utilitarianism and social choice theory, Rawlsian egalitarianism, Nozickian libertarianism, Sen's capabilities approach, and equality of opportunity.  
FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03, ECON 2201.03  
CROSS-LISTING: ECON 33601.03, PHIL 5361.03

### PHIL 3420.03: Philosophy of Biology.

This class provides an up-to-date systematic examination of central issues in the philosophy of biology. Topics typically include: How far can the Darwinian paradigm be taken to explain adaptive complexity? Is the new emphasis on developmental theory likely to revolutionize evolutionary theory? What are the most fundamental units of selection? Can the concept of biological function be understood without attributing purpose to nature? Why is the concept of species so elusive? Is there a human nature? Is genuine altruism possible given the forces of selection? Is there progress in evolution? How should clashes between faith and reason over the nature of our evolution be resolved?  
INSTRUCTOR(S): L. Meynell  
FORMAT: Lecture/discussion  
PREREQUISITE: One previous credit in philosophy or biology  
CROSS-LISTING: BIOL 3580.03, PHIL 5420.03

### PHIL 3445.03: Philosophy of Mind: The Mind-Body Problem.

This course will critically examine philosophical and scientific articles, and possibly short works of fiction, which explore various theories, problems and arguments regarding the status of minds in the physical world and the relationships between mind, body and world. We will explore and discuss controversies regarding the thesis that the mind is (nothing but?) the brain, and issues such as the theoretical foundations of artificial intelligence, the problem of subjectivity and consciousness, "naturalized" intentionality (how thoughts—if they are physical things or processes—can have the property of being about other things), and animal cognition.  
INSTRUCTOR(S): D. Abramson, A. Fisher  
FORMAT: Lecture/discussion  
PREREQUISITE: Two previous credits in philosophy  
CROSS-LISTING: PHIL 5445.03  
EXCLUSION: PHIL 3440.03  
CO-REQUISITE: none

### PHIL 3450.03: Philosophy of Emotions.

We will concentrate on the resurgence of philosophical interest in the emotions over the last twenty years. Although it is obvious that much human action is emotionally driven, traditionally many philosophers have expressed skepticism about the value of emotions to rational and ethical conduct. Recently, philosophers such as Martha Nussbaum, Amelie Rorty and Ronald De Sousa have argued powerfully that rationality requires emotions. Other philosophers have argued that we need a renewed assessment of the epistemic importance of emotion in revealing power and value. Topics will include emotional rationality; emotion and value; first person authority; cognitive, social constructivist and psycho-evolutionary approaches; emotion and feminist epistemology; emotion, power and racial construction.  
INSTRUCTOR(S): Staff  
FORMAT: Lecture/discussion  
PREREQUISITE: At least one previous credit in philosophy including one half credit above the 1000 level.  
CROSS-LISTING: PHIL 5450

### PHIL 3455.03: Philosophy of Mind: Personal Identity.

A systematic study of theories of personal identity. We will look not only at classic analytic thought experiments about identity in authors like Bernard Williams and Derek Parfit, but also at literary treatments of metamorphosis and at political texts that call upon persons to undertake identity shifts. Our interest will be in what these texts indicate about the nature of personal continuity from within a view of persons as socially constituted.  
INSTRUCTOR(S): Staff  
FORMAT: Lecture/discussion  
PREREQUISITE: at least one previous credit in philosophy including one half credit above the 1000 level.  
CROSS-LISTING: PHIL 5455.03  
EXCLUSION: PHIL 3440.03

### PHIL 3470.03: Human Rights: Philosophical Issues.

See class description for POLI 3403.03 in the Political Science section of this calendar.

### **PHIL 3475.03: Democratic Theory.**

See class description for POLI 3475.03 in the Political Science section of this calendar.

### **PHIL 3476.03: Liberalism and Global Justice.**

This is a course in normative political theory. We will critically examine some recent normative political theory, and then examine the prospects and perils of attempts by recent liberal theory to articulate a principled vision of global justice. We will consider Rawls' original bounded theory of justice and examine some challenges it faces from both cosmopolitan theories of justice and proponents of nationalism. Next we'll consider rival political conceptions of liberal international justice, and Rawls' response in the form of his recent *The Law of Peoples*. Concluding, we will examine specific issues of applied political justice (namely, human rights and immigration) as well as issues of economic and social justice and poverty.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Lecture/discussion

PREREQUISITE: 2 courses in Philosophy or Political Science or permission of the instructor

CROSS-LISTING: POLI 3476.03, POLI 5476.03, INTD 'Approved List,' PHIL 5476.03

### **PHIL 3520.03: Philosophy of Social Science.**

Can people from different cultures understand each other? What is to be a member of a culture? Are societies best thought of as collections of individuals, or are individuals constituted by societies? In what sense are the social sciences "sciences"? Are societies describable by explanatory laws? What counts as an explanation of human behaviour? This class explores these and related questions through a reading of classic and contemporary philosophers and social theorists.

INSTRUCTOR(S): M. Hymers

PREREQUISITE: two full credits in Philosophy

CROSS-LISTING: POLI 3496.03

### **PHIL 3530.03: Freedom, Action, and Responsibility.**

An investigation of the nature of action seeking criteria for individuating, describing, and explaining actions. Topics may include the roles of volitions, intentions, motives, and reasons in actions; responsibility for actions and the concept of free actions.

INSTRUCTOR(S): P. K. Schotch, D. MacIntosh

FORMAT: Lecture/discussion

PREREQUISITE: Two previous credits in philosophy

CROSS-LISTING: PHIL 5530.03

### **PHIL 3630.03: History of Philosophy: Kant.**

Special attention will be paid to Kant's metaphysics.

INSTRUCTOR(S): T. Vinci

FORMAT: Lecture/discussion

PREREQUISITE: PHIL 2610.03 or PHIL 2620.03 or permission of the instructor

CROSS-LISTING: PHIL 5630.03

### **PHIL 3635.03: History of Philosophy: 19th-Century Philosophy.**

This class will study major figures in 19th-century philosophy between Kant and Russell: Fichte, Hegel, Schopenhauer, Marx, Kierkegaard, Mill, Nietzsche, James and Bradley. Attention will also be paid to some important figures in related arts and sciences (e.g., Beethoven, Wagner, Ibsen, Feuerbach, Darwin, Freud, Wollstonecraft, Frege). We shall trace the main lines of development in epistemology and metaphysics as well as in ethics and political philosophy.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: PHIL 2610.03 or 2620.03

CROSS-LISTING: PHIL 5635.03

### **PHIL 3640.03: History of Philosophy: Twentieth-Century Philosophy.**

The Twentieth Century has been a period of revolutionary change in Anglophone philosophy. This class surveys the most influential figures, including Moore, Austin, Ayer, Wittgenstein, and Quine.

INSTRUCTOR(S): D. MacIntosh

FORMAT: Lecture/discussion

PREREQUISITE: One previous credit in the history of philosophy or permission of the instructor

CROSS-LISTING: PHIL 5640.03

### **PHIL 3650.03: Modern Philosophy.**

"Modern Philosophy" refers to a philosophical perspective that arose during the great advances of Western science in the 17th and 18th centuries. Modern Philosophy seeks to advance the thesis that persons are beings with conscious thoughts (ideas) and that all of the interesting forms of contact people have with the world - perceptual, semantic, epistemic, causal - are mediated by conscious thoughts. Modern Philosophy also seeks to reconcile this thesis with the scientific/materialistic image of the world then emerging. This class involves a study of the systematic properties of this perspective employing both historical primary sources and contemporary commentary. (This class is designed to complement PHIL 3660.03 but can be taken independently.)

INSTRUCTOR(S): T. Vinci

FORMAT: Lecture/discussion

PREREQUISITE: PHIL 2610.03, 2620.03 or permission of the instructor

CROSS-LISTING: PHIL 5650.03

### **PHIL 3660.03: Post-Modern Philosophy.**

Modern Philosophy is a philosophical perspective in which individuals and their conscious thoughts are paramount. Post-modern philosophy rejects this perspective, replacing it with one in which language and society are paramount. We shall study this perspective in the writings of post-Wittgenstein philosophers like Rorty in the English-speaking world as well as those like Derrida, Irigaray, and Habermas on the Continent. (This class is designed to complement PHIL 3650.03 and 3640.03 but can be taken independently.)

INSTRUCTOR(S): M. Hymers

FORMAT: Lecture/discussion

PREREQUISITE: Two previous credits in Philosophy (including, ideally, PHIL 2610 or PHIL 2620)

CROSS-LISTING: PHIL 5660.03

### **PHIL 3670.03: Philosophy of Science.**

This course offers an advanced survey of issues in the philosophy of science. Topics typically include: the demarcation between science and pseudo-science; scientific method and explanation; metaphysical assumptions of science and the role of values in scientific method and practice. Particular attention will be paid to key episodes in 20th Century philosophy of science. No scientific background is presupposed.

INSTRUCTOR(S): L. Meynell

FORMAT: Lecture/discussion

PREREQUISITE: At least two previous credits in philosophy, including one half- or full-year logic class such as PHIL 2660.03 or permission of instructor

CROSS-LISTING: PHIL 5670.03

### **PHIL 3851.03: Metaphysics.**

A study of topics such as the nature of substance and change, body and mind, cause and effect, and the concept of existence.

INSTRUCTOR(S): M. Hymers, T. Vinci, D. MacIntosh, P. K. Schotch

FORMAT: Lecture/discussion

PREREQUISITE: Two previous credits in philosophy including PHIL 1000.06 or PHIL 1010.06 or PHIL 2610.03 or PHIL 2620.03

CROSS-LISTING: PHIL 5851.03

#### **NOTE:**

Classes at the 4000 level are intended for advanced undergraduates with a strong background in philosophy. It is assumed that normally a student will have already taken relevant classes at the 3000-level. Classes with titles beginning "Topics in..." have no description, since the selection of topics and instructor is determined after the time of calendar preparation. These are seminar classes. Interested students should consult the department for up-to-date information.

### **PHIL 4055.03: Topics in Epistemology.**

In this seminar class, students focus on a particular topic in epistemology and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): M. Hymers, K. Borgerson

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5055.03

**PHIL 4070.03: Topics in Philosophy of Psychology.**

INSTRUCTOR(S): D. Abramson

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5070.03

**PHIL 4080.03: Topics in Logical Theory.**

INSTRUCTOR(S): P.K. Schotch

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5080.03

**PHIL 4115.03: Topics in Ethics I.**

In this seminar class, students focus on a particular topic in ethical theory and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5115.03

**PHIL 4120.03: Theory of Rational Decision.**

A study of foundational problems in contemporary theory of rational decision and its philosophical applications, drawing on work by philosophers, psychologists, economists and mathematicians.

INSTRUCTOR(S): D. MacIntosh

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5120.03

**PHIL 4125.03: Topics in Ethics II.**

INSTRUCTOR(S): G. Scherkoske

CROSS-LISTING: PHIL 5125.03

**PHIL 4150.03: Contemporary Metaethics.**

This seminar course surveys contemporary work in metaethics - the branch of moral philosophy concerned with the metaphysical, epistemological, semantic and psychological commitments of the moral discourse and practice.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Seminar

PREREQUISITE: 2 courses in Philosophy

CROSS-LISTING: PHIL 5150.03

**PHIL 4190.03: Topics in the History of Philosophy I: Wittgenstein.**

In this seminar class, students focus on a particular topic in the History of Philosophy and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): M. Hymers

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5190.03

**PHIL 4191.03: Topics in the History of Philosophy II.**

In this seminar class, students focus on a particular topic in Modern Philosophy (e.g., the work of Descartes or Spinoza) and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5191.03

**PHIL 4192.03: Topics in the History of Philosophy III.**

In this seminar class, students focus on a particular topic in Modern Philosophy (e.g., the work of Locke or Hume) and investigate it in detail. When the class is

offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5192.03

**PHIL 4200.03: Topics in Normative Theory.**

In this seminar class, students focus on a particular topic in Normative Theory and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5200.03

**PHIL 4215.03: Topics in the Philosophy of Law.**

In this seminar class, students focus on a particular topic in the Philosophy of Law and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5215.03

**PHIL 4220.03: Contemporary Philosophical Issues.**

Intensive study of a few topics which are currently being debated and may fall outside of or cut across standard classification of areas of interest. Examples are: evolution and value, philosophical accounts of "race" and culture, artificial intelligence, probability, theories of causation, supervenience.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5220.03

**PHIL 4470.03: Contemporary Liberalism and Democracy.**

Liberalism takes a variety of forms and includes many topics including the rule of law, limited government, the free exchange of goods, entitlement to property, the self, and individual rights. Its philosophical and political assumptions provide the intellectual context within which its account of the individual, its vision of the community and its preferred allocation of resources will be assessed.

INSTRUCTOR(S): G. Scherkoske

FORMAT: Seminar

PREREQUISITE: Two full credits in philosophy or political science or permission of the instructor

CROSS-LISTING: POLI 4479.03/5479.03, ECON 4446.03/5446.03, PHIL 5470.03

**PHIL 4480.03: Social Choice Theory.**

Arrow's theorem brings together the theory of voting and welfare economics, seemingly leading both (and the theory of democracy as well) to ruin. This class will consider how to cope with the problem. Cross-listed in Economics and Political Science.

INSTRUCTOR(S): P.K. Schotch

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: POLI 4480.03/5480.03, ECON 4448.03/5448.03, PHIL 5480.03

**PHIL 4500.03: Topics in Feminist Philosophy.**

In this class, we shall explore some of the current research in a focused area of feminist philosophy. Previous topics have included feminist ethics, feminist epistemology, post modern feminism, the feminist sexuality debates and ecofeminism.

INSTRUCTOR(S): L. Meynell, S. Dieleman

FORMAT: Seminar

PREREQUISITE: Strong background in philosophy or feminist theory (normally including at least one previous class in feminist philosophy or instructor's consent)

CROSS-LISTING: GWST 4500.03/5500.03, PHIL 5500.03

### PHIL 4510.03: Topics in the Philosophy of Language.

In this seminar class, students focus on a particular topic in the Philosophy of Language and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): M. Hymers

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5510.03

### PHIL 4680.03: Topics in the Philosophy of Science.

In this seminar class, students focus on a particular topic in the Philosophy of Science and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): L. Meynell, T. Vinci

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5680.03

### PHIL 4700.03: Philosophy of Race.

This course explores the metaphysics and ethics of race. Topics covered include: what "race" means; how old the concept is; whether races exist; what kinds of thing races are; whether it is valuable to acknowledge one's racial identity; and what counts as racism.

INSTRUCTOR(S): C. Jeffers

PREREQUISITE: At least two previous credits in Philosophy or permission of the instructor

CROSS-LISTING: PHIL 5700.03

### PHIL 4801.03: Topics in Ethics and Health Care.

In this seminar class, students focus on a particular topic in Ethics and Health Care and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): K. Borgerson

FORMAT: Seminar

PREREQUISITE: PHIL 2800.06 or 2805.03 AND 2810.03 or permission of the instructor

CROSS-LISTING: PHIL 5801.03, BIOT 5801.03

### PHIL 4855.03: Topics in Metaphysics.

In this seminar class, students focus on a particular topic in Metaphysics and investigate it in detail. When the class is offered, the topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable on the Web.

INSTRUCTOR(S): D. MacIntosh, P. K. Schotch

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5855.03

### PHIL 4940.03/4960.03/4980.03/4970X/Y.06/4990X/Y.06: Directed Reading.

Consult department for details. In special cases, classes to suit individual interests can be developed jointly by a student and an instructor.

NOTE: Students taking PHIL 4970X/Y.06 OR 4990X/Y.06 must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.

INSTRUCTOR(S): Staff

FORMAT: Individual instruction

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

RESTRICTION: Students may only register for this class with the written permission of the faculty member

## Political Science

Location: Henry Hicks Academic Administration Building, Room 301  
PO Box 15000  
Halifax, NS, B3H 4R2  
Telephone: (902) 494-2396  
Fax: (902) 494-3825  
Website: <http://www.politicalscience.dal.ca>

### Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

### Chair of Department

Finbow, R., (Room 301B, 494-6606, email: [finbow@dal.ca](mailto:finbow@dal.ca))

### Undergraduate Advisor

Denike, M., (Room 362, 494-6298, email: [m.denike@dal.ca](mailto:m.denike@dal.ca))

### Professors Emeriti

Boardman, R., BSc, PhD, DSc (London), FRHistS (McCulloch Professor in Political Science)  
Braybrooke, D., BA (Harv), MA, PhD (Corn), FRSC  
Cameron, D. M., BA (Queen's), MA, MPhil, PhD (Toronto)  
Eayrs, J. G., BA (Toronto), AM, PhD (Col), FRSC, OC  
Stairs, D. W., BA (Dal), MA (Oxon), PhD (Toronto) FRSC, OC  
Winham, G. R., BA (Bowdoin), Dip. in Int. Law (Manc), PhD (NorthCar), FRSC

### Professors

Black, D. R., BA (Trent), MA, PhD (Dalhousie)  
Fierlbeck, K., BA (Alberta), MA (York), PhD (Cantab)  
Finbow, R. G., BA (Dalhousie), MA (York), MSc, PhD (London)  
Harvey, F., BA, MA, PhD (McGill)  
Laursen, F., Cand. Scient. pol (Aarhus Univ.), PhD, (Penn) (Canada Research Chair in European Union Studies)

### Associate Professors

Arthur, P., BA (Ghana), MSc (LSE), MA (WLU), PhD (Queen's)  
Bow, B., BA (UBC), MA (York), PhD (Cornell)  
Carbert, L., BA (Alberta), MA, PhD (York)  
Denike, M., BA (Simon Fraser), MA (UBC), LLM (Queens), PhD (York)  
Good, K., BA, MA (Man), PhD (Toronto)  
Turnbull, L., BA (Acadia), MA, PhD (Dalhousie)

### Assistant Professors

Hayden, A., BA (McGill), MES (York), PhD (Boston College)  
Zaiotti, R., BA (Bologna), MA (Oxford), PhD (Toronto)

## I. What is Political Science?

Politics has been described as "Who Gets What, When, How, Why" in society. The study of politics, or Political Science, is one of the oldest academic disciplines known to humankind. In Ancient Greece political philosophers concerned themselves with creating a good society, and balancing justice with order. Today Political Scientists still study these matters, but the discipline has grown to encompass many aspects of government, such as parliaments, electoral processes and constitutions; or external relations, including issues of war, peace and poverty.

Political Science is important to society because, in an age of complex government, an educated citizenry is the best safeguard for democracy. Political Science is valuable for individuals who want to know more about the values, laws, institutions and policy mechanisms that govern their lives in society, and as well, the differences between their system of government and those in other countries. Beyond this, Political Science is an especially useful preparation for students who wish to pursue careers in teaching, law, public service or business.

Dalhousie University's approach to Political Science is a blend of traditional and modern analysis. The Department offers work in classical political philosophers;



and most classes emphasize government structure and policy making, including domestic public administration and foreign policy. Other classes deal with political behaviour such as public opinion or interest group activity. Classes in modern research methods, including quantitative analysis, are also offered.

The admission requirements for Political Science are listed under the Faculty of Arts and Social Sciences. There are no additional requirements for Political Science beyond those of the Faculty.

Students taking an Honours Degree in Political Science or majoring in Political Science are encouraged to seek advice from Professor Margaret Denike, the Undergraduate Advisor, in developing a program of studies. Professor Frank Harvey is the Coordinator of Graduate Studies.

## For General Interest

Students who have not yet decided on a major, or are looking for an elective in Political Science, should take one of the Introductory classes. These may be taken over a single term or over the full year.

PLEASE NOTE: Students who complete the King's Foundation Year program with a grade of "B-" or higher will not be required to complete an Introductory class in Political Science.

Students should take no more than the equivalent of one full credit in 1st year Political Science classes.

## II. Degree Programs

Students concentrating in Political Science may take a 15 credit minor program, 20 credit major, or 20 credit honours program. The degree requirements are spelled out in University and Faculty regulations, and in departmental regulations outlined below. The specific classes to be taken in each individual program are chosen in consultation with the undergraduate advisor.

A student's program may consist of a general selection of classes from the Department's offerings or may emphasize one of the sub-fields of Political Science, as set out below.

Students are encouraged to develop distinctive programs tailored to their own particular interests and circumstances. They should, however, seek advice early in their program to ensure that they are consistent with University regulations.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

In addition to introductory classes, Political Science classes are divided into four subfields:

- Canadian Government and Politics
- Comparative Government and Politics
- Political Theory and Methodology
- International Politics and Foreign Policy

Full class descriptions appear in Section III

### Introductory

- POLI 1010.03: From Concepts to Reality: Freedom & Government
- POLI 1020.03: Governments & Democracy
- POLI 1025.03: Ideas, Politics and People
- POLI 1050.03: Ideas, Politics, People
- POLI 1055.03: Governments and Democracy
- POLI 1100 X/Y.06: Political Worlds: An Introduction to Government and Politics
- POLI 1103 X/Y.06: Intro to Government and Politics

### Canadian Government and Politics

- POLI 2210.03: Unity and Diversity: The Dynamics of Canadian Federalism
- POLI 2220.03: Political Power and Partisan Politics: The Structures of Canadian Parliamentary Government
- POLI 2230.03: Local Government
- POLI 3206.03: Constitutional Issues in Canadian Politics
- POLI 3208.03: Canadian Provincial Policies
- POLI 3220.03: Intergovernmental Relations
- POLI 3224.03: Canadian Political Parties
- POLI 3231.03: The Politics and Governance of Canadian Cities
- POLI 3233.03: Politics and the Economy of Canada
- POLI 3235.03: The Politics of Regionalism

- POLI 3405.03: Canadian Political Thought
- POLI 4204X/Y.06: Advanced Seminar in Canadian Politics
- POLI 4207.03: Canadian Politics: Themes and Theories
- POLI 4228.03: Pressure Politics in Canada: Opportunities and Obstacles
- POLI 4240.03: Policy Formulation in Canada
- POLI 4241.03: Introduction to Policy Analysis
- POLI 4242.03: Politics of Reason, Passion, and Biology
- POLI 4250.03: Canadian Public Administration
- POLI 4260.03: The Politics of Health Care

### Comparative Government and Politics

- POLI 2300X/Y.06: Comparative Politics
- POLI 2350.03: Governance and Globalization
- POLI 3304.03: Comparative Federalism
- POLI 3311.03: Sport and Politics
- POLI 3315.03: African Politics
- POLI 3320.03: European Politics
- POLI 3321.03: Politics of the European Union
- POLI 3360.03: Politics in Latin America
- POLI 3378.03: U.S. Constitution, Government, and Politics
- POLI 3385.03: Politics of the Environment
- POLI 4302.03: Comparative Development Administration
- POLI 4303.03: Human Rights: Political Issues
- POLI 4322.03: The EU as a Global Actor
- POLI 4323.03: Treaty Reforms in the EU
- POLI 4340.03: Approaches to Development
- POLI 4355.03: Comparative Perspectives on the Development State

### Political Theory and Methodology

- POLI 2410.03: Crisis and Consent: Foundations of Political Thought: 1651-1778
- POLI 2420.03: Revolution and Rationality: Foundations of Political Thought, 1789-1900
- POLI 2450.03: Democracy, Difference and Citizenship: A Survey of Political Philosophy
- POLI 3401.03: Contemporary Political Thought
- POLI 3405.03: Canadian Political Thought
- POLI 3426.03: Sex and the State
- POLI 3427.03: The Sexualization of Western Political Thought
- POLI 3431.03: Politics Through Film and Literature
- POLI 3440.03: The Politics of Fear
- POLI 3450.03: Storm and Stress: Romanticism and the Backlash Against Enlightenment Political Thought
- POLI 3475.03: Democratic Theory
- POLI 3492.03: Political Inquiry I
- POLI 3493.03: Political Inquiry II
- POLI 4403.03: Human Rights: Philosophical Issues
- POLI 4479.03: Liberalism
- POLI 4481.03: Theories of Violence, Persecution, Genocide

### International Politics and Foreign Policy

- POLI 2520.03: World Politics
- POLI 2530.03: Foreign Policy in Theory and Practice
- POLI 2540.03: Canadian American Relations
- POLI 3505.03: Human Rights: Foundations
- POLI 3520.03: Building Democracy and Peace
- POLI 3525.03: Comparative Foreign Policy Simulation
- POLI 3531.03: The United Nations in World Politics
- POLI 3535.03: The New International Division of Labour
- POLI 3540.03: Foreign Policy in the Third World
- POLI 3544.03: Political Economy of Southern Africa
- POLI 3550.03: Japanese Foreign Policy
- POLI 3560.03: Human Development/Security at the Start of the Twenty-first Century
- POLI 3565.03: Contemporary Security Studies
- POLI 3567.03: International Organization
- POLI 3568.03: Canada and the World
- POLI 3574.03: American Foreign Policy
- POLI 3577.03: Civil-Military Relations in Contemporary Western Society
- POLI 3581.03: Diplomacy and Negotiation
- POLI 3589.03: Politics of the Sea I
- POLI 3591.03: Pirates, Profiteers and Protectors of the Sea
- POLI 3596.03: Explaining Global Conflict and Violence

- POLI 4340.03: Approaches to Development
- POLI 4512.03: The Politics of North America
- POLI 4569.03: Canadian Foreign Policy
- POLI 4575.03: Nuclear Weapons and Arms Control in World Politics
- POLI 4581.03: International Diplomacy: Institutions and Practices
- POLI 4587.03: International Political Economy
- POLI 4590.03: Politics of the Sea II
- POLI 4636.03 Nationalism and Statecraft
- POLI 4810.03 Special Topics in Political Science
- POLI 4820.03 Special Topics in Political Science

#### **Reading Classes (with permission of individual instructor)**

- POLI 3601X/Y.06: Readings in Political Science
- POLI 3602.03: Readings in Political Science
- POLI 3603.03: Readings in Political Science
- POLI 4810.03: Special Topics in Political Science
- POLI 4820.03: Special Topics in Political Science

#### **Special Topics (offered occasionally)**

- POLI 2810.03: Special Topics in Political Science
- POLI 2820.03: Special Topics in Political Science
- POLI 3810.03: Special Topics
- POLI 3820.03: Special Topics

## **A. Honours Program**

An honours program normally consists of a first year class, or two half-credit class, and not less than nine or more than eleven additional classes, or equivalent in half-credit classes, in Political Science. Although nine to 11 classes, or their equivalent, represents the range allowed under the general university regulations, the Department recommends quite strongly that the normal honours program consist of nine classes, or equivalent, past the first-year class, including the honours essay. The intent of this recommendation is to encourage our honours students to take supporting class work in related disciplines.

Any exception to the requirements stipulated below can only be obtained through written petition to the Undergraduate Committee, which reserves the authority to determine admission into the Honours program in these cases.

Students seeking entry to the Honours Program are advised to see the Honours Advisor in the spring term of their third year, when all grades from their third year are in.

### **Core Classes**

For purposes of the honours program the Department has designated a number of second year classes as honours core classes. These core classes represent the political science sub-fields of Canadian government and politics, comparative government and politics, political theory and methodology, and international politics and foreign policy. The core classes by area are as follows:

- POLI 2210.03 and POLI 2220.03
- POLI 2300X/Y.06
- POLI 2410.03 and POLI 2420.03
- POLI 2520.03 and POLI 2530.03

## **Departmental Requirements**

### **2000 level**

- Three core classes, or equivalent in half-credit classes, which must include 2410.03 and 2420.03
- Two additional Political Science credits at or above the 2000 level
- Two Political Science credits at advanced level (third and fourth year), not including those listed below.

### **3000 level**

- POLI 3492.03 (or equivalent)
- POLI 3493.03
- These classes (2410, 2420, 3492, 3493) should be completed by the end of the student's third year in order to be considered for admission to the Honours program.

### **4000 level**

- POLI 4600X/Y.06

Overall, these requirements leave a minimum of two optional credits, which may be taken at the second, third, or fourth year levels.

To gain admittance into the Honours program, students must have:

1. B average in their last ten credits
2. B+ average in a group of four Political Science classes, or equivalent, which must include:
  - Two core classes, or equivalent (which must include POLI 2410.03 and POLI 2420.03)
  - POLI 3492.03 and 3493.03
  - One full credit, or equivalent, at the 3000 level in Political Science

Students should complete the Honours Application Form (available from the Registrar) and submit it to the Political Science Honours coordinator at the end of their third year.

In their fourth year, honours students are encouraged to take the senior 4000 level classes in addition to POLI 4204/4207. Permission of the instructor is required.

This provides fourth year honours students with the opportunity to work with graduate students at an advanced level.

The honours essay is counted as one credit. It is prepared during the fourth year under the supervision of a faculty member. The essay shows the student's ability to develop a systematic argument with reference to pertinent literature and other such data or analytical materials as may be appropriate. The credit number for the honours essay is POLI 4600.06. Arrangements are made for honours students in the last year to meet their supervisor with some regularity to discuss and ultimately present the work represented in their essay. Honours students will also be expected to participate in the Honours Seminar, which will count toward the "21<sup>st</sup>" grade required by the University.

## **B. Combined Honours**

PLEASE NOTE: Be sure to read the Faculty of Arts and Social Sciences requirements for the Combined Honours Program listed in the Degree Requirements section of this Calendar.

Several of the more common combined honours programs are: Political Science and Philosophy; Political Science and History; Political Science and Economics; Political Science and Sociology; Political Science and Computer Science and Political Science and International Development Studies. Students interested in taking any of these combined honours programs or in discussing other possible programs should consult initially with the Honours Supervisor.

To obtain a Combined Honours, with an emphasis upon Political Science, students must have

- Two core classes in Political Science, which must include POLI 2410.03 and POLI 2420.03 (NOTE: The prerequisite for these classes is an introductory class in Political Science);
- A methods class in one of the two fields (e.g., POLI 3492.03 (or equivalent) and 3493.03)
- At least two full credits at an advanced level in Political Science (in addition to 3492.03 and 3493.03); and
- POLI 4600X/Y.06

To gain admittance into the Combined Honours program, with an emphasis upon Political Science, students must have a B+ average in a group of three Political Science classes comprised of two core classes (including POLI 2410.03 and POLI 2420.03) and 3492.03 and 3493.03.

Students who take a combined Honours, with an emphasis on a subject OTHER than Political Science, must take a minimum of

- One core class in Political Science (note that the prerequisite for core classes is an introductory class in Political Science);
- POLI 3492.03 (or an equivalent quantitative methods class (approved by the Department)) and POLI 3493.03;
- One full credit in Political Science at an advanced level; and
- One other full-credit Political Science class beyond the 1000-level.

To gain admittance into the Combined Honours program, with an emphasis upon a subject OTHER than Political Science, students must have a B+ average in a group of two Political Science classes, including a core class.

## **C. BA (20 credit) Major in Political Science**

The Major program offers the opportunity for students to design a more focused study within a specific subfield of Political Science. The Major program is a 20 credit class: students must have a minimum of six and a maximum of nine

Political Science classes in total above the 1000 level; three of these classes must be beyond the 2000 level.

## Departmental Requirements

### 1000 level

- One full credit (or two half credits) from the following: POLI 1010.03, 1020.03, 1025.03, 1050.03, 1055.03, 1100X/Y.06, 1103X/Y.06

### 2000 level

- Two full credits in different core class fields. The core class areas are as follows:
  - POLI 2210.03 and POLI 2220.03
  - POLI 2300X/Y.06
  - POLI 2410.03 and POLI 2420.03
  - POLI 2520.03 and POLI 2530.03

Students must complete a full credit in two of these areas, for a total of two full credits.

### 3000 level

- Three full credits. Note: one half credit must be either POLI 3492.03 (or equivalent) or POLI 3493.03.
- One additional full credit in Political Science above the 1000 level

## Other required classes

A writing class or King's Foundation Year Program.

## D. BA (20 credit) Double Major in Political Science

### Departmental Requirements

#### 1000 level

- One full credit (or two half credits) from the following: POLI 1010.03, 1020.03, 1025.03, 1050.03, 1055.03, 1100X/Y.06, 1103X/Y.06

#### 2000 level

- Two full credits in different core class fields. The core class areas are as follows:
  - POLI 2210.03 and POLI 2220.03
  - POLI 2300X/Y.06
  - POLI 2410.03 and POLI 2420.03
  - POLI 2520.03 and POLI 2530.03

Students must complete a full credit in two of these areas, for a total of two full credits.

#### 3000 level

- Two full credits. Note: one half credit must be either POLI 3492.03 (or equivalent) or POLI 3493.03.

### Other political science

- One additional full credit in Political Science above 1000 level

### Other required classes

- A writing class or King's Foundation Year Program

### Equivalents

- Classes equivalent to POLI 3492 are STAT 1060, SOSA 3403 and CTMP 3000

## E. BA (15 credit) Minor in Political Science

See requirements for minor below.

## F. Minors Program

### Minor in Political Science

A minimum of three credits in Political Science is required.

### Minor in American Studies

Three credits to be selected from the list below. Students minoring in American Studies must take at least one half credit from each of the three participating departments: ENGL, HIST, POLI. Please note that not all classes are offered each year.

- ENGL 2003: American Literature
- ENGL 2070: African American Literature
- ENGL 3061: American Literature to 1865
- ENGL 3062: American Literature 1865-1914
- ENGL 3070: 20th Century African American Novel

- ENGL 3220: American Literature of the Earlier Twentieth Century
- ENGL 3221: American Literature of the Later Twentieth Century
- ENGL 3245: Beat Generation
- ENGL 3820: Nabokov
- ENGL 4017: William Faulkner and Toni Morrison
- ENGL 4022: Ellison and Everett
- ENGL 4280: Hollywood Fiction
- ENGL 4400: Nature and American Culture
- ENGL 4405: American Gothic
- ENGL 4406: New York in Fiction and Poetry
- ENGL 4456: American Literature of the Great Depression
- ENGL 4609: Moby Dick in Context
- ENGL 4803: Race and Gender in American Speculative Fiction
- ENGL 4281: Literature and Television
- HIST 2331: Creation of the American Republic
- HIST 2332: The American Republic, 1840 to 1990
- HIST 2333: Political Reform in Twentieth Century America
- HIST 2335: Modern American Culture
- HIST 2336: The American Century
- HIST 2340: The Cold War
- HIST 3358: Slavery, Gender, and Power: Women in Nineteenth Century America
- HIST 3361: The American Civil War and Reconstruction
- HIST 3365: The Vietnam War
- HIST 3368: American in the 1950s
- HIST 3369: American in the 1960s
- HIST 3370: North American Landscapes
- HIST 3372: The Cuban Missile Crisis
- HIST 3373: Spying on the World: The CIA in American History
- HIST 3374: The Objectivity Question in American History
- HIST 3380: Slavery and Freedom in the Americas
- HIST 4360: Slavery and American Political Culture
- HIST 4988: The Historiography of American Foreign Relations, Post-1945
- POLI 2300: Comparative Politics
- POLI 2540: Canadian-American Relations
- POLI 3304: Comparative Federalism
- POLI 3378: US Constitution, Government and Politics
- POLI 3431: Politics Through Film and Literature
- POLI 3440: The Politics of Fear
- POLI 3525: Comparative Foreign Policy Simulation
- POLI 3574: American Foreign Policy
- POLI 4242: Politics of Reason, Passion, Biology
- POLI 4512: The Politics of North America

## Summer School Classes

The Department normally offers several second year or third year classes in the summer sessions. For details, see the University summer school calendar.

## III. Class Descriptions

The first digit of each class number indicates year, or level, of class. Except for 1000 level classes, the second digit denotes the sub-field within which the class is listed.

Not all classes are offered every year. For final listings check with the Department office or the current timetable.

### POLI 1050.03: Ideas, Politics, and People.

This class is an introduction to major political concepts, ideas, and disputes. It provides a foundation for all further courses in political science. By reference to current political issues, we explore the ideologies of nationalism, liberalism, socialism, conservatism, fascism, feminism, and other political ideas. A unit on political economy elucidates what these ideologies mean in practice. Another unit on political culture examines how these ideologies work out differently in individual nation-states. POLI 1055.03 follows sequentially.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1015.03, 1035.03, 1025.03

### POLI 1055.03: Governments and Democracy.

What do governments do? And how is democratic government distinct and valuable? In this class, we study how the institutions of government - legislatures, constitutions, federalism, judiciary, electoral system - operate. A unit on political violence and democratization includes material on development and

modernization theory. All this material leads to a final question: Is global governance the next stage in the development of democracy? This course follows sequentially from POLI 1050.03

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1010.03, 1030.03, 1020.03

### **POLI 1100X/Y.06: Political Worlds: An Introduction to Government and Politics.**

In this team-taught introductory course, you will be exposed to the diverse worlds of political life through the research and teaching interests of a diverse range of professors in the Political Science department. They will introduce you to a range of key issues and approaches that animate both their own research and contemporary politics in various parts of the world. Topics addressed will include: the nature and limits of democracy; the relationship between economic wealth and political power; the quest for human rights; the nature of diplomacy and international organization; the challenge of defining and promoting international security; the challenges of global inequality and development; forms of political participation; the politics of environmental sustainability; and the relationship between politics and sports.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

EXCLUSION: POLI 1010.03, POLI 1015.03, POLI 1020.03, POLI 1025.03, POLI 1030.03, POLI 1035.03, POLI 1103X/Y.06

### **POLI 1103X/Y.06: Introduction to Government and Politics.**

The approach and format in POLI 1103.06 is similar to that in POLI 1100.06 above. This class is also designed, however, to serve as the Department's designated Writing Class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing Requirement, lecture

PREREQUISITE: POLI 1010.03 or 1015.03 or 1050.03 or 1055.03 or 1100.06 or 1103.06 or permission from the Instructor.

EXCLUSION: POLI 1010.03, POLI 1015.03, POLI 1020.03, POLI 1025.03, POLI 1030.03, POLI 1035.03, POLI 1100X/Y.06

### **POLI 2210.03: Unity and Diversity: The Dynamics of Canadian Federalism.**

Along with parliamentary government and the Charter of Rights and Freedoms, federalism is one of the three constitutional pillars of governance in Canada. Federalism has been central to the Canada's political, economic, social and cultural development. The course examines federalism through three related conceptual angles: First, and most fundamentally, the course explores how federalism shapes the practice of democracy in Canada. Second, it examines how federalism either facilitates or hinders the recognition, accommodation and inclusion of a variety of territorial and non-territorial interests and identities. Third, it investigates how federalism influences the development and implementation of public policy. The course provides an overview of the institutional structures and evolution of Canadian federalism as well as the relationship between these structures and Canadian society. It engages with contemporary debates about the performance of Canada's federal institutions and explores possible reform options. Issues covered in the course include, for instance, the role of Quebec nationalism in the federation's evolution, the relationship between the Charter of Rights and Freedoms and federalism, debates concerning fiscal "imbalances" in the federation, the place of emerging "orders of government" (including municipalities and of Aboriginal governments) in the federation, and debates concerning the causes and consequences of centralization and decentralization in the Canadian federation.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2200X/Y.06

### **POLI 2220.03: Political Power and Partisan Politics: The Structures of Canadian Parliamentary Government.**

Canadian government is dominated by prime ministers and premiers. Why this concentration of power at both the federal and provincial levels of government? Are Members of Parliament who are not in the Cabinet really "nobodies" as one recent PM characterized them? Are Cabinets themselves becoming no more than "focus groups"? Do unelected partisan aides and public service advisors have more influence than the vast majority of elected representatives? Are political

parties irrelevant as vehicles for citizen engagement? Are interest groups or social movements any more relevant? Do elections matter? Are the media merely the political instruments of the business elites? These are among the issues that are examined in this class in an attempt to understand the most critical factors that shape the structuring of power in contemporary Canadian government.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2200X/Y.06

### **POLI 2230.03: Local Government.**

Most Canadians live in cities, yet local government is the weakest unit in our federal system. What accounts for this? After all, local government has often been described as the foundation of democracy. In Canada, local governments have many unique characteristics, from their constitutional status to the council system and a tradition of non-partisan government. We will explore the character of local government and the issues related to local governance, including regional and metropolitan restructuring and citizen participation, municipal finance, provincial-local relations, and the role of the federal government.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 3216.03

### **POLI 2300X/Y.06: Comparative Politics.**

This class introduces students to the methodology and scope of comparative politics, including analysis of political institutions and behaviour. General overviews and selected case studies are provided for liberal democracies, post-communist, newly industrializing and least developed countries. Topics include theories of the state, political culture and socialization, electoral and party systems, interest groups, ethnic and regional cleavages, gender politics, policy outcomes and system performance, political participation and leadership and contemporary challenges and changes. Group presentations are used for student exploration of these themes.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion

PREREQUISITE: Introductory political science class or instructors' permission

### **POLI 2350.03: Governance and Globalization.**

This seminar class provides students with an opportunity for critical evaluation of the reshaping of political processes and institutions that are occurring as the result of globalization. The class will explore the concept of governance in the context of changing dynamics related to the trans-nationalisation of production and increased capital mobility as well as the rise in numbers and influence of NGOs and new social movements. Hence, "new" forms of governance emerging out of decentralization and/or disinvestment of state authority and supra-national arrangements that are broadly captured within the concept of "global governance" will be explored along with traditional concepts of governance that centre on the actors, structures and environments of governmental policy-making. A range of issues will be examined – governance of economies, environment, communications, human rights, health, conflict and complex emergencies – within the context of debates involving the "internationalization" of the state; the role of identities – e.g. nationalist, ethnic, gender, cosmopolitan; the growing relevance of regions and the nature of and prospects for democracy and citizenship.

FORMAT: Seminar

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 3350.03

### **POLI 2410.03: Crisis and Consent: Foundations of Political Thought: 1651-1778.**

This class covers some of the most important early modern theorists (Hobbes, Locke, Hume, Smith, Rousseau, and Montesquieu). It looks at the development of natural rights, democracy, capitalism, and citizenship.

FORMAT: Lecture/tutorial

PREREQUISITE: An introductory class in Political Science or Philosophy

CROSS-LISTING: PHIL 2210.03

EXCLUSION: POLI 2400X/Y.06

### **POLI 2420.03: Revolution and Rationality: Foundations of Political Thought, 1789-1900.**

This class focuses upon late-eighteenth and nineteenth-century thought (Burke, Paine, Tocqueville, Mill, Hegel, Marx, Nietzsche), and investigates human rights, democracy, utilitarianism, individualism, socialism, and the roots of postmodern thought. POLI 2410 is not a formal prerequisite for POLI 2420, although students will find POLI 2410 a very useful introduction to POLI 2420.

FORMAT: Lecture/tutorial

PREREQUISITE: An introductory class in Political Science or Philosophy

CROSS-LISTING: PHIL 2220.03

EXCLUSION: POLI 2400X/Y.06

### **POLI 2450.03: Democracy, Difference and Citizenship: A Survey of Political Philosophy.**

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: An introductory class in Political Science or Philosophy

CROSS-LISTING: PHIL 2450.03

### **POLI 2520.03: World Politics.**

Why do states fight wars? Commit genocide? Sign treaties? Acquire and sell ballistic missile and nuclear technologies? Join economic and military alliances? Enforce and/or dismantle sanctions against states like Iraq, Iran or North Korea? Why can't we enforce international law as effectively as we enforce domestic law? Can we identify (and enforce) an objective set of universal moral values to guide relations between states and peoples? Is the U.N. a useful institution or is it destined to fail? Should NATO have intervened in conflicts in Bosnia, Kosovo, Rwanda or Afghanistan? What were the factors that led to the US-UK invasion of Iraq in 2003, and what does this tell us about US foreign policy and the origins of major conflict? These are some of the questions the course is designed to answer. Major frameworks will guide discussion.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science is recommended.

EXCLUSION: POLI 2500X/Y.06

### **POLI 2530.03: Foreign Policy in Theory and Practice.**

Foreign Policy is concerned with the way that individual states decide on their priorities and strategies in relating to the rest of the world. This class begins with a brief review of International Relations theories and their application to foreign policy. The main part of the course explores theories about what drives foreign policy decision-making: political systems, bureaucracy, culture, psychology, and leadership. The last part of the class looks at the instruments of foreign policy, with particular attention to the military, trade and investment, and foreign aid. All parts of the course feature a mix of abstract theory and specific, real-world examples.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2500X/Y.06

### **POLI 2540.03: Canadian-American Relations.**

Canada's relationship with the United States affects almost every aspect of our political, economic, social and cultural life. The U.S. outranks Canada on all the dimensions of power and influence by factors of 10 or 12 to one, and in some fields (e.g., military capacity) by considerably more. Well over 40% of Canada's economic production goes into exports, and of that well over 80% goes to the United States. Canadians cannot go to the movies, watch television, listen to popular music, consume fast food, or do errands at the local shopping centre without exposing themselves to what a prominent American political scientist has described as his country's 'soft power'. This class will consider how Canadians are affected by these and other influences from south of the border, how they have debated them among themselves, and what public policies have been established in response to the concerns they have generated.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2510X/Y.06, 2512X/Y.06

### **POLI 2810.03/2820.03: Special Topics in Political Science.**

An examination of selected issues in Political Science. This class explores (e.g. when a visiting scholar is on campus) a special topic that is not a regular offering of the department. It is taught as a lecture or seminar class, not as an independent studies class. Since the topics covered in these classes differ from year to year, students should seek further information from the Political Science Department before registering.

FORMAT: Lecture/seminar

PREREQUISITE: Instructor's Permission

### **POLI 3206.03: Constitutional Issues in Canadian Politics.**

These are political issues that possess an important constitutional dimension. They include judicial review and the role of the Supreme Court of Canada,

constitutional amendment, the representation formula, the Charter of Rights and Freedoms, language rights and the Crown.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03/2220.03

### **POLI 3208.03: Canadian Provincial Policies.**

An analysis of the dynamics and structures of provincial governments. Political parties, voting behaviour, legislatures, electoral systems, bureaucracies and policy formulation constitute the core of this class. Attention is also paid to interprovincial and intergovernmental relations.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03 and POLI 2220.03 or instructor's permission

### **POLI 3220.03: Intergovernmental Relations.**

This class will examine the territorial division of political and administrative power and the nature of relations between governments which result from such a division of power, including federal-provincial-municipal or "tri-level" relations. Specific topics will include the role of the courts in constitutional interpretations, the instruments of "fiscal federalism" (including equalization payments, conditional grants, tax sharing arrangements and shared cost programs), administrative relationships and the concept of "executive federalism".

These themes will be pursued further by each student through the preparation of a research paper. This paper will deal with a policy area selected by the student (transportation, education, health, etc.) and will provide an opportunity for a more intensive examination of the impact of intergovernmental relations, on public policy and vice versa. For additional information about class requirements, please consult the instructor.

FORMAT: Lecture/discussion

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission

### **POLI 3224.03: Canadian Political Parties.**

The Canadian party system, viewed as an integral part of the entire political system, presents a number of interesting questions for exploration, such as the alleged fickleness of voters, the role of party leaders, and the manner in which parties contribute to Canadian democracy. The particular themes emphasized will vary from year to year. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission.

### **POLI 3232.03: Local Government In Canada.**

Most Canadians live in cities, yet local government is the weakest unit in our federal system. What accounts for this? After all, local government has often been described as the foundation of democracy. In Canada, local governments have many unique characteristics, from their constitutional status to the council system and a tradition of non-partisan government. We will explore the character of local government and the issues related to local governance, including regional and metropolitan restructuring and citizen participation, municipal finance, provincial-local relations, and the role of the federal government.

FORMAT: Lecture/discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2230 and POLI 3231

CO-REQUISITE: POLI 2220 or POLI 2210

### **POLI 3233.03: Politics and the Economy in Canada.**

This seminar class, for graduates and senior undergraduates, will explore the relationship between politics and economic life in Canada. Canada's economic development, the role of the state, imperial and continental relationships, the debate over free trade, economic nationalism, and Canada's place in a global economy will be analyzed. Students will consider staples, liberal Keynesian and neo-classical, socialist and feminist perspectives. Other topics include women, trade unions, native and immigrant communities, and the impact of economic forces on national unity. Students will debate controversial themes on each topic. Student essays will explore a range of contemporary issues including the debt crisis, the federal-provincial fiscal relations, the economic consequences of Quebec separation, regional development programs, and policies for industrial development, human resources, technological change, poverty and inequality, etc.

FORMAT: Seminar

PREREQUISITE: Open to undergraduates who have completed classes in Canadian politics or economic history, or by permission of the instructor.

### **POLI 3235.03: The Politics of Regionalism.**

The class surveys the interaction between politics and economics in Canada with emphasis on the question of regional development. It will canvass competing explanations for differences in economic development among Canada's regions with special emphasis on Maritime economic problems, highlighting both the political sources of regional disparities and continuing efforts to rectify them.

Distinctive Western, Quebec and Ontario concerns will also be covered. Seminars for senior undergraduates will feature student presentations and research projects. Approved with Canadian Studies.

FORMAT: Seminar

PREREQUISITE: Open to senior undergraduates who have completed classes on Canadian politics, or permission of the instructor.

### **POLI 3304.03: Comparative Federalism.**

A seminar class which examines the theory and practice of federalism within a comparative framework. The actual federations discussed depend in part on student interest but usually includes both established federal nations and those moving in that direction.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or POLI 2300X/Y.06 or instructor's permission

CROSS-LISTING: PUAD 6755.03

### **POLI 3311.03: Sport and Politics.**

This class examines the role of sport in domestic, transnational and international politics. It addresses the gap in much of mainstream political science concerning the pervasive influence of popular cultural trends and practices on political life. Some topics include: the role of sport in political socialization and the creation of national identity; the politics of the Olympic Games; sport and globalization; and sport and the politics of gender and wealth accumulation.

FORMAT: Seminar

PREREQUISITE: POLI 2300.06 or POLI 2520.03/2530.03 or permission of instructor

### **POLI 3315.03: African Politics.**

The diversity of states, politics, economy and society in post-colonial sub-Saharan Africa is examined in this seminar. Topics include theoretical approaches, economic frameworks, governmental regimes, structural adjustments, civil society, and intra-regional political economies, and selected aspects of policy such as economic reform, political liberalization, women and development, drought and ecology, AIDS and health.

FORMAT: Seminar

PREREQUISITE: POLI 2300X/Y.06 or equivalent or instructor's permission

### **POLI 3320.03: European Politics.**

This class looks at the political systems of selected countries in Europe, including Germany, Britain, Spain, Ireland and Switzerland. Topics include political parties and elections, federalism, ethnicity and regional nationalisms, immigration politics, and changing state-economy relations.

FORMAT: Seminar

PREREQUISITE: A class in Political Science or instructor's permission.

EXCLUSION: POLI 3325X/Y.06

### **POLI 3321.03: Politics of the European Union.**

Europe is a complex polity. Almost all countries are members of the European Union (EU), which has common government institutions and policy-making processes. The class examines these important developments in the context of theories of integration. Among topics discussed are the common currency, agricultural politics, the common foreign and security policy, social policy issues, and the significance of institutions such as the European Parliament. The role of the EU in the global economy, and expansion into central and Eastern Europe, are also discussed.

FORMAT: Seminar

PREREQUISITE: A class in Political Science or instructor's permission

EXCLUSION: POLI 3325X/Y.06

### **POLI 3360.03: Politics in Latin America.**

This seminar for advanced undergraduates examines one of the world's most dynamic, diverse and rapidly changing regions. It surveys Latin America's search for democracy from colonial to contemporary times. Students examine differing perspectives on the nature of democracy and explore Latin American political history and development, including the indigenous foundations, the colonial impositions, and more recent foreign intervention. The course examines political structures and values, the authoritarian presidency, military politicization, party competition and electoral politics. The course also examines state-society relations, the immense inequality, the changing role of women and the remobilization of indigenous peoples and the impact of liberalization and reactions to it from civil society. The course concludes by examining prospects for consolidation of democracy and liberalization in the contemporary era of globalization, the significance of the revitalization of the political left, and the implications for scholarly interpretations.

FORMAT: Seminar

PREREQUISITE: POLI 2300.03 or POLI 2350.03 or POLI 2520.03 or INTD 2001.03 or INTD 2002.03 or SPAN 2109.03 or SPAN 2110.03 or SOSA 3168.03 or HIST 2384.03 or HIST 2385.03 or HIST 2386.03 or HIST 2387.03 or HIST 3390.03 or by permission of the instructor

### **POLI 3378.03: U.S. Constitution, Government, and Politics.**

The purpose of this seminar class is to gain a thorough and critical understanding of the American political process. To this end, a series of topics are examined, beginning with the framing of the constitution and concluding with questions about political culture. There is considerable emphasis on formal and informal political institutions, especially political parties and elections.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or POLI 2300X/Y.06 or instructor's consent

### **POLI 3385.03: Politics of the Environment.**

This course examines competing perspectives on the political, social, and economic forces driving environmental degradation, as well as differing visions of the types of political change required for ecological sustainability. Topics include: competing perspectives on ideas of limits to growth and sustainable development; the links between poverty, North-South inequality, and environmental degradation; population growth; the promise and limits of technological solutions; consumerism and ecological degradation; market-based environmentalism; ecological modernization; and ecological critiques of capitalism.

FORMAT: Lecture/seminar

PREREQUISITE: Any Political Science course or permission of the instructor.

EXCLUSION: POLI 3585.03

### **POLI 3401.03: Contemporary Political Thought.**

This class provides an overview of general themes and current debates within contemporary western social and political thought. The course will profile the work of selected authors (such as Michel Foucault, Noam Chomsky, Judith Butler, Carole Pateman, and Charles Mills) on topics such as power, justice, community, citizenship, property, entitlement, identity, and difference. We will also discuss the impact of theoretical developments, such as post-colonialism, feminism, postmodernism, and critical race studies on social, political, and legal reform.

FORMAT: Lecture/seminar

### **POLI 3405.03: Canadian Political Thought.**

This class addresses philosophical issues that play a major role in contemporary Canadian politics. These include minority rights and multiculturalism; nationalism, federalism, and self-determination; and citizenship and the politics of identity. Approved with Canadian Studies.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or POLI 2410.03/2420.03

EXCLUSION: POLI 3205.03

### **POLI 3426.03: Sex and the State.**

This class will consider the role of the state and other institutions in the social, moral and legal production and regulation of sex and gender, particularly in Western countries. It will begin with a brief historical overview of the role of religious prescriptions in the social and legal regulation of sex, and in the refinement of laws and policies that have been implicated in sex- and gender-based discrimination. We will also address a range of contemporary topics such as the decriminalization of homosexuality; hate crimes against sexual minorities; the politics of relationship recognition; state response to HIV/AIDS; gender-related refugee claims; and developments in the regulation of reproductive technologies.

FORMAT: Seminar

PREREQUISITE: POLI 1010, 1015, 1030, 1035, 1050, 1055, 1100, 1103, 2210, 2230 2350, 2410, 2420, 2430, 2440, 2450, or permission from the instructor

CROSS-LISTING: GWST 3426.03

### **POLI 3427.03: The Sexualization of Western Political Thought.**

Representations of women and constructs of femininity are a significant part of mainstream western political thought. Drawing on contemporary critical analyses, this course examines the roles of such representations in the work of leading philosophers, with attention to understanding the relation between ideas of sexual difference and their general systems of thought. We will also discuss the work of contemporary feminist political theorists on a range of social and legal issues, through a review of recent developments in theories of knowledge, embodiment, equality, and rights.

FORMAT: Lecture/seminar

PREREQUISITE: POLI 1010.03 OR 1015.03 OR 1030.03 OR 1035.03 OR 1050.03 OR 1055.03 OR 1100.06 OR 1103.06 OR GWST 1010.03 OR 1015.03 OR 2000.03 OR 2053.03 OR 2066.03 OR 2200.06 OR 2217.03 OR 2300.03 OR 2301.03 OR 2310.03 OR 2320.03 OR 2500.03 OR 2800.06 OR permission from the instructor.

CROSS-LISTING: GWST 3600.03

### **POLI 3431.03: Politics Through Film and Literature.**

Film and literature often capture the depth and texture of politics in a way that the social scientific method cannot. This class uses contemporary novels and films to analyze the Enlightenment, Orientalism, the frontier, and the political economy of community.

FORMAT: Seminar

PREREQUISITE: POLI 2410.03/2420.03 or instructor's permission

### **POLI 3440.03: The Politics of Fear.**

This course will consider the instrumentality of fear and terror in public policy, and its role in fostering public opinion and managing social groups and populations. Drawing on interdisciplinary and theoretical analyses of sex and race discrimination, it will consider various ways in which sexual and racial politics are implicated in the production and proliferation of "terror" in contemporary western societies, in practices perpetrated or sanctioned by both state and non-state actors. It will look at the recent discourses of terrorism and its representation in the media: philosophical considerations of anti-immigrant fear-mongering; and political analyses of the economy of "security" industries. It will also address the role of both state and corporate interest in disaster relief, epidemics, and other social crises.

FORMAT: Seminar/lecture

PREREQUISITE: POLI 1010 or POLI 1015 OR POLI 1030 OR POLI 1035 OR POLI 1050 OR POLI 1055 OR POLI 1100 OR POLI 1103 AND the completion of 70 credit hours, OR by permission of the instructor.

### **POLI 3449.03: Confronting Fascism.**

This course focuses on German writers, artists, filmmakers, and intellectuals whose work impacted and was impacted by the rise of fascism in the 20th century.

FORMAT: Lecture/tutorial

CROSS-LISTING: GERM 3450.03

### **POLI 3450.03: Storm and Stress: Romanticism and the Backlash Against Enlightenment Political Thought.**

Romanticism is generally seen as a cultural movement, with its expression in literature, music, painting, and philosophy. Yet its effect upon politics have been profound. Nonetheless, there has been little extensive political analysis of the Romantic movement and its effects. This class examines the development of Romanticism, especially in its opposition to rationalism, positivism, and classicism, from the late eighteenth century to the present. It examines the thesis that the early 21st century is experiencing a significant period of neo-romanticism, with its own set of reactions against rationalism and realism. What is the political manifestation of this neoromanticism, and what are the implications for contemporary politics?

FORMAT: Seminar/lecture

PREREQUISITE: POLI 2410.03, POLI 2420.03 or instructor's permission

### **POLI 3475.03: Democratic Theory.**

Democracy is an essential component of legitimacy for all western states: few would be inclined to assert their "undemocratic" nature. But what are the essential characteristics of democracy; and to what extent must modern democratic theory remain grounded in nineteenth-century western liberal thought? While this class has a predominantly theoretical orientation, it will include an examination of the relations between democratic theory and economic production/redistribution; as well as an investigation into how democratic theory can be developed in non-Western political contexts.

FORMAT: Seminar

PREREQUISITE: Any political or moral philosophy class or instructor's consent

CROSS-LISTING: PHIL 3475

### **POLI 3492.03: Political Inquiry I.**

This course is an introduction to empirical research methods in political science and the social sciences more generally. It covers a range of issues that are relevant to both qualitative and quantitative empirical research, but the emphasis is on quantitative strategies (i.e., statistical analysis). Key issues include specification of hypotheses, measurement of variables, case selection, choosing and evaluating

research designs, and drawing sound inferences from research findings. The "quantitative" component of the course de-emphasizes statistical theory and math, and focuses instead on the generation and interpretation of statistical results, using the SPSS statistical software. The course is built around a series of small homework assignments, lab sessions, a formal "data analysis paper," and a midterm and final exam.

FORMAT: Lecture

PREREQUISITE: Introductory Political Science course or instructor's permission.

CO-REQUISITE: POLI 3493.03 (political science honours students only)

### **POLI 3493.03: Political Inquiry II.**

This course introduces the theory and practice of qualitative research methods to study political phenomena. Themes addressed in the course include the theoretical and conceptual implications of choosing a particular methodology; the philosophical assumptions behind social science research; the various qualitative research methods available to political scientists, including interviewing, participant observation, case studies, comparative analysis, and the use of documentary/primary sources; the evaluation of academic texts in political science, focusing on the logic of their argument, their methodologies, and the relationship between the evidence presented and their argument; and the ethical issues involved in conducting qualitative research.

FORMAT: Lecture/discussion

PREREQUISITE: Introductory Political Science class or instructor's permission.

EXCLUSION: POLI 2494X/Y.06

CO-REQUISITE: POLI 3492.03 (political science honours students only)

### **POLI 3505.03: Human Rights: Foundations.**

This course examines the formation of international human rights institutions, mechanisms, practices, and related jurisprudence. It provides an overview of the development of international humanitarian law and policy; the treaty system and monitoring bodies; and international criminal court and criminal tribunals. Through analyses of reporting systems under a selection of treaties, we will address how both states and non-government organizations have engaged human rights treaty committees on different conventions and areas of law (e.g., civil and political rights; the rights women, children, migrants, torture victims, etc.), and we will consider their applications within domestic law and policy. We will also look at the formation of international criminal law institutions, and, through a sample of case studies, we will consider their approaches to state and individual responsibility and accountability for persecution, genocide and crimes against humanity.

FORMAT: Seminar/lecture

PREREQUISITE: POLI 1010 or 1015 or 1030 or 1035 or 1050 or 1055 or 1100 or 1103 OR permission from the instructor.

EXCLUSION: POLI 3303.03

### **POLI 3520.03: Building Democracy and Peace.**

Many people have long argued that there is an intimate relationship between democracy and peace. Thus, they claim, democracies are much more inclined to peace - both internal and external than other political systems. It is clear that democracy allows the representation of a large number of interest in a society, and this can lead to peaceful resolution of or accommodation of - disputes.

There have been many studies about established democracies in this regard, but less research into societies in transition--i.e., countries which are democratizing. Since countries in transition present the vast majority of countries in the world, it would seem timely to study this phenomenon. Democratization involves a multitude of steps and must therefore incorporate a great variety of actors, particularly in post-conflict societies. The role of three (overlapping) elements in post-conflict societies in the process of democratizing appear to be the key. These elements are civil society, the institutional environment and refugees. This third or fourth year level course will examine these key actors/elements and processes.

FORMAT: Lecture

### **POLI 3525.03: Comparative Foreign Policy Simulation.**

This class is designed for advanced (i.e., 3rd/4th year) undergraduate and graduate students in Political Science. Once students become familiar with basic concepts, theories and decision-making frameworks developed within the sub-field of comparative foreign policy (part 1), they will be expected to apply what they have learned through participation in an interactive computer simulation involving other university teams throughout North and South America and eastern and western Europe. As they attempt to implement policy initiatives and work in teams to resolve international disputes, students will confront foreign policy issues in a context that provides an authenticity of experience. The objective is to enable students to create and test organizational skills, understand the interdependence of

international issues, appreciate cultural differences and approaches to world problems, and use computers for multinational communications.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03/2530.03

### **POLI 3531.03: The United Nations in World Politics.**

The evolution of the United Nations from its early concentration on problems of collective security, through the period of preventive diplomacy and anti-colonialism, to its present role as a forum for the aspirations and demands of the Less Developed Countries is reviewed. The more distant future, and the continuing relevance of the United Nations in world politics, and how its role and objectives should be determined, are considered.

FORMAT: Seminar

PREREQUISITE: Class in international politics or instructor's permission

### **POLI 3535.03: The New International Division of Labour.**

This seminar provides an overview of the global political economy in the current post-Bretton Woods and -Cold War period. It treats the New International Division of Labour/Power from several theoretical and political perspectives, from comparative foreign policy to feminism. Issues addressed include the Newly Industrializing Countries, the Middle Powers and the Fourth World; new functionalism; popular participation; and alternative futures.

FORMAT: Seminar

PREREQUISITE: Class in international politics or instructor's permission.

### **POLI 3540.03: Foreign Policy in the Third World.**

This seminar offers a comparative perspective on the political economy of foreign policy in Africa, Asia, the Middle East, and South America at the end of the twentieth century. Its focus is how such state and non-state actors in the South relate to the New International Divisions of Labour and Power given the demise of both Bretton Woods and Cold War global regimes. In addition to selective case studies of both large and small states - from Brazil, India, Indonesia, and Nigeria to Botswana, Jamaica, Kuwait, and Singapore - it treats formal and informal external relations, from regional intergovernmental institutions to non-governmental coalitions. It also examines new forms of regional conflict and cooperation, including guerrilla struggles and civil societies. It emphasizes the incidence and impact of structural adjustment programs and conditionalities along with the emergence of "new" issues such as debt, democracy, ecology, gender, refugees, and technology. A range of alternative approaches is identified and evaluated appropriate to the contemporary period of revisionism.

FORMAT: Seminar

PREREQUISITE: Class in international politics or instructor's permission

### **POLI 3544.03: Political Economy of Southern Africa.**

An introduction to the comparative politics, economic structures and international relations of Southern Africa, which provides a study of regional political economy with both empirical and theoretical significance. As well as country comparisons, the class will look at the region as a political unit, exploring the opportunities for and constraints against formal regional cooperation on economy or security as well as informal processes that constitute the basis of "new" regionalism forces.

FORMAT: Seminar

PREREQUISITE: POLI 2300X/Y.06 or equivalent or instructor's permission

### **POLI 3560.03: Human Development/Security at the Start of the Twenty-first Century.**

This senior undergraduate/graduate seminar is designed to present current definitions of and debates about human development/human security at the turn of the century. These have both analytic and policy relevance for a wide range of actors in contemporary global politics: not just states/international organizations but also civil societies & private companies, think tanks and partnerships. It is offered in summer school to attract a diverse, interdisciplinary range of registrants and to coincide with the annual weekend workshop of the "new regionalisms" network which treats an issue of relevance to global development each year, such as new regionalisms in August 2000 and globalizations in 2001.

FORMAT: Seminar

PREREQUISITE: Offered as a summer class only. Consult instructor.

### **POLI 3565.03: Contemporary Security Studies.**

The course examines developments in the theory and practice of international security since the end of the Cold War. The first part reviews the concept of security and the main theoretical approaches that inform the contemporary security debate. The second part analyzes some of the key contemporary issues in world politics and their relation with international security. Topics include:

Military Security, Terrorism, Human Security, Environmental Security, Migration, Health and Security.

FORMAT: Lecture and Seminar

PREREQUISITE: POLI 2520.03 and POLI 2530.03

### **POLI 3567.03: International Organization.**

This class will investigate the process of international organization through analysis of the role of international organizations, institutions and regimes. For the purposes of the course, international organizations as well as less formal institutional arrangements. The course will focus on the contemporary debate between rationalist and constructivist theoretical approaches to analyzing international organization. These perspectives will be employed to study the role of international organizations in areas such as international security and international political economy. Topics to be covered include democracy and international organizations, culture and international organizations, bargaining in international organizations, political and economic integration, NGOs and global civil society, and the future of global governance.

FORMAT: Seminar/lecture

PREREQUISITE: POLI 2520.03, POLI 2530.03 or instructors permission.

### **POLI 3568.03: Canada and the World.**

This class examines post-World War II Canadian Foreign Policy in two parts: (1) an analysis of 'landmark' policy issues; and (2) an investigation of the general factors that help to "explain" the form and content of Canadian foreign policy, with particular reference to the institutions and processes through which policy decisions are made. Issues discussed are likely to include: the "invention" of peacekeeping; the Mulroney government's involvement in the campaign to end apartheid in South Africa; the negotiation of the North American free trade; the politics of immigration and diasporas; and the place of the Arctic in Canada and international relations.

FORMAT: Seminar

PREREQUISITE: Class in international politics, Canadian politics, or Canadian history in the 20th century, or with the permission of the instructor.

CROSS-LISTING: CANA 3568.03

### **POLI 3574.03: American Foreign Policy.**

This class is a general introduction to American foreign policy, with special attention to the theoretical and policy debates of the post-Cold War period. The course begins with relatively brief introductions to the history of US foreign policy and the institutions of foreign policy-making, but most of the readings and lectures are concerned with broad theoretical debates about what does, and/or what should, drive US foreign policy decisions. In later weeks, some of these theoretical lenses are applied to some specific (recent) foreign policy decisions, including the signing and "unsigning" of the Kyoto Accord, the extension of Permanent Normal Trade Relations status to China, and/or the war in Iraq.

FORMAT: Lecture

PREREQUISITE: POLI 2520.03 or POLI 2530.03, or instructor's permission.

### **POLI 3576.03: Defence Policy in Canada.**

This seminar examines the substance, processes, recurring themes, and major international and domestic determinants of post-World War II Canadian defence policies. It explores several major policy "milestones" (e.g. Canadian Forces' role in the Persian Gulf conflict), and various persistent themes (the "Commitment-capability gap"; efforts to "democratize" defence policy reviews) and current issues (e.g. the implications of recent human rights challenges to traditional military professionalism; Canada's role in the Afghanistan conflict) of Canadian defence. Approved with Canadian Studies.

FORMAT: Lecture

EXCLUSION: POLI 3571.06

RESTRICTION: Class in international relations, or foreign policy, or postwar

Canadian history, or instructor's permission. Restricted to students in their third year or beyond. Class in international relations, or foreign policy, or postwar Canadian history, or instructor's permission. Restricted to students in their third year or beyond.

### **POLI 3577.03: Civil-Military Relations in Contemporary Western Society.**

The class will examine the trilateral relationship between society, government, and the military in the post-Cold War era. The context includes: changing societal values and the domestic pressures they produce; and the implications of a constantly changing strategic environment. Different perspectives will be examined to assess the implications for civil-military relations of the above-noted changes: legal/constitutional (Charter challenges); military/professional



(operational requirements); and political (constituency and special interest demands).

FORMAT: Seminar

PREREQUISITE: POLI 2520.03/2530.03 or instructor's permission

### **POLI 3581.03: Diplomacy and Negotiation.**

This class looks at the way states decide which diplomatic strategies to pursue, and why these succeed or fail. Among the themes considered are the evolution of diplomacy as an international institution, national power and bargaining leverage, and the effects of domestic politics, psychology, and culture on international negotiation. Specific historical cases which may be reviewed in any given year include: the Peloponnesian War, the Munich Crisis, the Cuban Missile Crisis, the negotiation of the Canada-US Free Trade Agreement and NAFTA, and the Kyoto Protocol. Students participate in a negotiation-simulation exercise and write a paper on a particular historical case.

FORMAT: Seminar

PREREQUISITE: Class in international politics or instructor's permission

### **POLI 3589.03: Politics of the Sea I.**

The major issues involved in the Law of the Sea, the differing interests of different countries, the developing legal framework, and the political process of the on-going negotiations are covered.

FORMAT: Seminar

PREREQUISITE: Preference is given to graduate students, although mature students from other relevant disciplines are welcome.

### **POLI 3591.03: Pirates, Profiteers and Protectors of the Sea.**

While the world is focused on the terrorist threat on land, piracy and other criminal activities are spreading rapidly on the seas. Youths in small boats with simple weapons are embarrassing the most powerful navies in the world, hijacking merchant ships off the coast of Somalia and getting multi-million dollar ransoms for their hostages. Meanwhile, illegal immigration and smuggling are also increasing dramatically. Natural disasters are also on the rise. Is Canada ready for these challenges? Are our maritime forces properly structured for the new security era or should they be changed radically? Tens of billions will be spent soon on new ships to either perpetuate the status quo or launch in a new direction. This course shows the full range of policy and capability options available and explains the logic behind the choices that need to be made. What would you recommend?

FORMAT: Lecture/seminar

PREREQUISITE: POLI 2520.03 or permission of instructor

### **POLI 3596.03: Explaining Global Conflict and Violence.**

During a 13-week period in 1994 more than 800,000 people were killed in Rwanda -- that number exceeds the combined total of Canadian and American military casualties in both World War I and II. Between 1990-95, 250,000 people died in the Balkans -- the equivalent of one US Oklahoma bombing disaster (168 casualties) every day for four years. Large-scale violence associated with inter-state and intra-state conflict and war continues to have undeniable relevance for all of humanity. Given the rise of ethnic conflicts in Europe and proliferation of advanced weapons technology world wide, providing answers to pressing questions about the onset and escalation of war is becoming more, not less, imperative in the aftermath of the Cold War. Unfortunately, notwithstanding years of inquiry into the nature and origins of war, it remains unclear whether we've produced any definitive knowledge. This seminar is designed, in part, to provide students with a comprehensive (and critical) review of answers to questions about the onset, escalation and de-escalation of violent conflict.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03/2530.03 or instructor's permission

### **POLI 3601X/Y.06: Readings in Political Science.**

A full-year reading class, taught only by special arrangement between individual students and individual instructors. SIGNATURE REQUIRED.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

CROSS-LISTING: POLI 5601.06

### **POLI 3602.03: Readings in Political Science.**

A one-term reading class, taught only by special arrangement between individual students and individual instructors. SIGNATURE REQUIRED.

CROSS-LISTING: POLI 5602.03

### **POLI 3603.03: Readings in Political Science.**

A one-term reading class, taught only by special arrangement between individual students and individual instructors. SIGNATURE REQUIRED.

CROSS-LISTING: POLI 5603.03

### **POLI 3810.03/3820.03: Special Topics.**

An examination of selected issues in Political Science. This class explores (e.g., when a visiting scholar is on campus) a special topic that is not a regular offering of the department. It is taught as a lecture or seminar class, not as an independent studies class. Since the topics covered in these classes differ from year to year, students should seek further information from the Political Science Department before registering. The subject matter in this class will be explored in greater depth than a class offered under POLI 2810.03/2820.03

SIGNATURE REQUIRED

### **POLI 4204X/Y.06: Advanced Seminar in Canadian Politics.**

This senior seminar will take an in-depth and critical look at the major issues and institutions in Canadian politics and government. Topics include: the concentration of power; parliamentary governance: constitutional politics; party and electoral systems; and, the role of the mass media and pressure groups. SIGNATURE REQUIRED.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

CROSS-LISTING: POLI 5204X/Y.06

RESTRICTION: Restricted to Students in their fourth year.

### **POLI 4207.03: Canadian Politics: Themes and Theories.**

This senior seminar will take an in-depth and critical look at the major issues and institutions in Canadian politics and government. Topics include: the concentration of power; parliamentary governance: constitutional politics; party and electoral systems; and, the role of the mass media and pressure groups.

FORMAT: Seminar

PREREQUISITE: Instructor's permission

CROSS-LISTING: POLI 5207.03

EXCLUSION: POLI 4204.03

### **POLI 4228.03: Pressure Politics in Canada: Opportunities and Obstacles.**

The goal of this seminar is to explore the opportunities for and obstacles to advocacy politics in Canada. We analyze the strategies that pressure groups use to engage the most important loci of power in the Canadian political system; parliament, the public service and the courts.

FORMAT: Seminar, 3 hours

CROSS-LISTING: POLI 5228.03, PUAD 6505.03

EXCLUSION: POLI 3228.03

### **POLI 4232.03: Urban Governance in Canada.**

The objective of this course is to provide students with the empirical, analytical, theoretical, and methodological tools to understand and explain the politics and policy activities of Canada's urban and suburban municipalities within their socioeconomic, institutional, and Constitutional contexts. A major concern is to evaluate how effectively and equitably city governments in Canada have responded to contemporary urban challenges. The course adopts a critical perspective on urban governance and engages with contemporary debates concerning municipal governance reform and the evolving nature of urban governance within Canadian federalism.

FORMAT: seminar

PREREQUISITE: POLI 3220.03 or POLI 3232.03

EXCLUSION: POLI 3231/5231

### **POLI 4234.03: Canadian Urban Politics in Comparative Perspective**

This course examines the politics and governance of Canadian cities from a comparative perspective. More specifically, the course uses comparative method in three ways: it asks what one can learn from comparing Canadian cities with each other (subnational comparisons), what cross-national comparisons of Canadian cities can teach as well as compares Canadian cities implicitly with other cities by applying theories of urban politics and development that have been developed elsewhere to Canadian cities. The objective of this course is to provide advanced political science students with the theoretical,

empirical and methodological tools to understand and explain the political development of Canadian cities.

FORMAT: Seminar

PREREQUISITE: POLI 3220.03 or POLI 3232.03

CROSS-LISTING: POLI 5234.03

### **POLI 4240.03: Policy Formulation in Canada.**

This class provides a general introduction to the field of policy management, for graduate and honours undergraduate students. Using British 'best practice' ideas of professional policy making and Canadian statements of generic policy competencies, it seeks to improve the policy capacity of participants. It does this first by increasing their knowledge of public policy structures, processes, and outputs, and secondly, by giving them knowledge that they can use in policy advocacy both inside and outside government. The first section of the class examines policy definitions and professional policy making approaches in the 21st century. The second sections considers the role of the state in the 21st century, and the policy competencies that analysts must have is that role is to be carried out effectively. Section three explores vertical, horizontal and external policy relationships, both as determinants of policy and as practical matters of management. Section four explores, and helps participants to gain proficiency in, the most recent processes of strategic policy design and implementation. This blend of theory and practice will increase the policy knowledge of all participants, and equip those who are in professional programs, including the various public services, to contribute more effectively policy processes in the future.

SIGNATURE REQUIRED.

FORMAT: Seminar

PREREQUISITE: Open to Honours students in their fourth year and to graduate students.

CROSS-LISTING: POLI 5240.03, PUAD 5120.03

### **POLI 4241.03: Introduction to Policy Analysis.**

This class examines four aspects of policy analysis: (1) The role of the analyst in modern government; (2) The analyst's working environment; (3) Techniques used in carrying out research and preparing position papers; (4) and the analyst's responsibilities to government and to the public in determining what information should reach decision-makers. Approved with Canadian Studies.

SIGNATURE REQUIRED.

FORMAT: Seminar

PREREQUISITE: POLI 4240.03 or instructor's permission

CROSS-LISTING: POLI 5241.03, PUAD 5121.03

### **POLI 4242.03: Politics of Reason, Passion, and Biology.**

This is a class about how people behave politically. Is political behavior driven by reason, passion, biology, or some combination of the three? Does reason or passion drive politicians and citizens to act as they do? Or does the dichotomy between the mind and the heart disguise a more fundamental biological basis to political behavior? Do these approaches leave any room for citizens to exercise their own judgment, or is autonomy lost altogether? Normative questions of justice, equality, and freedom are deeply embedded within each approach and must be confronted as they apply in practice. Although this material is inherently global and comparative, we principally want to investigate how it applies to Canada.

FORMAT: Seminar

### **POLI 4250.03: Canadian Public Administration.**

This class examines the organization and management of the executive-bureaucratic structures of government for the formulation and management of public policy and public services. It considers the design and operation of the cabinet system and ministerial portfolios; relations between ministers and the career public service; policy and budgetary processes; and, the structural designs of departments, agencies, crown corporations and regulatory commissions. A major focus will be the effects of the new public management on public administration, as governments in Canada, as elsewhere, seek to cope with budgetary restraints, increased demands for quality services and public participation, and greater effectiveness in securing results. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: POLI 2210.03.03/2220.03 or instructor's permission.

CROSS-LISTING: POLI 5250.03

EXCLUSION: POLI 3250.03, POLI 3251.03

### **POLI 4260.03: The Politics of Health Care.**

Because of its nature as both a public institution and a political icon, the Canadian healthcare system is an inherently political institution which cannot be understood

without a clear comprehension of both its composition and its relationship to the broader political landscape in Canada. This class will provide a survey of the political and theoretical debates within the area of healthcare in Canada, including investigations of federalism, funding, and governance.

FORMAT: Seminar

PREREQUISITE: Introductory political science class or instructor's permission

CROSS-LISTING: POLI 5260.03

EXCLUSION: POLI 3260.03

### **POLI 4302.03: Comparative Development Administration.**

This class examines analytical, normative and political issues of public administration in developing countries. It considers the scope of development administration as a sub-field of public administration; public sector organization and management including public services, public enterprises, decentralization and rural development, financial systems, human resource management, aspects of state economic management (with the use of case studies) and institutional aspects of aid administration (with CIDA and World Bank cases).

FORMAT: Seminar

PREREQUISITE: POLI 2300.06 or equivalent or instructor's permission

CROSS-LISTING: POLI 5302.03, PUAD 6780.03

EXCLUSION: POLI 3302.03

### **POLI 4303.03: Human Rights: Political Issues.**

This class will introduce students to the evolving place of human rights in politics, both comparative and international. We begin by examining the historic emergence of human rights as an issue in world politics, principally since the Second World War, and their conceptual foundations. We then focus on a number of specific topics and controversies concerning human rights in world politics, including: the sources of and struggle to end human rights-abusive regimes; the multilateral politics of human rights; human rights in national foreign policies; the rights of indigenous peoples; genocide, humanitarian intervention; and the responsibility to protect; and the relationship between globalization and human rights, and the 'Global War on Terrorism' and human rights. Finally we look at the role of human rights in domestic politics, focusing on the issues of women's rights and sexual orientation.

FORMAT: Seminar

PREREQUISITE: POLI 2300X/Y.06 , POLI 2520.03/ POLI 2530.03 or POLI

3505.03 or equivalent, or instructor's consent

CROSS-LISTING: POLI 5303.03

EXCLUSION: POLI 3303.03

### **POLI 4322.03: The EU as a Global Actor.**

The aim is to enable the student to analyze and understand the international roles played by the EU in both economic and political areas. Why has the EU been better able to speak with one voice in economic areas than political areas? To what extent can the member states control the foreign policies of the EU? The introductory part will include an overview of the EU governance systems in the area of external economic relations (first pillar) and the Common Foreign and Security Policy (the second pillar) and analyses of the main achievements in both areas. Specific topics to be selected for analyses during the second part will include the EU and the WTO, the EU and the US, the EU and the East Asia, and the EU and developing countries. Finally, in the third part of the course students study recent efforts to develop a European Security and Defence Policy.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03 or 2530.03 or appropriate History class.

CROSS-LISTING: POLI 5322.03

EXCLUSION: POLI 3322.03

### **POLI 4323.03: Treaty Reforms in the EU.**

The course covers the treaties founding the European Communities (Treaty of Paris, 1951 and Treaties of Rome 1957) and the reforms of these treaties in the Merger treaty (1965), the budget treaties (1970 and 1975), the Single European Act (1987), the Treaty of Maastricht (1992), the Treaty of Amsterdam (1997), the Treaty of Nice (2001), the Constitutional Treaty (2004), and the Lisbon Treaty (2007). How were these successive treaties negotiated? Why has the Ec/EU gone through so many treaty reforms? Is there a particular trend in the reforms? Which theories can help us to understand the changes?

FORMAT: Seminar

PREREQUISITE: POLI 2300.03 or POLI 2520.03 or POLI 2530.03 or

appropriate History credit.

CROSS-LISTING: POLI 5323.03

EXCLUSION: POLI 3323.03

### **POLI 4340.03: Approaches to Development.**

A survey of theories of and policies about dependence, underdevelopment and peripheral social formations. Particular emphasis on modernization, materialist, and alternative modes of analysis, and on orthodox and radical strategies of development. Topics treated include social contradictions (e.g. class, race and ethnicity), debt, structural adjustment, human development, human security, gender, technology, civil society, informal sectors, democratization and ecology. **FORMAT:** Seminar, 3 hours

**PREREQUISITE:** By permission of instructor

**EXCLUSION:** POLI 3340.03

### **POLI 4355.03: Comparative Perspectives on the Development State.**

This class examines development in a broad regional comparative context to determine whether endogenous or exogenous conditions account for the success with which the North/Southeast Asian economies have been transformed vis-a-vis Latin America and Africa. The course compares the "development state" model across the developing world, by briefly focussing on three distinct cases - South Africa, Malaysia and Brazil - as "upwardly mobile" late industrialisers.

**FORMAT:** Seminar

**PREREQUISITE:** Poli 2300.06 or Poli 2520.03 and Poli 2530.03, or equivalent, or instructor's permission.

**CROSS-LISTING:** POLI 5355.03

**EXCLUSION:** POLI 3355.03

### **POLI 4380.03: Politics of Climate Change.**

This course examines the interactions between politics and a changing climate. Core questions include: What lies behind political disagreements over how to respond to climate change? What does climate change mean for various political, social, and economic projects? Topics include: the role of science and economics in climate politics; the new "climate capitalism"; non-capitalist alternatives that question growth and consumerism while emphasizing "climate justice"; Canada's particular difficulties in addressing climate change; climate politics at the personal level; international climate negotiations; and climate as a security issue.

**FORMAT:** Primarily seminar with some lecture time.

**PREREQUISITE:** POLI 3385 Politics of the Environment or permission of the instructor.

**EXCLUSION:** POLI 3380 Politics of Climate Change

### **POLI 4403.03: Human Rights: Philosophical Issues.**

An examination of the historical and conceptual development of human rights, this class looks specifically at normative and political issues involved in the emergence of human rights from the 13th century to present. It covers the shift from natural law to natural right, the emergence of states, rights to sovereign governance, and the development of specific classes of rights (including freedom of conscience, property rights, women's rights, cultural rights, animal rights, and socioeconomic rights).

**FORMAT:** Seminar

**PREREQUISITE:** POLI 2410.03 or POLI 2420.03 or POLI 3505.03, or permission of instructor

**CROSS-LISTING:** PHIL 3470.03, POLI 5403.03

**EXCLUSION:** POLI 3403.03

### **POLI 4440.03: The Politics of Affect Theories of Emotion and Political Life.**

This course draws on recent developments in the burgeoning field of affect studies to address the relation of both conscious and non-conscious emotive experience to public and political life. Drawing on the insights and scholarship from different disciplines, we will examine the social, political and cultural theories of affect, emotion, and aesthetics to explore their role in political decision-making and public responses. Topics will include the affective logic of public threat, the cultural politics of emotion such as fear and shame; sensorial responses to moralistic rhetoric; visceral responses to social groups and/or cultural practices. We will also look at how sensibility, feeling, and affect have operated in social and political movements, including a consideration of emotions such as fear, disgust, and disdain, and compassion in social conflict, and in the formative approaches to retribution and reconciliation.

**FORMAT:** Seminar

**PREREQUISITES:** Permission of the instructor

**CROSS-LISTINGS:** POLI 5440.03

### **POLI 4479.03: Liberalism.**

Liberalism takes a variety of forms and includes many topics including the rule of law, limited government, the free exchange of goods, entitlement to property, the self, and individual rights. Its philosophical and political assumptions provide the

intellectual context within which its account of the individual, its vision of the community and its preferred allocation of resources will be assessed.

**SIGNATURE REQUIRED.**

**FORMAT:** Seminar

**PREREQUISITE:** Normally, classes in philosophy or political science or economics: consult instructor.

**CROSS-LISTING:** PHIL 4470.03/5470.03, ECON 4446.03/5446.03, POLI 5479.03

### **POLI 4481.03: Theories of Violence, Persecution, Genocide.**

This course will provide an overview of contemporary theoretical approaches to systemic violence, particularly against racial, ethnic, and sexuality minorities.

Through a selection of historical and contemporary case studies, it will assess different accounts and explanatory frameworks for understanding the instigation and exacerbation of persecution and genocide. Attending to the role of the state and state policies in the history of violence, it will examine the discourses and practices that have both fuelled and justified the colonization of native peoples, enslavement of racial groups, the holocaust, and ethnic cleansing in the 20th century genocides. We will also consider the recent attempts of the international community to prevent, deter, and curb genocidal outbreaks, and the theoretical assumptions about human behaviour that underpin them.

**FORMAT:** Seminar

**PREREQUISITE:** Any second year Political Science class, or instructor's permission

**CROSS-LISTING:** POLI 5481.03

### **POLI 4512.03: The Politics of North America.**

North America has become increasingly integrated over the last thirty years--economically, demographically, and even politically. This course will review the history of regional integration in North America, and consider a number of contemporary policy controversies. It bridges sub-disciplinary boundaries by looking at both domestic policy-making (Comparative Politics) and at bargaining between the three countries (International Relations).

**FORMAT:** Seminar

**PREREQUISITE:** Any previous political science class

### **POLI 4521.03: Theories of International Relations I: Security Studies**

4521 and 4522 are independent classes that are conceptually closely related. This relationship is partially based on the more general division within IR between "Security Studies" and International Political Economy (IPE). POLI 5421 sets things up by reviewing the broadest theoretical debates within the field, with an emphasis on questions of power and order, and looks at theoretical work which focuses on political/military issues like deterrence, balancing, and the meaning of "national security." POLI 4522 begins with theoretical debates over cooperation and institutions, and is empirically anchored in various aspects of IPE, including trade, finance, and development.

**FORMAT:** Seminar

**PREREQUISITE:** Instructor's permission

**CROSS-LISTING:** POLI 5421.03

**EXCLUSION:** POLI 4520.06

### **POLI 4522.03: Theories of International Relations II: International Political Economy**

4521 and 4522 are independent classes that are conceptually closely related. This relationship is partially based on the more general division within IR between "Security Studies" and International Political Economy (IPE). POLI 5421 sets things up by reviewing the broadest theoretical debates within the field, with an emphasis on questions of power and order, and looks at theoretical work which focuses on political/military issues like deterrence, balancing, and the meaning of "national security." POLI 4522 begins with theoretical debates over cooperation and institutions, and is empirically anchored in various aspects of IPE, including trade, finance, and development.

**FORMAT:** Seminar

**PREREQUISITE:** Instructor's permission

**CROSS-LISTING:** POLI 5422.03

**EXCLUSION:** POLI 4520.06

### **POLI 4569.03: Canadian Foreign Policy.**

This advanced seminar course is concerned with the 'structure-agent' problem as it applies to Canadian foreign policy. In other words, what are the structures (both material and normative) that shape and constrain the pursuit of Canadian foreign policy; what room for maneuver and initiative is there; and who are the key actors, or the 'agents' who shape and implement Canada's global role? The course

discusses these questions through four sections: theoretical and analytical approaches to the study of Canadian foreign policy; the external context; the domestic; and key themes and issues in Canadian foreign policy.

FORMAT: Seminar

PREREQUISITE: Class in international relations, Canadian politics, or Canadian history, or with instructor's permission.

CROSS-LISTING: POLI 5569.03

EXCLUSION: POLI 3569.03, POLI 3570.06 or POLI 5570.06

### **POLI 4575.03: Nuclear Weapons and Arms Control in World Politics.**

The seminar examines the technological, doctrinal, and political aspects of the nuclear weapons "problem" and the arms control "solution". It also assesses the fate of contemporary nuclear arms control efforts.

FORMAT: Seminar

PREREQUISITE: Class in international relations or defence policy, or with instructor's permission.

CROSS-LISTING: POLI 5575.03

EXCLUSION: POLI 3575.03

### **POLI 4581.03: International Diplomacy: Institutions and Practices.**

This course considers the historical evolution of international diplomacy. Among the themes reviewed are the emergence of national states, sovereignty norms, human rights and norms governing military intervention, the growth of international law and institutions, and the prospects for global governance. The course features extensive student participation, an emphasis on writing, and a negotiation simulation.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03, POLI 2530.03 or other international relations course

CROSS-LISTING: POLI 5581.03

### **POLI 4587.03: International Political Economy.**

This course is composed of two overlapping constituent themes. The first theme is that of competing explanations of international political economic behaviour - behaviour affected by that diffuse political authority characteristic of the international system, the second, that of examining the basic issues in international political economy - the fundamental questions as to why international trade, international finance, unequal economic development, international organization, and the multinational enterprise. The first theme functions to create the over-all framework of analysis by which competing approaches to international political economy can be evaluated. The second theme will integrate these approaches with issue areas within the fields of international trade, international finance, and what might be termed "international production" (within which fields issues such as economic development, the multinational enterprise, and the global "division of labour" constitute the major foci). The course sessions will roughly be constituted by 50 percent lecture and 50 percent organized student contributions for seminar discussion and debate.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03 or equivalent. Students should feel comfortable with economic theory as well, otherwise by instructor's permission

EXCLUSION: POLI 3587.03

### **POLI 4590.03: Politics of the Sea II.**

This course will examine environmental, political and economic forces which affect contemporary ocean governance and management. Contemporary issues will be used to explore the geo-political ocean on a sectoral basis (transportation, fisheries and resources, military, etc.), as well as analyzing the evolution of national oceans policies and institutions.

FORMAT: Lecture/seminar

CROSS-LISTING: POLI 5595.03, MARA 5589.03

EXCLUSION: POLI 3590.03

RESTRICTION: to 4th year Political Science Honours students

### **POLI 4600X/Y.06: Honours Essay.**

Political Science undergraduates in the Honours program are required to attend the Honours seminar as scheduled. This seminar is designed as a research seminar for Honours students.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Honours Co-ordinator.

RESTRICTION: Restricted to Political Science Honours students in their final year.

### **POLI 4636.03: Nationalism and Statecraft.**

An examination of the sources, ingredients and consequences of contemporary nationalism, with particular reference to its implications for the conduct of international politics. In the early sessions of the class, pertinent literature from the pre-World War II period will be evaluated for its relevance to our understanding of current circumstances, in which the apparent revival of nationalist impulses has coincided with intensifying manifestations of functional interdependence.

SIGNATURE REQUIRED.

FORMAT: Seminar

CROSS-LISTING: POLI 5636.03

RESTRICTION: Restricted to students in their fourth year

### **POLI 4810.03: Special Topics in Political Science.**

An examination of selected issues in Political Science. This class explores (e.g., when a visiting scholar is on campus) a special topic that is not a regular offering of the department. It is taught as a lecture or seminar class, not as an independent studies class. Since the topics covered in these classes differ from year to year, students should seek further information from the Political Science Department before registering. The subject matter in this class will be explored in greater depth than a class offered under 3810.03/3820.03

FORMAT: Seminar

### **POLI 4820.03: Special Topics in Political Science.**

An examination of selected issues in Political Science. This class explores (e.g., when a visiting scholar is on campus) a special topic that is not a regular offering of the department. It is taught as a lecture or seminar class, not as an independent studies class. Since the topics covered in these classes differ from year to year, students should seek further information from the Political Science Department before registering. The subject matter in this class will be explored in greater depth than a class offered under 3810.03/3820.03

FORMAT: Seminar

# Religious Studies

NOTE: Classes in Religious Studies are administered by the Classics Department page 151.

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## Dean

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## Undergraduate Advisor

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## Professor Emeritus

Ravindra, R., BSc, MTech (IIT), MA (Dalhousie), MSc, PhD (Toronto), Adjunct Professor of Physics

## Assistant Professor

Austin, Christopher, BA, MA (Concordia), PhD (McMaster)

## Associate Professor

Treiger, Alexander, BA, MA (Hebrew University of Jerusalem), MPhil, PhD (Yale)

## I. Introduction

Religion is a phenomenon virtually universal in human society and history. Understanding religion involves grasping simultaneously both the meaning of faith in the lives of participants, and the critical analysis of outside observers. Both the student wishing enhanced understanding of religion as an historical, and social and human fact, and the student who wishes to wrestle with problems arising in academic reflection concerning the relation between the personal and the objective, can find material to engage them in the programs and classes described below.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA (20 credit) Major in Religious Studies

#### Departmental Requirements

- At least one full class [two half classes] (six credit hours) selected from RELS 1001.03, RELS 1002.03, or RELS 1200.06. This requirement may be relaxed at the discretion of the Department. The King's Foundation Year Program satisfies it. Students must complete a minimum of six full classes [12 half classes] (36 credit hours) or a maximum of nine full classes [18 half classes] (54 credit hours) in Religious Studies beyond the 1000 level. They must include:
- At least two full classes [four half classes] (12 credit hours) selected from RELS 2001.03, 2003.03, 2011.03, 2012.03, 2013.03, 2025.03, 2026.03, 2027.03, 2052.03, 2203.03, 2220.03, 2281.03, 2282.03.
- RELS 3000.03 Seminar in Religious Studies. This requirement may be relaxed at the discretion of the Department.

- At least two full classes [four half classes] (12 credit hours) selected from RELS 3001.03, 3009.03, 3012.03, 3018.03, 3019.03, RELS 3100.03, 3101.03, 3111.03, 3112.03, 3381.03, 3382.03, 3411.03, 3412.03, 3432.03, 3661.03, 3662.03, 3910.06, 4010.03, 4011.03, 4018.03, 4019.03, 4450.06.

### B. BA (20 credit) Double Major in Religious Studies

Students must complete the Faculty requirements for a double major. These include 10 to 14 full credits (60-84 credit hours) in the Major subjects at the 2000 level or higher, with no more than eight credits (48 credit hours) and no fewer than five credits (30 credit hours) in each subject. Religious Studies requires:

- At least one full class [two half classes] (six credit hours) selected from RELS 1001.03, RELS 1002.03, or RELS 1200.06. This requirement may be relaxed at the discretion of the Department. The King's Foundation Year Program satisfies it.
- At least two full classes [four half classes] (12 credit hours) selected from RELS 2001.03, 2003.03, 2011.03, 2012.03, 2013.03, 2025.03, 2026.03, 2027.03, 2052.03, 2203.03, 2220.03, 2281.03, 2282.03.
- RELS 3000.03 Seminar in Religious Studies. This requirement may be relaxed at the discretion of the Department.
- At least one and a half full classes [three half classes] (nine credit hours) selected from RELS 3001.03, 3009.03, 3012.03, 3018.03, 3019.03, RELS 3100.03, 3101.03, 3111.03, 3112.03, 3120.03, 3381.03, 3382.03, 3411.03, 3412.03, 3432.03, 3661.03, 3662.03, 3910.06, 4010.03, 4011.03, 4018.03, 4019.03, 4450.06

### C. BSc (20 credit) Double Major, Second Subject in Religious Studies

Students must complete the Faculty requirements for a double major. Religious Studies can only be the second subject, with no fewer than five credits (30 credit hours) and no more than nine credits above the 1000 level. Two of these credits (12 credit hours) must be at the 3000 level or higher. Religious Studies requires:

- At least one full class or two half classes (six credit hours) selected from RELS 1001.03, RELS 1002.03, or RELS 1200.06. This requirement may be relaxed at the discretion of the Department. The King's Foundation Year Program satisfies it.
- At least two full classes [four half classes] (12 credit hours) selected from RELS 2001.03, 2003.03, 2011.03, 2012.03, 2013.03, 2025.03, 2026.03, 2027.03, 2052.03, 2203.03, 2220.03, 2281.03, 2282.03.
- RELS 3000.03 Seminar in Religious Studies. This requirement may be relaxed at the discretion of the Department.
- At least one and a half full classes [three half classes] (nine credit hours) selected from RELS 3001.03, 3009.03, 3012.03, 3018.03, 3019.03, RELS 3100.03, 3101.03, 3111.03, 3112.03, 3381.03, 3382.03, 3411.03, 3412.03, 3432.03, 3661.03, 3662.03, 3910.06, 4010.03, 4011.03, 4018.03, 4450.06

### D. BA (20 credit) Combined Honours in Religious Studies

Students must complete the Faculty requirements for the combined honours degree. At least five credits (30 credit hours) and no more than eight credits (48 credit hours) must be in Religious Studies above the 1000 level. At least 11 credits (66 credit hours) and no more 14 (84 credit hours) are to be in both subjects.

The Religious Studies requirements are:

- At least one full class [two half classes] (six credit hours) selected from RELS 1001.03, RELS 1002.03, or RELS 1200.06. This requirement may be relaxed at the discretion of the Department. The King's Foundation Year Program satisfies it.
- At least two full classes [four half classes] (12 credit hours) selected from RELS 2001.03, 2003.03, 2011.03, 2012.03, 2013.03, 2025.03, 2026.03, 2027.03, 2052.03, 2203.03, 2220.03, 2281.03, 2282.03.
- RELS 3000.03 Seminar in Religious Studies. This requirement may be relaxed at the discretion of the Department.
- At least two full classes [four half classes] (12 credit hours) selected from RELS 3001.03, 3009.03, 3012.03, 3018.03, 3019.03, RELS 3100.03, 3101.03, 3111.03, 3112.03, 3120.03, 3381.03, 3382.03, 3411.03, 3412.03, 3442.03, 3661.03, 3662.03, 3910.06, 4010.03, 4011.03, 4018.03, 4019.03, 4450.06
- Outside Religious Studies one full class [two half classes] will be required from the following list: ARBC 1020.06 (Arabic), CHIN 1030.06 (Mandarin), CLAS 1600.03 (Sanskrit I), CLAS 1700.06 (Greek), CLAS 1800.06 (Latin), CLAS 1900.06 (Classical Hebrew), CLAS 2600.03 (Sanskrit II). Students may substitute a more advanced class in these languages for this requirement.

6. Completion of the Religious Studies Honours Examination (RELS 0400.00) if the first subject is Religious Studies.

### **E. BSc (20 credit) Combined Honours, Second Subject in Religious Studies**

Students must complete the Faculty requirements for the combined honours degree. Religious Studies can be the second subject only. At least five full classes [10 half classes] (30 credit hours) and no more than seven full classes [14 half classes] (42 credit hours), or nine full classes [18 half classes] (54 credit hours) with the approval of the Department, must be in Religious Studies above the 1000 level. At least 11 full classes (66 credit hours), or 13 (102 credit hours) with departmental approval, are to be in both subjects.

The Religious Studies requirements are:

1. At least one full class [two half classes] (six credit hours) selected from RELS 1001.03, RELS 1002.03, or RELS 1200.06. This requirement may be relaxed at the discretion of the Department. The King's Foundation Year Program satisfies it.
2. At least two full classes [four half classes] (12 credit hours) selected from RELS 2001.03, 2003.03, 2011.03, 2012.03, 2013.03, 2025.03, 2026.03, 2027.03, 2052.03, 2203.03, 2220.03, 2281.03, 2282.03.
3. RELS 3000.03 Seminar in Religious Studies. This requirement may be relaxed at the discretion of the Department.
4. At least two full classes [four half classes] (12 credit hours) selected from RELS 3001.03, 3009.03, 3012.03, 3018.03, 3019.03, RELS 3100.03, 3101.03, 3111.03, 3112.03, 3120.03, 3381.03, 3382.03, 3411.03, 3412.03, 3442.03, 3661.03, 3662.03, 3910.06, 4010.03, 4011.03, 4018.03, 4019.03, 4450.06.
5. Outside Religious Studies one full class [two half classes] will be required from the following list: ARBC 1020.06 (Arabic), CHIN 1030.06 (Mandarin), CLAS 1700.06 (Greek), CLAS 1800.06 (Latin), CLAS 1600.03 (Sanskrit I), CLAS 1900.06 (Classical Hebrew), CLAS 2600.03 (Sanskrit II). Students may substitute a more advanced class in these languages for this requirement.

### **F. Minor in Abrahamic Religions**

See 5.b page 135 for information about a Minor in Abrahamic Religions

### **G. Minor in Middle East Studies**

See 5.b, page 136 for information about a Minor in Middle East Studies.

## **III. Class Descriptions**

First year students are not admitted to classes beyond the 1000 level without the consent of the instructor. Classes at the 2000 level do not have prerequisites; in general, they are available only to students in their second year or above. Prerequisites for classes at the 3000 and 4000 levels are listed with each individual class below; in general, they are available only to students in their third year or above in the University.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

### **RELS 0400X/Y.00: Religious Studies Honours Examination.**

Details available from the department.

FORMAT: Examination administered by Religious Studies (Dept. of Classics)

PREREQUISITE: Students must be declared as B.A. Combined Honours Religious Studies, first subject Religious Studies

### **RELS 1001.03: Religions of the East.**

This course serves as an introduction to the history, beliefs, and practices of Hinduism, Jainism, Sikhism, Buddhism, Daoism, Shinto, and Confucianism.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture

EXCLUSION: RELS 1000.06

### **RELS 1002.03: Judaism, Christianity, and Islam: The Abrahamic Religions.**

This course serves as a comparative and thematic introduction to the history, beliefs, and practices of Judaism, Christianity, Zoroastrianism, and Islam.

FORMAT: Lecture

EXCLUSION: RELS 1000.06

### **RELS 1200X/Y.06: Gods, Heroes, and Monsters: Ancient Mythology.**

An introductory survey of the traditional religious narratives of ancient civilizations including Mesopotamia, Egypt, Israel, Greece, and Rome. Of special interest: the function of myth in shaping and expressing a culture's understanding of the divine, the institutions of human community (religion, the family, government), and the natural world; the interrelationships of the myths of those civilizations; the reception of those traditions in the origins of Christian and Islamic culture. The traditional narratives and their broader cultural contexts will be approached through study of primary sources including epic, tragic, and didactic poetry, hymnography, historiography, philosophy, the visual arts, and architecture. This class fulfills the first year writing requirement.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): P. O'Brien

FORMAT: Writing Requirement. Lecture

CROSS-LISTING: CLAS 1100X/Y.06, CLAS 2100X/Y.06

### **RELS 1600.03: Introductory Sanskrit I.**

This course provides students with all the basic tools required for the study of Sanskrit, with a particular emphasis on basic Sanskrit grammar. Students will learn the Devanagari script, several common nominal forms and the basics of the verbal system, as well as develop a competency in basic reading and recitation.

CROSS-LISTING: CLAS 1600.03

### **RELS 2001.03: Judaism.**

An introduction to Jewish beliefs, practices history, and writings from the Hellenistic period to the present. Topics to be covered include: the Torah, the Talmud, the development of the Rabbinic tradition, Jewish philosophy and mysticism.

INSTRUCTOR(S): A. Treiger

FORMAT: Lecture/seminar

### **RELS 2003.03: Islam.**

An introduction to Muslim beliefs, practices, history and writings from the 7th century to the present. Topics to be covered include: the life and mission of Muhammad, the Qur'an, the Islamic legal, philosophical, and mystical tradition, the development of the Hadith, and the rise of political Islam in the twentieth century.

INSTRUCTOR(S): A. Treiger

FORMAT: Lecture/seminar

### **RELS 2011.03: Hinduism.**

A basic introduction to Hinduism, including Vedic religion, classical Brahmanical religion, the caste system, bhakti (devotional) traditions and the rise of epic literature, philosophical traditions and the Upanishads, the theistic traditions of the gods Vishnu and Shiva, and of the goddess Devi.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture/seminar

### **RELS 2012.03: Chinese and Japanese Religions.**

An introduction to the cultural, religious, and philosophical traditions China and Japan. Topics to be covered include: Classical Confucianism, Neo-Confucianism, Philosophical and Religious Daoism, Shinto, Chinese and Japanese Buddhism. The course will also examine the interaction, competition, and overlap between these traditions.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture/seminar

CROSS-LISTING: CHIN 2060.03

### **RELS 2013.03: Buddhism.**

This course introduces the student to the Buddhist religious tradition, beginning with its origins and early developments in India and followed by a treatment of key themes of later world Buddhism such as meditation, devotion, monasticism, and ritual. The course thus exposes students to both Buddhism's early Indian doctrinal and institutional dimensions, and to aspects of Buddhism as practiced subsequently in China, Japan, and Tibet.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture/seminar

CROSS-LISTING: CHIN 2070.03

### **RELS 2025.03: Nature, the Human, Community and the Divine in the Pre-Modern West.**

What is nature? What is the proper relationship between nature and the human being, political community, and divinity? This course will investigate ancient

Greek, Roman, Jewish, Christian and Islamic answers, to this question through the study of literature, philosophy, art and architecture of the Pre-Modern West.  
 FORMAT: Lecture/team-taught  
 CROSS-LISTING: CLAS 2025.03

### RELS 2026.03: Paganism.

"Pagan" originated as a derogatory Christian designation for ignorant conservative rustics who kept to the pre-Christian religions. We shall look at those religions in their origins, nature, and development in antiquity, their continuations in the Middle Ages and modernity, and their persistence and revival in the contemporary world.

FORMAT: Lecture/discussion  
 CROSS-LISTING: CLAS 2026.03

### RELS 2027.03: Magic, Religion and Philosophy.

Reading the Greek Magical Papyri, as well as curse tablets and binding spells for ancient sources, we will explore the intersections of, and relations between, magic, religion, and philosophy in antiquity. The focus will be on both the practical and theoretical aspects of magic in the Greek and Roman worlds.

CROSS-LISTING: CLAS 2027.03

### RELS 2052.03: A Cultural Introduction to the Arab World.

This class provides students with the basic tools for approaching the Arab world from a cultural perspective. The main topics are: 1) the guide marks of Arabic history; 2) a civilization "of the Word": the Arabic language, the Koran, the Tradition of the Prophet Mohammed, and the sciences related to the Islamic Law (shari'a); 3) the Arabic legacy in sciences, philosophy, literature, architecture, calligraphy, decoration, etc; 4) multi-cultural Al-Andalus and the ideal of 'convivencia'; 5) present nostalgia for the past; 6) tradition, modernity and effects of 'Globalization' in the contemporary Arabic "high culture" and "pop culture": in literature, music, arts, cinema, life style, education system, media, etc. Some lectures will be accompanied by audio-visual presentations including documentary films. The class does not require background in Arabic.

INSTRUCTOR(S): D. Firanescu  
 FORMAT: Lecture/discussion  
 CROSS-LISTING: ARBC 2100.03, HIST 2500.03

### RELS 2203.03: Philosophy and God.

Does God exist? Can God be known? Have a nature? Do evil? Beginning by occupying the same ground as religion, philosophy has asked these questions. Starting with Pythagoras, Empedocles, Plato, Aristotle, Epicurus, and continuing with their pagan, Jewish, Christian, and Islamic followers, we shall learn to state the answers of sages and mystics with historical accuracy and to judge their persuasive power.

FORMAT: Lecture/discussion  
 CROSS-LISTING: CLAS 2024

### RELS 2205.03: Philosophy of Religion.

Monotheistic religions (such as Judaism, Christianity, and Islam) assert the existence of a single God. This class addresses philosophical problems posed by traditional monotheism. Why care whether monotheism is true? Why care whether belief in God is rational? Does the rationality of belief in God depend on the evidence for and against God's existence? What is the best evidence for and against? What bearing does God have on human morality?

CROSS-LISTING: PHIL 2205.03  
 EXCLUSION: PHIL 2200X/Y.06

### RELS 2208.03: Science and Medicine in Islamic Societies, 700 - 1500.

Through a combination of primary and secondary source readings, this class explores some of the major trends and debates within science and medicine in Islam from the seventh century till the early modern period. A special emphasis is placed on situating these developments within the larger political, social and institutional structure of Islamic societies.

FORMAT: Seminar  
 CROSS-LISTING: HSTC 2208.03  
 EXCLUSION: HSTC 3610.03 and RELS 3610.03 for the 2010/11 academic year only  
 RESTRICTION: Restricted to students in their 2nd year and above

### RELS 2209.03: The Roman World from Constantine to Theodosius (312-395).

This class covers one of the most important periods of Roman history in which Christianity became the dominant religion in the empire and foreign peoples

threatened the existence of the empire itself. The class is open to first-year students. There is no foreign language requirement.

FORMAT: Seminar  
 CROSS-LISTING: HIST 2017.03, CLAS 2209.03  
 EXCLUSION: CLAS 2210X/Y.06, HIST 2004X/Y.06

### RELS 2220.03: Ancient Israel in her Near Eastern Context.

Students will become familiar with the broad outlines of ancient Israelite history with specific attention to Israel's relationship to her immediate neighbours and the major imperial powers from the 2nd millennium BCE to first century CE. This will entail an initial survey of biblical texts in order to lay an adequate understanding of ancient Israel's self-conception, followed by a detailed survey of Israel's interaction with other nations, including early Mesopotamia, Egypt, Assyria, Babylon, Persia, the Seleucid empire, and Rome.

FORMAT: Lecture and seminar presentations  
 CROSS-LISTING: CLAS 2220.03/HIST 2520.03

### RELS 2281.03: Christian Beginnings: The Orthodox and Oriental Churches.

This class traces the development of Christianity from its origin as a Jewish sect to its status as the dominant religion within the Byzantine Empire. The Christian religion as patronized by the Eastern Roman Emperors identified itself with the persecuted Christian sect of the first three centuries through the cult of the martyrs, articulated in the increasing importance of relic, icon, and pilgrimage to holy place. The seven ecumenical councils (325-787) progressively defined the Orthodox faith and resulted in the rise of Oriental churches, rejecting aspects of the definitions. Through to our end-date of 843 (when the icon was finally accepted) themes will be treated by attention to historical events (including the rise of Islam), art, architecture, liturgy, and various genres of literature (including hagiography).

FORMAT: Lecture  
 CROSS-LISTING: CLAS 2281.03  
 EXCLUSION: CLAS 3280X/Y.06

### RELS 2282.03: Christian Beginnings: Catholicism.

This class will consider the formation of Catholicism (Latin Christianity) up to the 12th century in relation to the Greco-Roman context and the barbarian invasions. Moving from North Africa to Western Europe, and using a combination of text, music and artistic, architectural, and archaeological evidence, it will examine the formation of doctrine and discipline in relation to schisms, heresies and Hellenic philosophy, the origin and developments of western monasticism, the papacy, church and state relations, and the construction of liturgy. A theme will be the interplay between the centrifugal and centripetal.

FORMAT: Lecture  
 CROSS-LISTING: CLAS 2280.03  
 EXCLUSION: CLAS 3280X/Y.06

### RELS 2365.03: Plato and the Case of Socrates: Philosophy on Trial.

Socrates (469-399 BCE) never wrote a single word, but posed such threat to Athens that a jury put him to death for the alleged ethical corruption and impiety of his thought. This class will explore the revolutionary life and thought of Socrates, and consider whether the jury's decision against him was justified.

FORMAT: Lecture  
 CROSS-LISTING: CLAS 2365, PHIL 2365

### RELS 2420.03: Witchcraft in Early Modern Europe.

The period of European history from 1500 to 1800 saw the rise of modern science and philosophy. It was also a period in which thousands of witch trials and executions were carried out. This class will seek to understand how these seemingly contradictory developments could have occurred simultaneously. The class will examine changing conceptions of the witch and witchcraft in their historical, intellectual, cultural, religious, and political contexts. Questions that will be addressed include: How did the Renaissance interest in magic influence the Early Modern understanding of witchcraft? What impact did concerns about popular religion have on the witch trials? What constituted evidence that someone was a witch? What did Early Modern scientists think about witchcraft? The class will pay special attention to Early Modern notions of gender and sexuality and their influence on the witch hunts and witch trials.

INSTRUCTOR(S): K. Morris  
 FORMAT: Lecture/tutorials  
 CROSS-LISTING: GWST 2320.03, EMSP 2320.03

### RELS 2503.03: Classical and Medieval History of Islamic Civilization.

This course will introduce students to the Perso-Levantine world at the time of Muhammad's prophecy in the 7th century, and how the Arabian Peninsula was impacted by the creation and emergence of an Islamic society in Medina and Mecca. With the displacing of Byzantine control in the Holy Land and the collapse of the Sasanian Empire in Persia, the Arab-centric society of Mecca and Medina had become an empire of unprecedented size and ethnic complexity. The class will examine the respective Umayyad and "abbasid Dynasties, as well as the Ottomans, safavids, and Mughals. The central theme of this course will be an examination of the Islamic surrounding traditions and cultures in the Mediterranean, the Iranian Plateau, the Caucasus, the Steppe, India, and Southeast Asia. Another important theme will be the study of how various Islamic societies understood and resolved the age-old dynamic between tribal nomadism and hierarchical urbanism.

FORMAT: Lecture

CROSS-LISTING: HIST 2503.03

EXCLUSION: 1st year students and HIST 2501.03

### RELS 2600.03: Introductory Sanskrit II.

This course develops further the basic grammar and vocabulary of Introductory Sanskrit I, emphasizing the basic past tense verbal systems, participial formations, and translation of simple Sanskrit texts.

PREREQUISITE: RELS 1600.03 or CLAS 1600.03

CROSS-LISTING: CLAS 2600.03

### RELS 3000.03: Topics in Religious Studies.

This course treats a range of theoretical and methodological issues in the study of religion and serves to introduce students to key problems in scholarship on both Western and Eastern traditions. A variety of themes will be explored such as the relationship between philosophy and religion, the functions of doctrine and ritual, the nature of holiness and the nature of scripture. Beyond a basic understanding of these and other themes, however, the course will engage students with the various - often conflicting - ways in which these themes have been treated in Religious Studies scholarship. The course is a core requirement for all students majoring in Religious Studies.

INSTRUCTOR(S): W. Hankey, A. Treiger, C. Austin

FORMAT: Seminar

RESTRICTION: Students must be in their third year of study, or beyond

### RELS 3001.03: Islam and the Others.

During its history, Islam has encountered numerous "others": Christians, Jews, Zoroastrians, Hindus, and most recently the "West." Muslim countries have had non-Muslim minorities, and conversely there have been Muslim minorities in non-Muslim countries. This course deals with Islamic perceptions of, and relations with, these "others" throughout history.

INSTRUCTOR(S): A. Treiger

FORMAT: Lecture

### RELS 3008.03: The Medieval Church.

This class does not attempt to provide a chronological survey of the development of the Western church, but is an advanced seminar dealing with topics which have no strict chronological limits. Subjects of study include monasticism, heresy, education and the universities, town and cathedral, lay-clerical conflict, and "popular" concepts of religion. Each year one or more topics are examined in detail, with the help of original documents in translation, and using recent periodical literature and/or monographs. Students prepare and present one or two well-researched papers, and class discussions are used to explore related materials and readings in greater depth. Some prior knowledge of medieval European history is essential.

RECOMMENDED: HIST 1001.03

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2001.03 or HIST 2002.03 or HIST 2120.03

CROSS-LISTING: HIST 3002.03

EXCLUSION: Former HIST 3021.03 and 3022.03 students

### RELS 3009.03: Christianity in the Lands of Islam.

After the Islamic conquest of the Middle East in the seventh century, approximately half of the world's Christians found themselves under Islamic rule. The course tells the story of these Christians, their religious practices, their literatures, written in Greek, Arabic, Syriac, and Coptic, and their complex relations with the Muslims from the seventh century until today.

INSTRUCTOR(S): A. Treiger

FORMAT: Lecture

PREREQUISITE: Students must be in their third year of study, or beyond

### RELS 3012.03: Mystics of the Middle East.

The course is designed as an introduction to mystical dimensions of Islamic thought and practice in their historical development. Topics to be covered include: the beginnings of the Sufi tradition in relation to other varieties of Middle Eastern mysticism, orthodoxy and heresy in early Sufism, stations and states on the Sufi path, Sufism and philosophy in interaction, Sufi orders, Sufi poetry as vehicle of mystical experience.

PREREQUISITE: RELS 1002.03 or RELS 2003.03 or permission of the instructor.

### RELS 3018.03: Meetings Between Hellenism and the East to Philo the Jew.

We consider the constitution of Hellenism in relation to Eastern cultures as this emerges in Homer and Herodotus, the emergence of philosophy and the polis. With Alexander and the Hellenistic empires we look at the results and limits of military conquest especially in what is now Afghanistan. The class concludes with the constitution of Jewish religion and culture and its meeting with Hellenism with Philo Judaeus in Alexandria. In order to integrate the presentation of text and art the lectures are all in PowerPoint.

FORMAT: Lecture and Discussion

CROSS-LISTING: CLAS 3016.03, HIST 3016.03

### RELS 3019.03: Meetings between Hellenism, Judaism, Christianity and Islam until the Renaissance.

We consider the constitution of Christianity in relation to Hellenism and Judaism during the first six centuries of the Christian era. After treating the constitution of Islam, we consider its meetings with Christianity and Judaism especially in Spain and Norman Sicily. We conclude with medieval Jewish, Christian and Islamic philosophical theologians. Integrating the presentation of text and art the lectures are all in PowerPoint.

FORMAT: Lecture and Discussion

CROSS-LISTING: CLAS 3017.03, HIST 3017.03

### RELS 3100.03: Readings in Western Religions.

This class will focus on a single body of literature from the Jewish, Christian, or Islamic religious traditions such as the Gospels, Midrashic collections, or Tafsir. The course will examine the interpretation of the literature in its original context, in traditional commentaries, and in the modern academy.

FORMAT: Lecture/seminar

PREREQUISITE: A 2000 level course or permission of instructor

EXCLUSION: RELS 3002.03

### RELS 3101.03: The Self and the World in Indian Story.

Through a close reading of narrative and other forms of story literature, this course explores the twin themes, fundamental to all South Asian religions, of renouncing and embracing the world. Reading materials will draw from Hindu, Indian Buddhist, Jain and Sikh narrative literature, and will reflect a range of religious attitudes towards engaged worldly life within the family and society, and the pursuit of personal liberation through asceticism, renunciation and monasticism.

INSTRUCTOR(S): C. Austin

PREREQUISITE: A 2000 level RELS course or permission of the instructor

EXCLUSION: RELS 3002.03

### RELS 3111.03: Vishnu and Krishna the Dark Lord: Popular Hindu Religion.

This course focuses on the god Vishnu and his various manifestations, particularly Krishna, the "Dark Lord." Through an examination of traditional Sanskrit sources and popular regional traditions across India, the course treats the theological, mythic and cultic expressions of one of Hinduism's most beloved figures.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture with tutorial meetings

PREREQUISITE: RELS 2011 or permission of instructor

### RELS 3112.03: Buddhism in India and Tibet.

This course engages the student with the Mahayana and Vajrayana traditions of Buddhism as lived and practiced initially in India and subsequently in the Tibetan cultural region. Emphasis will be placed on the philosophical schools called Madhyamaka and Yogacara, and particularly on the tantric ritual and meditation practices of Tibetan Buddhism.

INSTRUCTOR(S): C. Austin

FORMAT: Lecture with Tutorial Meetings

PREREQUISITE: RELS 2013, or permission of instructor



### RELS 3200.03: Science and Religion: Historical Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the early modern period. From an examination of the biblical view of nature, ancient Babylonian astrology and divination and Plato's Timeaus, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo's controversy with the Church and instances where religious belief inspired scientists like Boyle and Newton. Claims that certain confessional traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion relations are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic and witchcraft. This course employs examples from Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

FORMAT: Lecture/discussion

CROSS-LISTING: HSTC 3200.03, EMSP 3330.03, HIST 3075.03

### RELS 3201.03: Science and Religion: Contemporary Perspectives.

Beginning with an overview of the history and methodology of the study of science and religion, encounters between science and religion are traced from the dawn of civilization to the end of the eighteenth century, with a special focus on the early modern period. From an examination of the biblical view of nature, ancient Babylonian astrology and divination and Plato's Timeaus, this course moves through a treatment of the centrality of theology to Medieval science on to natural theology and the "Watchmaker" Design Argument of the seventeenth and eighteenth centuries. Models of conflict, harmony and complementarity offered to characterize relations between science and religion are explored through case studies such as Galileo's controversy with the Church and instances where religious belief inspired scientists like Boyle and Newton. Claims that certain confessional traditions (notably Protestantism and its dissenting offshoots) facilitated the rise of modern science are also appraised. Science-religion relations are examined both from the standpoint of mainstream religion and with respect to religious heterodoxy, prophecy, alchemy, magic and witchcraft. This course employs examples from Islamic cultures in addition to the Judeo-Christian tradition. Special features include a focus on primary texts and guest lectures by scientists.

FORMAT: Lecture/discussion

CROSS-LISTING: HSTC 3201.03, CTMP 3201.03, HIST 3076.03

### RELS 3202.03: The End of the World: The Apocalypse in German Thought.

The war, death and destruction that define European history in the 20th century can only begin to explain the obsession with the apocalypse in contemporary German thought. In this seminar we will study the secular appropriation of apocalyptic imagery from the Judeo-Christian tradition.

FORMAT: Lecture/discussion

CROSS-LISTING: GERM 3850.03

RESTRICTION: Restricted to students in 2nd year or above

### RELS 3250.03: Atheism in Early Modern Europe.

Although atheism continues to be a source of controversy and debate, one of the most significant features of the modern world is the extent to which religious unbelief has become accepted as a morally and intellectually defensible position. This course will seek to understand the rise of modern atheism by examining its origins in the Early Modern world.

INSTRUCTOR(S): K. Morris

FORMAT: Lecture/tutorial

CROSS-LISTING: EMSP 3250.03

### RELS 3381.03: Medieval Philosophy from Augustine to Anselm.

A study of texts, primarily within the Latin tradition from Augustine to Anselm, but including selected writings of the Pseudo-Dionysius. Three works will normally be read in their entirety: Boethius, Consolation of Philosophy; Dionysius, Mystical Theology; Anselm, Proslogion. The main interest is the use and transformation of the philosophy of Plato, Aristotle, the Stoics and the Neoplatonists in this development.

FORMAT: Lecture

CROSS-LISTING: CLAS 3381, PHIL 2381

### RELS 3382.03: Medieval Philosophy from Arabic and Jewish Thinkers to Aquinas.

A study of texts which reflect the transformation of the ancient philosophical tradition within the works of medieval Arabic and Jewish thinkers and of the Latin Christians to whom they mediated ancient philosophy. Selections from al-Farabi, Moses Maimonides, Averroes, and Aquinas, among others will be read. Bonaventure The Minds Journey into God will be read in its entirety.

CROSS-LISTING: CLAS 3382, PHIL 2382

### RELS 3411.03: Augustine's Confessions I: Books 1-9.

This class will examine the first nine books of Augustine's Confessions. These 'autobiographical' books contain Augustine's account of his intellectual progress, culminating in his encounter with Platonism in book 7, followed by an account of his conversion to Christianity and his life as a Christian in books 8 and 9.

FORMAT: Seminar

CROSS-LISTING: CLAS 3411.03

EXCLUSION: CLAS/RELS 3410.03

### RELS 3412.03: Augustine's Confessions II: Books 10-13.

This class will examine the last four books of Confessions. Book 10 marks the transition from autobiography to Augustine's account of his present psychological life, undertaken in order to know himself as he is known by God. Books 11-13 are an exegesis of the beginning of the book of Genesis.

FORMAT: Seminar

CROSS-LISTING: CLAS 3412.03

EXCLUSION: RELS/CLAS 3410.03

### RELS 3432.03: St. Augustine's On the Trinity Part 2.

A study of Books 8-15 of Augustine's De Trinitate, in which he attempts to understand what has been shown in the first 7 books( the orthodox teaching about God through Scripture and a consideration of the categories of substance, relation and act) through the distinction of scientia and sapientia.

FORMAT: Seminar

CROSS-LISTING: CLAS 3432.03

### RELS 3510X/Y.03: Sultans and Shahs: Polity and Religion in the Islamic Gunpowder Age (1500-1800).

Until the devastating Mongol invasions of the 13th century, the principal centers of Islamic power, culture, and thought had been based in Cairo and Baghdad. This class will examine the post-Mongol Islamic world, and how politics and religion were irrevocably changed with the annihilation of the Sunni 'Abbasid caliphate. Religious heterodoxy, combined with the power vacuum left by Chingiz Khan and his descendants, allowed for the emergence of a number of unique Turkmen states in Western Asia, the most famous being the Ottoman Turks of Anatolia. By 1500, innovations in military technology and the paper-making industry allowed for the emergence of centralized and bureaucratically-sophisticated 'gunpowder' empires in western and south Asia. This class will discuss the three most significant of these: the Ottoman Turks (based in Istanbul), the Safavid Persians (based in Isfahan), and the Mughal Indians (based in Delhi). Areas of focus will include: issues of political legitimacy, use of military 'slave' corps, orthodox and popular religious movements, tensions between nomadic and sedentary segments of society, innovations in cultural expression (poetry, art, architecture), scientific and philosophical development, and the penetration and impact of the Portuguese, English, Dutch, and French 'world economies' into Asia and the Indian Ocean. This course will also examine different debates regarding the 'decline of the East', and introduce the theoretical implications of how the Islamic world is approached by contemporary scholarship.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Mitchell, Colin

FORMAT: Lectures/discussion

PREREQUISITE: HIST 2501.03 or 2502.03 or 2503.03

CROSS-LISTING: HIST 3510.03

### RELS 3610.03: Studies in Ancient and Medieval Science.

Topics vary each year. Some of the topics are "Causation", "History of dissection", "Mesopotamian science", "Sciences and cultures in antiquity", "The mangle of praxis", "Ptolemy", "Ancient Method", "Embryology", "Posterior analytics", etc.

For descriptions of the current year's studies topics, please contact the History of Science and Technology Programme.

NOTE: Not more than two studies courses (one full credit) and no more than one of each course number, can be taken for credit towards the History of Science and Technology Programme.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: HSTC 3610.03

### **RELS 3661.03: Hellenistic Philosophy: Stoics and Epicureans.**

A study of philosophy in the Hellenistic Age. We will investigate the development of Greek and Roman philosophy after Aristotle, focusing on Stoicism and Epicureanism. The course covers the logic, physics, and ethics of these philosophical schools, as well as their religious dimension.

FORMAT: Seminar

PREREQUISITE: CLAS 2361.03 and 2362.03 or permission of instructor

CROSS-LISTING: CLAS 3661.03

### **RELS 3662.03: Hellenistic Philosophy: From Scepticism to Neoplatonism.**

A study of philosophy in the Hellenistic Age. We will investigate the development of Greek and Roman Philosophy, focusing on Pyrrhonian and Academic Scepticism, as well as Middle Platonism. The course covers the logic, physics, and ethics of these philosophical schools, as well as their religious dimension.

PREREQUISITE: CLAS 2361.03 and 2362.03 or permission of instructor

CROSS-LISTING: CLAS 3662.03

EXCLUSION: RELS 4602.03, CLAS 4602.03

### **RELS 3850.03: The End of the World: The Apocalypse in German Thought.**

The war, death and destruction that define European history in the 20th century can only begin to explain the obsession with the apocalypse in contemporary German thought. In this seminar we will study the secular appropriation of apocalyptic imagery from the Judeo-Christian tradition.

FORMAT: Lecture/discussion

CROSS-LISTING: GERM 3202.03

RESTRICTION: Restricted to students in 2nd year or above

### **RELS 3910.06: Neoplatonism: Plato and Neoplatonism.**

The philosophy of Plotinus and later thinkers considered as the resume of Greek Philosophy; in particular the role of Plato and other older philosophers in the formation of Neoplatonism is a principal interest.

CROSS-LISTING: CLAS 3910.06

### **RELS 4010.03: Islamic Philosophy: al-Ghazali.**

Abu Hamid al-Ghazali (1058-1111) is one of the greatest Muslim thinkers of all time. This course is an introduction to his thought, focusing on al-Ghazali's "two-tier" approach to theology – exoteric theology for the masses and esoteric theology for the select few – and on his attitude to Islamic philosophy and Islamic mysticism (Sufism).

INSTRUCTOR(S): A. Treiger

FORMAT: Seminar

CROSS-LISTING: CLAS 4010.03

### **RELS 4011.03: Jewish Philosophy: Maimonides.**

Moses Maimonides (1135-1204) is one of the greatest Jewish thinkers of all time. This course is an introduction to his philosophical and legal writings, with special emphasis on his famous treatise *The Guide of the Perplexed*. Maimonides' stance on such issues as God's incorporeality, creation, and prophecy will be compared to that of other varieties of Judaism.

INSTRUCTOR(S): A. Treiger

FORMAT: Seminar/lecture

PREREQUISITE: Students must have completed 5 full credits of university study and RELS 2001.03 or RELS 3382.03/CLAS 3382.03/PHIL 2382.03, or permission of the instructor

CROSS-LISTING: CLAS 4011.03

### **RELS 4018.03: Christian Theology in Islamic Lands: John of Damascus.**

John of Damascus (d. 749) is one of the greatest Christian theologians of the Patristic age. Though he wrote in Greek, he was a Christian Arab (his Arabic name is Mansur ibn Sarjun), who lived under Muslim rule and was employed as a

public official in the Umayyad administration in Damascus. The course will focus on his theological works (especially his *summa* of Christian theology, entitled *On the Orthodox Faith*, and his three treatises in defence of the icons), their Christian sources, and their Islamic context.

FORMAT: Seminar

PREREQUISITE: At least one of: RELS 1002.03, RELS 2003.03, RELS 2281.03, RELS 2282.03, RELS 3009.03, foundation year program, or permission of the instructor

CROSS-LISTING: CLAS 4018.03

### **RELS 4019.03: Philo Judaeus: Philosophical Religion: Plato and Yoses.**

Reconciling Jewish Scripture and Plato, Philo culminates Second Temple Jewish thought and founds the Christian treatment of Scripture. He is the most influential Jewish theologian and presents the High Priest as priest of the cosmos so he is crucial both to understand our past and to carry us into the future.

FORMAT: Seminar

PREREQUISITE: At least one class at the second year or above in CLAS or RELS

CROSS-LISTING: CLAS 4019.03

### **RELS 4450X/Y.06: Medieval Interpreters of Aristotle.**

The class considers Latin philosophical texts of the Middle Ages. Given alternately with CLAS 4500X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Wayne Hankey

FORMAT: Seminar

CROSS-LISTING: CLAS 4450.06

# Russian Studies

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## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair of Department

Leving, Y.

## Undergraduate Advisor

Spasova, S.

## Professor Emeritus

Pereira, N. G. O., BA (Williams), MA, PhD (UC Berkeley)

## Associate Professors

Barnstead, J. A., BA (Oakland), AM (Harvard)  
Leving, Y., BA, MA, PhD (Hebrew University)

## Assistant Professors

Kozlov, D. PhD (Toronto)

## Instructor

Spasova, S., BA (Oberlin), MA, PhD (University of Wisconsin)

## I. Introduction

The Russian Studies Department offers classes in Russian language, literature, culture and history. Since Russia plays a crucial role in today's world and makes important contributions in a wide variety of scientific, technical, and humanistic fields, knowledge of its linguistic and cultural backgrounds can prove advantageous in many areas of study. Recent radical shifts in the country have significantly widened opportunities for using Russian in business, law, science, and government.

In the language classes emphasis is placed on gaining a thorough grasp of Russian grammar combined with practical competence in speaking, listening, reading, and writing. Sections are small and intensive. Classroom work is supplemented by computerized audio-visual materials. Study of Russian literature begins with a general survey intended for first or second year students, followed by monograph, period, and genre classes. Literature classes are generally offered in both English and Russian in order to give as many students as possible from other disciplines the opportunity to become acquainted with this important part of Russian life.

Classes in Russian culture and civilization are intended to introduce students to art, architecture, music, religion, and other areas of Russian life which are necessary to understand the language and literature. Films, guest speakers, and evenings of Russian poetry are scheduled periodically. The Dalhousie Association of Russian Students organizes a variety of events throughout the year.

Major or honours students may, with the approval of the Russian Studies Department, take up to one semester (five half credits) of work at a university in Russia and receive credit at Dalhousie. Qualified students are urged to participate in the Intensive Russian Program, founded by Dalhousie, which enables Canadian students to study for a semester at St. Petersburg State University.

## II. Certificate of Proficiency in Russian

### A. Certificate of Proficiency in Russian

This certificate is normally awarded to students who are not specializing in Russian Studies but who, having taken several Russian language classes at Dalhousie, wish to have their proficiency officially acknowledged. However, Major and Honours students may also be awarded a certificate, provided all the requirements are met. A candidate's superior performance will be reflected by a specific distinction appearing on the certificate.

### Requirements

#### Classes

- RUSN 1000X/Y.06
- RUSN 2002.03, RUSN 2003.03
- RUSN 3002.03, RUSN 3003.03, RUSN 2029.03 or RUSN 3029.03 and ONE of the following:
- one half credit of any Russian literature or culture class that has a Russian language component in consultation with the class instructor, or any 4000 level half class taught in Russian.

#### Exam

A written and oral examination with a minimum average of B- on each part. Students who fail the examination on the first attempt will be allowed to take it over after one year. It is expected that only the most capable and dedicated of students will be able to achieve the needed proficiency with three years of language study.

No one is entitled to take the examination without having done the class work.

### Administration

Please consult the Russian Studies Department for details.

## III. Degree Programs

Classes in the Russian Studies Department are open to students either (1) as electives in any degree program; (2) as constituents of a major or honours degree in Russian; or (3) with classes in another discipline forming part of a combined honours degree or double major; or (4) as a minor.

All Bachelor degree programs are governed by the general Requirements for Degrees set out in the University Calendar, in addition to the departmental requirements stated below. See "Degree Requirements" section, page 131 of this calendar for complete details.

### A. BA Honours in Russian Studies

#### Departmental requirements

##### 1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03
- RUSN 1070.03

##### 2000 level

- RUSN 2002.03 (or 2001X/Y.06)
- RUSN 2003.03 (or 2001X/Y.06)
- RUSN 2051.03
- RUSN 2052.03
- Five other credits at or above the 2000 level and not including those listed below.

##### 3000 level

- RUSN 3002.03 and RUSN 3003.03
- One other credit at the 3000 level or higher

##### 4000 level

- RUSN 4000X/Y.06

#### Other required classes

- One full credit in Russian History (normally RUSN 2022.03 and 2023.03). This requirement is included in the number of credit hours noted above.
- Honours Thesis

## B. BA Combined Honours in Russian Studies

### Departmental requirements

#### Russian Studies as first subject:

##### 1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03
- RUSN 1070.03

##### 2000 level

- RUSN 2002.03 and 2003.03 (or 2001X/Y.06)
- RUSN 2051.03 or RUSN 2052.03
- Four other credits at or above the 2000 level and not including those listed below.

##### 3000 level

- RUSN 3002.03 and RUSN 3003.03
- One other credit at the 3000 level or higher

##### 4000 level

- RUSN 4000X/Y.06

#### Other required classes

- One half credit in Russian History (normally RUSN 2022.03 or 2023.03). This requirement is included in the number of credit hours noted above.
- Honours Thesis

#### Russian Studies as second subject:

- A minimum of five credits with at least two of those credits being language classes on the 2000 level or above (normally 2002.03/2003.03/3002.03/3003.03, or 4000X/Y.06)

## C. BA (20 credit) Major in Russian Studies

### Departmental requirements

##### 1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03
- RUSN 1070.03

##### 2000 level

- RUSN 2002.03 and 2003.03 (or 2001X/Y.06)
- RUSN 2051.03 and 2052.03
- Two other credits at or above the 2000 level not including those listed below

##### 3000 level

- RUSN 3002.03 and 3003.03
- Two other credits at or above the 3000 level

##### 4000 level

- RUSN 4000X/Y.06

#### Other required classes

- One full credit in Russian History (normally RUSN 2022.03 and 2023.03).

## D. BA (20 credit) Double Major in Russian Studies

#### Russian Studies as first major:

##### 1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03
- RUSN 1070.03

##### 2000 level

- RUSN 2002.03 and RUSN 2003.03 (or 2001X/Y.06)
- RUSN 2051.03 or RUSN 2052.03
- One and a half other credits at or above the 2000 level not including those listed below

##### 3000 level

- RUSN 3002.03
- RUSN 3003.03
- One other credit at or above the 3000 level

##### 4000 level

- RUSN 4000X/Y.06

#### Other required classes

- One half credit in Russian History (normally RUSN 2022.03 or 2023.03).

#### Russian Studies as second major:

- A minimum of five credits with at least two of those credits being language classes on the 2000 level or above (normally 2002.03/2003.03/3002.03/3003.03 or 4000X/Y.06).
- At least two of the five credits must be at the 3000 level or above.

## E. BA (15 credit) Minor in Russian Studies

See the requirements for the Minor below.

### F. Minor in Russian Studies

Students must complete three full credits above the 1000 level.

1.5 credits in Russian language, chosen from:

- RUSN 2002.03
- RUSN 2003.03
- RUSN 3002.03
- RUSN 3003.03
- RUSN 4000.06

AND

- RUSN 2022.03 or RUSN 2023.03
- RUSN 2051.03 or RUSN 2052.03

AND

One more class in Russian film, literature, or history above the 1000 level chosen from:

- RUSN 2036.03
- RUSN 2037.03
- RUSN 2046.03
- RUSN 2061.03
- RUSN 2062.03
- RUSN 2070.03
- RUSN 2081.03
- RUSN 2151.03
- RUSN 2191.03
- RUSN 2270.03
- RUSN 2500.03
- RUSN 2750.03
- RUSN 2760.03
- RUSN 3090.03
- RUSN 3092.03
- RUSN 3099.03
- RUSN 3102.03
- RUSN 3103.03
- RUSN 3121.03
- RUSN 3122.03
- RUSN 3330.03
- RUSN 3520.03
- RUSN 3800.03
- RUSN 3820.03

## G. Russian Program Abroad

### Director

Leving, Y. (494-3473/6923)

### 1. Introduction

The Russian Program Abroad (the oldest of its kind in Canada), is an interdisciplinary class of instruction which allows students to undertake intensive study of the Russian language both here and in Russia at St. Petersburg University during winter or summer semesters. This program is offered at the third-year level of language study for students who have successfully (mark of "B") completed one year of Russian or its equivalent. Students at Dalhousie must enrol in a third-year fall preparatory session prior to going to Russia.

If students from elsewhere wish to join the third-year program only in Russia, they may do so after successful completion of application requirements.

## 2. Classes at Dalhousie

(September to December, January to April)

Students are required to take:

- RUSN 3002.03: Grammar;
- RUSN 3029.03: Conversation;
- RUSN 3090.03: Russian Society Today;
- two additional A-term classes in Russian history and Russian literature, language.

## 3. Classes at St. Petersburg State University

(January to May, June to July)

- RUSN 3011.03: Grammar I;
- RUSN 3012.03: Grammar II;
- RUSN 3031.03: Conversation;
- RUSN 3032.03: Translation;
- RUSN 3035.03: Literature - Reading and Analysis

## IV. Class Descriptions

### RUSN 1000X/Y.06: Elementary Russian.

For students who have little or no previous knowledge of the Russian language. Equal emphasis is placed on developing oral, listening, and reading skills with a sound grammatical basis. May be offered in a traditional classroom setting or online.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Instruction

### RUSN 1002.03: Elementary Russian I.

For students who have little or no previous knowledge of the Russian language. Equal emphasis is placed on developing oral, listening, and reading skills with a sound grammatical basis. May be offered in a traditional classroom setting or online.

EXCLUSION: RUSN 1000X/Y.06

### RUSN 1003.03: Elementary Russian II.

For students who have little or no previous knowledge of the Russian language. Equal emphasis is placed on developing oral, listening, and reading skills with a sound grammatical basis. May be offered in a traditional classroom setting or online.

FORMAT: Lecture

PREREQUISITE: RUSN 1002.03

EXCLUSION: RUSN 1000X/Y.06

### RUSN 1020.03: Russian Culture and Civilization under the Tsars.

Conducted in English. The class traces developments in the Russian arts: painting, sculpture, theatre and music.

FORMAT: ✍ Writing Requirement (when taken in combination with RUSN 1070.03), 3 hours

### RUSN 1070.03: Modern Russian Culture and Civilization.

Conducted in English. The cultural history of 20th century Russia.

FORMAT: ✍ Writing Requirement (when taken in combination with RUSN 1020.03), 3 hours

### RUSN 2001.06: Intensive Second Year Russian.

The material covered in RUSN 2002 and RUSN 2003 presented in a single semester.

FORMAT: Instruction/drill 6 hours

PREREQUISITE: C+ or higher in RUSN 1000X/Y.06 or permission of instructor

EXCLUSION: RUSN 2002.03, 2003.03

### RUSN 2002.03: Intermediate Russian I.

A continuation of RUSN 1000X/Y.06. Oral and reading skills and a further knowledge of grammar are developed through study and discussion of Russian texts.

FORMAT: Instruction/drill 4 hours

PREREQUISITE: C+ in Russian 1000X/Y.06 or permission of instructor

EXCLUSION: RUSN 2001X/Y.06

### RUSN 2003.03: Intermediate Russian II.

A continuation of RUSN 2002.03.

FORMAT: Instruction/drill 4 hours

PREREQUISITE: RUSN 2002.03 or equivalent

EXCLUSION: RUSN 2001X/Y.06

### RUSN 2021X/Y.06: Imperial and Soviet Russia.

See class description for HIST 2020X/Y.06 in the History section of this calendar.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

### RUSN 2022.03: Imperial Russia.

Equivalent to the first half of HIST 2020.06. Chronologically covers the imperial period of Russian history, from Peter the Great to the Revolution of 1917.

FORMAT: Lecture/discussion

EXCLUSION: May not be taken by students who have completed HIST 2020X/Y.06, RUSN 2021X/Y.06

### RUSN 2023.03: Soviet Russia.

Equivalent to the second half of HIST 2020X/Y.06. Chronologically covers the Soviet period of Russian history, from 1917 to Gorbachev.

FORMAT: Lecture/discussion

EXCLUSION: May not be taken by students who have completed HIST 2020.06 or RUSN 2021X/Y.06

### RUSN 2029.03: Conversation.

Development of conversation skills and vocabulary building

FORMAT: Conversation practice

PREREQUISITE: Student must be enrolled in the 2nd year grammar class or must have permission of instructor.

### RUSN 2034.03: History of Russian Natural Science.

Conducted in English.

An overview of the history of Russian natural science from the foundation of the Russian Academy of Sciences during the reign of Peter the Great to modern times.

FORMAT: Lecture/discussion

### RUSN 2036.03: Russian Film I.

This course surveys Russian film from the Silent Era to "Thaw" (1900-1960s). Its goal is to develop students' knowledge of cinema in its historical and cultural context through critical watching, reading, thinking, and writing. The course will concentrate on the development of main genres and styles in Russian and official Soviet cinema, major directors and styles. Full versions of films will be screened each Monday night. Later in the week they will be followed by a lecture, discussion, and viewing additional short clips.

FORMAT: Lecture/discussion

CROSS-LISTING: THEA 2336.03

### RUSN 2037.03: Russian Film II.

This course will provide an overview of the most significant trends and periods in the development of Russian cinema since the 1960s until the latest blockbusters. The course will concentrate on the development of main genres and styles, major directors and productions, issues of race, gender, war and violence in Soviet, post-Soviet and new Russian cinema.

FORMAT: Lecture/discussion

CROSS-LISTING: THEA 2337

### RUSN 2046.03: East European Cinema: War, Love, and Revolutions.

This course brings post-Berlin Wall European film into the fray of current debates on cultural identity, transnational cinema, and postcolonialism. Despite the state control, the filmmakers of communist Europe were often more bold, honest and provocative than their profit-driven Hollywood counterparts. By drawing on political, cultural, and philosophical discourses, the course will offer pointed analyses of most significant East European films that touch upon issues of ethnicity, gender, and overcoming censorship.

FORMAT: Lecture/discussion 3 hours

CROSS-LISTING: THEA 2346.03

### RUSN 2051.03: Survey of Russian Literature.

Conducted in English with section in Russian for majors. Required for majors and honours candidates. An overview of Russian literature from its beginnings through Tolstoy.

FORMAT: ✍ Writing Requirement (when taken in combination with RUSN 2052.03), lecture and discussion 3 hours  
EXCLUSION: RUSN 2050.06

### **RUSN 2052.03: Survey of Russian Literature.**

Conducted in English with section in Russian for majors. Required for majors and honours candidates. An overview of Russian literature from Chekhov to the present.

FORMAT: ✍ Writing Requirement (when taken in combination with RUSN 2051.03), lecture and discussion 3 hours  
EXCLUSION: RUSN 2340.06

### **RUSN 2061.03: Russian Modernism.**

Conducted in English. A study of trends in literature and the arts at the turn of the century. Known as “The Silver Age”, this is one of the most innovative and dynamic periods in Russian culture.

FORMAT: Lecture/discussion  
EXCLUSION: RUSN 2340.03

### **RUSN 2062.03: Literature of Revolution - The 1920s in Russian Literature.**

Conducted in English. A study of experiment and submission during one of the most exciting, diverse, and frustrating periods in Russian letters. “Socialist realism” was not yet official doctrine; innovation in literature was tolerated. Writers openly pondered the role of the individual and culture in the new collective society.

FORMAT: Lecture/discussion  
EXCLUSION: RUSN 3250.03

### **RUSN 2070.03: Russian Literature and Culture since Stalin's Death.**

Conducted in English. The literary and cultural history of Russia after Stalin's death in 1953. Among the major issues considered are the significance of Stalin's death, the “Thaw” and de-Stalinization, samizdat and literature since glasnost.

FORMAT: Lecture/discussion

### **RUSN 2081.03: Contemporary Russian Culture - The Seven Deadly Sins.**

Conducted in English. The fall of the Soviet Union has allowed a deluge of once 'sinful' excesses, all of which define Russia's accelerated processes of multiculturalism. This class investigates such 'sins' in the following order: pride, covetousness, lust, anger, gluttony, envy and sloth.

### **RUSN 2151.03: Introduction to Russian Folklore.**

Conducted in English. A broad survey of traditional Russian popular beliefs and practices: proverbs, riddles, and counting rhymes; the rites and rituals of the Russian agricultural year; fairy tales and epic poems (byline); reconstruction of the Slavic pantheon and its evolution.

### **RUSN 2191.03: Survey of Russian Theatre.**

Conducted in English with a section in Russian for majors. An overview of Russian writing for the theatre, with emphasis on the nineteenth and twentieth centuries.

FORMAT: Lecture/discussion

### **RUSN 2270.03: The Russian “Heroine”.**

Conducted in English. The strong spiritual and moral force which Russian women have exerted on their society is richly reflected in literature. The class focuses on the portrayal of several literary heroines and discusses their impact on both the literary imagination and society.

FORMAT: Lecture/discussion

### **RUSN 2500.03: Tolstoy.**

Conducted in English. An introduction to the work of this enigmatic spiritual giant of Russian literature. Reading includes War and Peace, Anna Karenina, and Resurrection.

FORMAT: Lecture/discussion

### **RUSN 2550.03: Russian and Eastern European Science Fiction.**

This course will provide an introduction to science fiction in the Russian and Eastern European context. Emphasis on the origins from fantastic elements of Russian literature, utopian, socialist, and dystopian impulses, as well as the post-

Soviet experience as apocalypse. Authors will include: Gogol, Zamyatin, Capek, Bulgakov, the Strugatskys, Lem, Pelevin.

FORMAT: Lecture/discussion

### **RUSN 2750.03: Dostoevsky and the Russian Idea.**

Conducted in English. Dostoevsky's novels are of the highest importance in understanding the fate of Russia and the thoughts of other great Russian authors and thinkers. Crime and Punishment and The Brothers Karamazov are taken as the basis for discussion. The works of I. Turgenev and Lev Tolstoy are discussed together with the ideas of such great Russian philosophers as V. Solovyev and N. Berdyaev.

FORMAT: Lecture/discussion

### **RUSN 2760.03: Dostoevsky and Western Literature.**

Conducted in English. With all his love for Russia, Dostoevsky treasured the West and its literature. It is impossible to understand Dostoevsky and his main novels, including The Idiot and The Devils without Hamlet by Shakespeare, Don Quixote by Cervantes, Faust by Goethe, some plays by F. Schiller, etc. The class traces the influence of Western ideas on Dostoevsky and his influence on such Western thinkers as Nietzsche and Freud.

FORMAT: Lecture/discussion

### **RUSN 3002.03: Advanced Russian I.**

Conducted in Russian. Following a thorough review, this class concentrates on expanding all aspects of the student's knowledge of Russian grammar. Texts are read extensively and intensively. Discussion and compositions are based on the assigned readings.

FORMAT: Lecture/discussion/4 hours  
PREREQUISITE: RUSN 2000.06 or equivalent  
EXCLUSION: RUSN 3000X/Y.06

### **RUSN 3003.03: Advanced Russian II.**

A continuation of RUSN 3002.03.

FORMAT: Lecture/discussion/4 hours  
PREREQUISITE: RUSN 3002.03 or equivalent  
EXCLUSION: RUSN 3000X/Y.06

### **RUSN 3011.03: Grammar I.**

This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Intensive study of the finer points of Russian grammar. Topics include verbs of motion, aspect, impersonal constructions, government and agreement, and other themes.

EXCLUSION: RUSN 3010.06

### **RUSN 3012.03: Grammar II.**

This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Continuation of RUSN 3011.03

EXCLUSION: RUSN 3010.06

### **RUSN 3029.03: Conversation.**

Development of conversational skills and vocabulary building.

FORMAT: Conversation practice

PREREQUISITE: Student must be enrolled in the 3rd year grammar class or must have permission of instructor.

EXCLUSION: RUSN 3010.06

### **RUSN 3031.03: Conversation.**

This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Systematic development of conversational ability on everyday themes: transport, city services, theatre, sport, shopping, the library, the educational system, the structure of the government, etc.

### **RUSN 3032.03: Translation.**

This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Work on translation of literary, business and journalistic texts.

### **RUSN 3035.03: Literature: Reading and Analysis.**

This class is offered in Russian only as part of the Intensive Russian Programme in Russia. Reading and analysis of literary texts.

### **RUSN 3090.03: Russian Society Today.**

Basic institutions of Russian society are considered in their historical context, with special attention to the role of official culture and literature, the workings of the economy, and social stratification.

RECOMMENDED: RUSN 1000.06, 2nd year Russian (This class is part of the Fall Intensive Russian Programme.)

FORMAT: Seminar  
CROSS-LISTING: HIST 3090.03/5090.03

### **RUSN 3091.03: Russian Intellectual History.**

This class will examine intellectual developments in modern Russia, from Peter the Great to the late 20th century. Among the possible topics we will cover are: Russian thought and the West, the Russian intelligentsia and its relationship with the people and the state, Russian Orientalism, the roles of literature, arts, and media in Russian politics and society, the nature of dissent and revolutionary movements, as well as the functions of historical memory in Russian thought and culture. Throughout the course we will approach Russia as a multinational country that developed in constant and close interaction with the outside world.

FORMAT: Lecture/discussion.

PREREQUISITE: Some Russian history required; Recommended are HIST 2021.03 or HIST 2022.03.

CROSS-LISTING: HIST 3030.03

### **RUSN 3092.03: Russian Topics.**

Topics to be studied and researched will vary from year to year. They may include the sources of Bolshevism/Leninism, the doctrine of peaceful coexistence, the position of national minorities, the role of literature (official and samizdat) and the press, the Cult of Personality, Khrushchev's "Thaw", Brezhnev, Gorbachev, and Yeltsin.

RECOMMENDED: HIST 2020.06 or RUSN 2022.03/2023.03

FORMAT: Seminar

PREREQUISITE: One 2000-level class in history

CROSS-LISTING: HIST 3092.03

### **RUSN 3096.03: The History of Ideas in Russia: From Official Nationality to Solzhenitsyn's Neo-Slavophilism.**

This class examines some of the main currents in Russian intellectual history from the middle of the nineteenth century through the 1990s. Topics include classical Slavophilism and early Westernism, Populism and Nihilism, Anarchism, Marxism, Leninism, Socialist Realism, anti-Stalinism, Glasnost, neo-Westernism (Sakharov), and neo-Slavophilism (Solzhenitsyn).

RECOMMENDED: HIST 2020.03 or RUSN 2022.03/2023.03

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 3096.03

### **RUSN 3099.03: Solzhenitsyn Seminar.**

Alexander I. Solzhenitsyn is one of the most controversial and influential Russian writers of the twentieth century. His life spanned the entire Soviet period and even now his creative oeuvre continues unabated. Solzhenitsyn's books are a unique blend of literary imagination, philosophical reflections, memoirs and witness-bearing, historical conscience and chronicle. This seminar will study several of his more important historical works; these may include *One Day in the Life of Ivan Denisovich*, *Cancer Ward*, *First Circle*, *Lenin in Zurich*, *Gulag Archipelago*, *August 1914* and subsequent volumes of the cycle.

FORMAT: Seminar

CROSS-LISTING: HIST 3099.03

### **RUSN 3102.03: Black Identity in Pushkin (Russian).**

Conducted in Russian. A close study of the poetry and prose of the father of Russian literature, Aleksandr Sergeevich Pushkin, needs to be grounded in the centrality of his Black Identity for his life and oeuvre. Pushkin's unfinished work Arap Petra Velikogo serves as the window illuminating his artistic genius and struggle for a mode of expression for his own identity. The silences which shroud Pushkin's blackness are probed to reveal their ideological, historical, legal and human significance, which are then critically assessed. The major narrative and lyric poems, Eugene Onegin, the Little Tragedies, Boris Godunov, the Tales of Belkin, the Queen of Spades, as well as Pushkin's letters and critical works are revisited in this new light. Students will explore such themes as marginalization, liberty, prescience, aesthetic innovation, and the poet as political symbol and creator of a new literary language. Restoring Pushkin's identity to its proper place is a condition -- sine qua non-- for understanding the true meaning of his work for modern literature and its ongoing influence on world culture.

FORMAT: Lecture/discussion

PREREQUISITE: RUSN 2003.03

EXCLUSION: RUSN 2100.03

### **RUSN 3103.03: Black Identity in Pushkin (English).**

Conducted in English. A close study of the poetry and prose of the father of Russian literature, Aleksandr Sergeevich Pushkin, needs to be grounded in the centrality of his Black Identity for his life and oeuvre. Pushkin's unfinished work

Arap Petra Velikogo serves as the window illuminating his artistic genius and struggle for a mode of expression for his own identity. The silences which shroud Pushkin's blackness are probed to reveal their ideological, historical, legal and human significance, which are then critically assessed. The major narrative and lyric poems, Eugene Onegin, the Little Tragedies, Boris Godunov, the Tales of Belkin, the Queen of Spades, as well as Pushkin's letters and critical works are revisited in this new light. Students will explore such themes as marginalization, liberty, prescience, aesthetic innovation, and the poet as political symbol and creator of a new literary language. Restoring Pushkin's identity to its proper place is a condition -- sine qua non -- for understanding the true meaning of his work for modern literature and its ongoing influence on world culture.

FORMAT: Seminar

### **RUSN 3121.03: 19th Century Russian Prose and Poetry.**

Conducted in Russian. Students read, translate, and critically interpret representative works of the nineteenth century. Original texts are supplied with vocabularies and grammatical notes.

FORMAT: Lecture/discussion

PREREQUISITE: Two years of Russian

EXCLUSION: RUSN 3120.03

### **RUSN 3122.03: 20th Century Russian Prose and Poetry.**

Conducted in Russian. Students read, translate, and critically interpret representative works of the twentieth century. Original texts are supplied with vocabularies and grammatical notes.

FORMAT: Lecture/discussion

PREREQUISITE: Two years of Russian

EXCLUSION: RUSN 3120.03

### **RUSN 3330.03: Masterpieces of Russian Short Fiction.**

In-depth analysis of selected masterpieces of Russian nineteenth and twentieth century short fiction, including works by Pushkin, Lermontov, Gogol, Tolstoy, Sologub, Chekhov, Bunin, Nabokov, Krzhizhanovsky, Bulgakov, Babel, Zoshchenko, Kharms, Eppel, Dovlatov, Pelevin, and Sorokin.

FORMAT: Lecture/discussion

### **RUSN 3520.03: Chekhov and Turgenev.**

Conducted in English. Close analysis and discussion of the major works of Turgenev, sensitive portrayer of socio-political and psychological issues of the second half of the nineteenth century in Russia, and Chekhov, unequaled short-story writer and radical innovator in modern theatre.

FORMAT: Lecture/discussion

### **RUSN 3800.03: Gogol and His Tradition.**

Author of "Overcoat," "Nose," Taras Bulba, Dead Souls, Gogol has been proclaimed "a pathological liar and honest anatomist of the soul, jejune jokester and tragic poet, realist and fantast". An in-depth study of this major writer.

FORMAT: Lecture/discussion

### **RUSN 3820.03: Nabokov.**

A close study of selected works by consummate twentieth century prose stylist Vladimir Nabokov -- novelist, poet, critic and translator, author of the notorious *Lolita*.

INSTRUCTOR(S): Y. Leving

FORMAT: Lecture/discussion

CROSS-LISTING: ENGL 3820.03

### **RUSN 4000X/Y.06: The Structure of Contemporary Standard Russian.**

This class is offered in Russian. Required for honours candidates. Systematic study of the structure of Russian: analysis of special problems in phonology, morphology, syntax, and stylistics. Tailored to the individual needs of the student, with emphasis on practical applications of linguistic insights.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: RUSN 3000.06 or permission of the instructor

### **RUSN 4302.03: Russian Poetry.**

Conducted in Russian. A combination of an introduction to the theory of poetry with close analysis of masterpieces of nineteenth and twentieth century Russian poetry chosen to fit the interests of the individual student.

FORMAT: Lecture/discussion

PREREQUISITE: Permission of the instructor

### **RUSN 4950X/Y.03: 4960/03, 4990.06: Special Topics.**

Conducted in Russian. Offers the student an opportunity to work with an advisor in researching subjects which are not regularly taught in the Department. Recent topics have included Old Church Slavonic, the historical phonology and morphology of Russian, and Russian symbolism. Students who wish to register for a specific program should consult the chair of the Department.

NOTE: Students taking 4990 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: Permission of the Instructor

## **Sociology and Social Anthropology**

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Location: 6135 University Avenue, Room 1128  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-6593  
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### **Dean**

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD b (Toronto)

### **Chair**

Gardiner Barber, Pauline (494-2069)

### **Undergraduate Coordinator**

Gambold, L. (494-3689)

### **Graduate Coordinator**

Whelan, E. (494-6752)

### **Professors Emeriti**

Barkow, J. H., AB (Brooklyn), AM, PhD (Chi)  
Binkley, M. E., BA, MA, PhD (Toronto)  
Butler, P. M., BA (MUN), MA (UNB), PhD (Toronto)  
Clairmont, D. H., BA, MA (McMaster), PhD (Wash. U)  
Thiessen, V., BA (Man), MA, PhD (Wis)

### **Professors**

Apostle, R. A., BA (Simon Fraser), MA, PhD (Calif)  
Gardiner Barber, P.T., BA, MA (Auck), PhD (Toronto)  
Murphy, C. J. BA (St. FX), MA (Dalhousie), PhD (Toronto)

### **Associate Professors**

Cooper, A., BA (Toronto), MA (Ontario Institute for Studies in Education), PhD (Toronto)  
DuBois, L., BA (McGill), MA, PhD (New School)  
Fitting, E., BA (Toronto), MA, PhD (New School)  
Helland, C., BA, MA (Concordia), PhD (Toronto)  
Noble, B., BA, MA, PhD (Alberta)  
Oakley, R., BA (Saint Mary's), MA, PhD (Toronto)  
Ramos, H., BA (York), PhD (McGill)  
Whelan, E., BA (Winnipeg), MA (Queen's), PhD (Carleton)

### **Assistant Professors**

Gambold, L., BA (Illinois), MA, PhD (UCLA)  
Guy, J.-S., BA (Hons), MA (Laval), PhD (UQAM)  
Hetherington, K., BA (Concordia), MA (Dalhousie), PhD California (Davis)  
Martin, F., BA (Queen's), MA (Melbourne)  
Park, M., BA (Toronto), MA (York), PhD (London School of Economics)  
Radice, M., BA (U of Sussex), MA (U Laval), PhD (INRS - UCS)  
Yoshida, Y., BA (Tsuda College), MA, PhD (McGill)

### **Adjunct Professors**

Cohn, F., BA, MEd (Harvard), PhD (Minn)  
Davis, A., BA (SMU), MA (Manitoba), PhD (Toronto)  
Gamberg, H. V., BA (Brandeis), AM, PhD (Princeton)  
Khasnabish, A., BA, MA, PhD (McMaster)  
Looker, D., BA (Carleton), MA (Waterloo), PhD (McMaster)  
Morgan, J. G., BA (Nott), MA (McMaster), DPhil (Oxon)  
Phyne, J., BA (Memorial), MA, PhD (McMaster)  
Thompson, S., BA (Memorial), PhD (Cambridge)



## I. Introduction

Social Anthropology and Sociology are related and overlapping disciplines. Although in some universities they are found in separate departments, this Department and many of its classes blur the distinction between them and emphasize the areas of overlap. The Department is committed to a program which stresses the areas of convergence between the two disciplines.

Sociology and Social Anthropology provide an academic training which is rigorous and cosmopolitan. Students develop research skills along with a general intellectual preparation which stands them in good stead for graduate work in the disciplines or for a broad range of professions such as law, medicine, social work or journalism.

### A. Sociology

From its inception in the nineteenth century, sociology has been concerned with understanding the growth and evolution of modern societies. Classical sociologists attempted to identify universal laws of human behaviour which would help them to understand the nature of social change and of social order, the role of the individual vis-a-vis the broader society, and the production and reproduction of social inequalities. While contemporary sociologists have abandoned the search for universal laws, the discipline continues to study the social context of human action, and has contributed substantially to knowledge and understanding of our own world.

### B. Social Anthropology

Anthropology is composed of four subfields, social/cultural, archaeological, biological, and linguistic. The strength of our program is the minor upon Social Anthropology, the area most complementary to Sociology. Social Anthropology, with its emphases on global context, continuity and change, questions of human and group identity, and views on human nature, may focus on local cultures or entire civilizations. For example, some Social Anthropologists study historical and contemporary conditions of indigenous groups, tribal or peasant societies, others conduct their research within industrial societies. Our program provides the opportunity for students to become conversant with the comparative cultural implications of modern societies such as different forms of family and kinship practices, changing gender relations, the organization of work, law and social injustice, medicine and health, religion, and political economy. How do people in different places and times react, resist, and adapt to change?

## II. Degree Programs

The Department's BA degree program is offered as a 15 credit minor or a 20 credit major in Sociology and Social Anthropology. The BA honours degree is offered through more specialized programs of study in Sociology or in Social Anthropology. Dalhousie graduates wishing to upgrade from a 15 credit minor may complete an additional five credits to be awarded the Major Conversion or the Honours Conversion. An honours degree is normally the required preparation for graduate study.

All Bachelors degree programs are governed by the general Requirements for Degrees set out in the University Calendar, in addition to the departmental requirements stated below. See "Degree Requirements" section page 131 of this calendar for complete details.

NOTE:

1. **No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1050.06, 1100.06, 1200.06, or both 1002.03 and 1003.03.**
2. For purposes of gaining entry to 2000 and 3000 level SOSA classes, King's Foundation Year satisfies the introductory class prerequisite.
3. If they so elect, King's Foundation Year students may also obtain credit for one introductory class from SOSA 1000.06, 1050.06, 1100.06, or 1200.06 or both 1002.03 and 1003.03.
4. Students may obtain credit for both SOSA 2001.06 and 2002.06, and those proposing to apply to the honours program are particularly encouraged to acquire a foundation in both disciplines.

### A. Concentrated Honours BA Program

The Department's honours programs are designed for students with an interest in, and demonstrated aptitude for, advanced study in either Sociology or Social Anthropology. Admission to these programs is based solely on academic performance. More specifically, the Department requires a grade average of B+ (3.30) or higher on classes above 1000 in SOSA and the minor (or second major)

subject. In addition, a minimum cumulative GPA of 2.70 is required. Potential applicants should consult with one of the Department's Undergraduate Advisors, preferably during their second year of study, and should plan to take the 3000 level classes required for honours during their third year. The Advisor will assist the student to design a program of study with a minor in Social Anthropology or Sociology meeting the general Faculty requirements and the specific requirements for each program as set out below. It is important that students have a strong foundation before undertaking the honours thesis, therefore SOSA 2001 or SOSA 2002, and two of the required 3000 level classes are pre-requisites to the departmental Honours Seminars (SOSA 4000 X/Y or SOSA 4500 X/Y). Students who, after their third year, have not taken the pre-requisite classes may still do honours, but should plan to do so part-time over two years. The honours thesis paper is produced for the class SOSA 4500X/Y.06 (Sociology) or SOSA 4000.06 (Social Anthropology). This fulfills the College of Arts and Science Honours Qualifying Examination requirement. Students with the honours concentration in Sociology may not declare Social Anthropology as their secondary subject; students with the honours concentration Social Anthropology may not declare Sociology as their secondary subject.

### Departmental Requirements

#### Classes required in Concentrated Honours in Social Anthropology:

##### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

##### 2000 level

- SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

##### 3000 level

- SOSA 3400.03
- SOSA 3402.03
- SOSA 3403.03

##### 4000 level

- SOSA 4000.06
- SOSA 4003.03
- A minimum of one additional SOSA 4000 level seminar (0.5 credit)

In total a minimum of nine and a maximum of 11 SOSA credits beyond the 1000 level are required.

#### Classes required in Concentrated Honours in Sociology:

##### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

##### 2000 level

- SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

##### 3000 level

- SOSA 3401.03
- SOSA 3402.03
- SOSA 3403.03
- SOSA 3405.03

##### 4000 level

- SOSA 4001.03 or 4003.03
- SOSA 4500X/Y.06
- A minimum of one additional SOSA 4000 level seminar (0.5 credit)

In total a minimum of nine and a maximum of 11 SOSA credits beyond the 1000 level are required.

NOTE: Students considering graduate work in Sociology are strongly advised to take SOSA 4002.03: Quantitative Analysis for the Social Sciences II, since intermediate statistical competence is often required as a component of graduate social science programs.

## B. Combined Honours in Sociology or Social Anthropology and another field

The requirements noted below normally apply. In some cases a variation may be allowable when approved by honours advisors in both departments, for example when a similar class is required by both departments.

**Classes required in Combined Honours with Sociology as the primary subject:**

### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

### 2000 level

- SOSA 2002.06 (recommended) or 2001.06

### 3000 level

- SOSA 3401.03
- SOSA 3402.03
- SOSA 3403.03
- SOSA 3405.03

### 4000 level

- SOSA 4001.03 (recommended) or 4003.03
- SOSA 4500.06
- A minimum of one additional SOSA 4000 level seminar (half credit) excluding SOSA 4211.03

In total, a minimum of 11 and maximum of 14 credits beyond the 1000 level in the two honours subjects with a grade of "C" or better. Of this, at least five credits must be in the other honours subject.

**Classes required in Combined Honours with Social Anthropology as the primary subject:**

### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

### 2000 level

- SOSA 2001.06 (recommended) or 2002.06

### 3000 level

- SOSA 3400.03
- SOSA 3402.03
- SOSA 3403.03

### 4000 level

- SOSA 4003.03
- SOSA 4000.06
- A minimum of one additional SOSA 4000 level seminar (half credit) excluding SOSA 4211.03

In total, a minimum of 11 and maximum of 14 credits beyond the 1000 level in the two honours subjects with a grade of "C" or better. Of this, at least five credits must be in the other honours subject.

**Classes required in Combined Honours with Sociology or Social Anthropology as the secondary subject:**

### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

### 2000 level

- SOSA 2001.06 or 2002.06

### 3000 level

- For Sociology: one of SOSA 3401.03, 3402.03, 3403.03 or 3405.03
- For Social Anthropology: one of SOSA 3400.03, 3402.03, 3403.03

In total, a minimum of 11 and maximum of 14 credits beyond the 1000 level in the two honours subjects with a grade of "C" or better. Of this, at least five credits must be in SOSA classes.

## C. Honours Conversion in Sociology or Social Anthropology

This program permits Dalhousie graduates to undertake an additional five credits upgrading their qualifications from the 15 credit BA to Honours. Students must meet the usual conditions for admission to honours, and complete the full set of Honours requirements in either Sociology or Social Anthropology. Interested students should consult an Undergraduate Advisor. Students with a 20 credit major may also upgrade to honours.

## D. BA (20 credit) Major in Sociology and Social Anthropology

### Departmental requirements

#### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

#### 2000 level

- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

#### 3000/4000 level

- Total of three full SOSA credits, including at least one half credit at the 4000 level

In total a minimum of six and a maximum of nine SOSA credits beyond the 1000 level are required.

## E. BA (20 credit) Double Major in Sociology and Social Anthropology

Students must obtain at least 10 and no more than 14 credits beyond the 1000 level in two allied subjects, with no fewer than five and no more than eight in either.

### Departmental requirements

#### 1000 level

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, both 1002.03 and 1003.03 or King's Foundation Year Program

#### 2000 level

- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

#### 3000/4000 level

- Two full SOSA credits at the 3000 level or above

## F. BA (20 credit) Major in Sociology and Social Anthropology Conversion

This program permits Dalhousie graduates to undertake an additional year of study upgrading their qualifications from the 15 credit BA to the 20 credit BA. Students must meet the full set of Major requirements.

## G. BA (15 credit) Minor in Sociology and Social Anthropology

See requirements for minor below.

## H. Minor in Sociology and Social Anthropology

### Departmental Requirements

#### 2000 level

- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

#### 3000 level

- One full SOSA credit

In total, three to four and a half SOSA credits beyond the 1000 level are required.

## I. Minor in Sociology and Social Anthropology of Critical Health Studies

This minor requires three full credits (18 credit hours) above the 1000 level from the list below. PLEASE NOTE THAT ONLY A SOME OF THESE CLASSES WILL BE OFFERED IN ANY GIVEN YEAR. Students may pick any classes from the following list.

- SOSA 2001.06: Ethnography in Global Context OR SOSA 2002.06: The Sociological Perspective (only one of these two may be included in the minor)
- SOSA 2401.06: Food and Eating Across Cultures
- SOSA 2400.06: Health and Illness Across Cultures
- SOSA2502.03: Biomedicine and the Illness Experience
- SOSA2501.06: Sociology of Health and Illness
- SOSA 3135.03: The Social Organization of Health Care
- SOSA 3143.03: Health, Illness and the World System
- SOSA 3145.03: Gender and Health
- SOSA 3147.03: Social Gerontology
- SOSA 3148.03: Drugs, Health and Society
- SOSA 3149.03: Childhood in Cross Cultural Perspective
- SOSA 3150.03: Sociology and Anthropology of the Body
- SOSA 3245.03: Women and Aging
- SOSA 3250.03: Beyond Genes and Circuits: The Anthropology and Sociology of Technoscience

## J. Minor in the Sociology and Social Anthropology of Social Justice & Inequality

This minor requires three full credits (18 credit hours) above the 1000 level from the list below. PLEASE NOTE THAT ONLY A SOME OF THESE CLASSES WILL BE OFFERED IN ANY GIVEN YEAR. Students may choose from the following classes:

- SOSA 2001.06: Ethnography in Global Context OR SOSA 2002.06: The Sociological Perspective (only one of these two may be included in the minor)
- SOSA 2041.03: Describing Social Inequality
- SOSA 2042.03: Explaining Social Inequality
- SOSA 2115.03: African Canadian Society, Culture and Resistance
- SOSA 2180.06: Crime and Criminal Justice
- SOSA 2181.03: Explaining Crime and Criminal Behavior
- SOSA 2182.03: Exploring Crime and Criminal Behavior
- SOSA 2190.06: Comparative Perspectives on Gender
- SOSA 2260.03: Society, Politics, and Culture
- SOSA 3002.03: Native Peoples of Canada
- SOSA 3006.03: Comparative Perspectives on Gender and Work
- SOSA 3015.03: Popular Memory SOSA 3100.03: Feminist Perspectives in Sociology and Anthropology
- SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America
- SOSA 3190.03: Social Movements
- SOSA 3206.03: Ethnicity, Race and Nationalism
- SOSA 3215.03: Migration and Identity
- SOSA 3225.03: Culture, Rights and Power SOSA 3275.03: Crime and Public Policy SOSA 3283.03: Globalized Security and Justice: the Challenge of Global Crime and Terrorism
- SOSA 3285.03: Sociology of Law
- SOSA 3295.03: Society and the Police

## K. Minor in the Sociology and Social Anthropology of Economy, Work and Development

This minor requires three full credits (18 credit hours) above the 1000 level from the list below. PLEASE NOTE THAT ONLY A SOME OF THESE CLASSES WILL BE OFFERED IN ANY GIVEN YEAR. Students may choose from the following classes:

- SOSA 2001.06: Ethnography in Global Context OR SOSA 2002.06: The Sociological Perspective (only one of these two may be included in the minor)
- SOSA 2111.03: Is there an Atlantic Canada?
- SOSA 2140.03: Going Global; Geography, Economy, and Work in the 21st Century
- SOSA 2141.03: Good Jobs, Bad Jobs
- SOSA 2270.03: Introduction to Popular Culture
- SOSA 2271.03: Popular Culture in a Global Context
- SOSA 2401.06: Food and Eating Across Cultures
- SOSA 3005.03: Knowledge, Work and Culture in the Contemporary World
- SOSA 3006.03: Comparative Perspectives on Gender and Work

- SOSA 3014.03: Rethinking Culture and Class
- SOSA 3060.03: Social Change and Development
- SOSA 3096.03: Introduction to Demography
- SOSA 3165.03: Peoples and Cultures of the World: Selected Area Studies
- SOSA 3168.03: Issues in Latin American Society
- SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America
- SOSA 3200.03: Environmental Anthropology SOSA 3211.03: Continuity and Change in Rural Societies SOSA 3214.03: Living in a Globalized World SOSA 3215.03: Migration and Identity SOSA 3284.03: Living in Cities SOSA 3310.03: Indian Society: Change and Continuity

## III. Class Descriptions

Some classes listed may not be offered in a given academic year. Consult the timetable for details. Where prerequisites apply, students requesting exceptions must obtain permission directly from the instructor involved.

Note:

1. Enrolment in 4000 level classes is restricted to Honours and Major students in their fourth year of study.
2. No more than one credit may be obtained for introductory classes from SOSA 1000.06, 1050.06, 1100.06, 1200.06 or both 1002.03 and 1003.03.
3. King's Foundation Year Program satisfies the introductory class prerequisite.

### SOSA 1002.03: People and Culture.

The course is an introduction to both anthropology and sociology. It presents to the students the research field that both scientific disciplines share in common: how humans organize themselves in groups, be it tribes or states, and how group organization affect individual lives. For this purpose, the course proceeds to explain and apply a series of fundamental concepts like culture, socialization, institutions, stratification, and so forth. Students also explore the various dimensions of social life, either in Canada or abroad: from politics to religion, from economy to sexuality.

FORMAT: Lecture

EXCLUSION: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, 1200X/Y.06

### SOSA 1003.03: People and Society.

This course builds on the material developed in SOSA 1002 though the latter is not a requirement for students. By making use of the basic concepts in anthropology and sociology, students examine specific empirical cases relevant for the scientific study and understanding of human activities in the world today. Topics may include: control and deviance, gender and health, racial and ethnic inequality, self and identity, work and organization, globalization, and so on.

FORMAT: Lecture

EXCLUSION: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y, 1100X/Y.06, 1200X/Y.06

### SOSA 1050X/Y.06: Explorations in Culture and Society.

What are culture and society? How do we study and understand them? In beginning to answer these questions, the class introduces students to the key concepts, perspectives and methods of sociology and social anthropology. Taking examples from Canada and around the globe, we will look at such topics as beliefs, values, power, social structure, economy and more. This class fulfills the first-year writing requirement. It also satisfies the prerequisite for enrolment in upper level classes in sociology and social anthropology.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: ✍ Writing Requirement, lecture

EXCLUSION: SOSA 1000X/Y.06, or 1002.03/1003.03, 1100X/Y.06, or 1200X/Y.06.

### SOSA 1100X/Y.06: Introduction to Anthropology.

Social anthropologists study cultural diversity in western and non-western societies. Often living among the people they study, anthropologists attempt to understand the structures that shape and constrain peoples' lives, and the ways in which people make sense of their changing circumstances. Classic studies focused on rural people in the developing world (hunter-gatherers, pastoralists, peasants). Contemporary studies are just as likely to focus on development, migration, artists, boardroom rituals or street gangs. Theories and methods from anthropology can be applied to a wide range of academic and practical settings including development, politics, economics, health, law, art, and human rights.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

EXCLUSION: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06 and 1200X/Y.06

### **SOSA 1200X/Y.06: Introduction to Sociology.**

This class introduces students to basic sociological concepts, the logic of social inquiry, and major theoretical and methodological issues in the field. Substantive class contents may include the study of culture, socialization, deviance, social organizations, institutions, social roles, and demography. Emphasis is on the study of modern industrial societies with special attention given to Canadian society.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture

EXCLUSION: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06 and 1100X/Y.06

### **SOSA 2001X/Y.06: Ethnography in a Global Context.**

Ethnography describes how people conduct their lives in a particular time and place. This class examines the challenge, complexity, strengths, and limitations of ethnographic knowledge and writing in Social Anthropology. Students will learn about a number of different ethnographic settings which may vary from year to year. A selection of ethnographies, films, autobiographical writing, and critical commentaries will be used to reveal how social anthropologists generate ethnographic knowledge about past and present societies, and why research priorities shift. Approved with International Development Studies.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 2002X/Y.06: The Sociological Perspective: Thinking and Doing Sociology.**

Sociologists are interested in understanding the social world. They do not rely on preconceived ideas alone to enrich this understanding, but see the need to conduct studies, carry out investigations, make observations, analyze findings, formulate ideas, and construct theories and interpretations about what they find. This class looks at the ways sociologists go about their work. What are some of the dominant ways of thinking current in sociology today? What are the relationships between such ways of thinking and what are seen as questions to investigate? How do sociologists do their research? What are social surveys, interviews, theories, sociological ideas? What is distinctive about a sociological way of looking at a problem?

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 2004.03: Current Controversies.**

This course will examine current social problems, puzzles and controversies. It will introduce perspectives to explore and understand social fads, critical events, and social debates. Readings and assignments will look at issues like the rise of social networking media, environmental disasters, and contemporary controversies, such as, austerity measures, same-sex-marriage, immigration, and abortion, among others.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1002.03 and 1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### **SOSA 2041.03: Describing Social Inequality.**

This course examines inequality in practice. The focus will be on applying understandings of inequality to empirically describe cases of injustices in order to look at measures, practices, and policies regarding inequality. The evidence used to describe inequality will be critically examined through theoretical considerations. Possible topics to be covered in readings and assignments include economic, social, cultural, political and health inequalities among other contemporary issues of social justice.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1002.03 and 1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2040X/Y.06

### **SOSA 2042.03: Explaining Social Inequality.**

This course examines various perspectives on inequality. It will examine how various forms of social inequality emerge and persist. The focus will be on the unequal distribution of wealth and sources of social power. Readings and assignments will focus on theories and explanations of inequality as well as historical and contemporary cases, including class, ethnicity, race, nation, region, gender, orientation and other manifestations of inequality.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1002.03 and 1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2040X/Y.06

### **SOSA 2045.03: Indian Society: Change and Continuity.**

The objective of this half-credit class is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an unbroken living civilization of great antiquity. The focus of the class will be on selected, significant aspects of Indian society with particular emphasis on issues of current relevance. Topics discussed include: a historical background, social structure, political and social constraints to economic development, health issues, major religions and philosophy, development and foreign policy since independence, science and technology, disaster relief and development, and literature. This class counts as a half-credit in Sociology and Social Anthropology towards the IDS established discipline requirement.

INSTRUCTOR(S): Staff

FORMAT: Lecture

CROSS-LISTING: INTD 2045.03

EXCLUSION: INTD 3045.03

### **SOSA 2090X/Y.06: Youth and Society.**

Events of enormous future consequences occur in the period between childhood and adulthood. Competing sociological and anthropological arguments try to explain the nature of the relationships between youth and society. This course critically examines the arguments, with special focus on assessing the empirical evidence that might be used to support or refute them. That is, the context of youth will be used to illuminate the connections between argument and evidence, theory and data. Although the emphasis is on youth in Canadian society, a comparative perspective will be employed.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

### **SOSA 2101.03: Environment and Culture.**

Concern about the environment is an increasingly widespread phenomenon as more people and confront their relationship to a changing ecology. Environmental issues like pollution, global warming, or resource depletion, have global as well as personal implications. The efforts of cities to deal with environmental pollution, for example, may lead to conflicts with rural regions, and changes in consumption patterns in one country may have consequences for the environment of other countries. This class will explore key relationships between human culture and the physical environment. Topics to be examined may include: environmental knowledge, food and agriculture, environmental ethics, health, resource management and conservation.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2100.06

### **SOSA 2102.03: Political Ecology.**

Environmental issues, like all things involving human societies, are always political issues. Whether we are talking about who gets to use a resource, or who has to clean up afterwards, environmental actions always have consequences for other aspects of people's lives, and therefore the possibility for disagreement. The course will examine those phenomena where traditionally political questions about the distribution of resources or power within a society overlap with environmental questions, and where struggles over environmental protection or regulation intersect with struggles to control group life. Topics covered may include competition over resources, the politics of environmental regulation, the social and historical conditions that give rise to environmental disagreements, or the ways that different plans for mitigating climate change affect global power dynamics.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2100.06

### SOSA 2111.03: Is there an Atlantic Canada?

This course will examine the historical and contemporary social issues related to the Maritimes and Atlantic Provinces. The course will critically question what is meant by "Atlantic Canada" and look at its social, demographic, economic, and cultural trends in relation to the rest of the country. Attention will be given to the role of Acadians, Mi'kmaq, and African Nova Scotians as well as dominant power holders in the construction of Atlantic Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

CROSS-LISTING: CANA 2111.03

### SOSA 2115.03: African Canadian Society, Culture, and Resistance.

There has been a presence of African peoples in Canada for over 400 years; however, the rich histories of African-Canadian people have been often ignored. This course examines African Canadian society and culture from the historical to contemporary period. Topics will include historical analyses, slavery, patterns of immigration and settlement, family, continental African and diasporic connections, identity, arts and culture, education, employment, justice and the law, the media, diasporic debates, Black struggles and resistance, and African Canadian achievements. The course will be taught from a critical race and gender perspective, and will include readings about the diverse Black communities across Canada. There has been a presence of African peoples in Canada for over 400 years; however, the rich histories of African-Canadian people have been often ignored. This course examines African Canadian society and culture from the historical to contemporary period. Topics will include historical analyses, slavery, patterns of immigration and settlement, family, continental African and diasporic connections, identity, arts and culture, education, employment, justice and the law, the media, diasporic debates, Black struggles and resistance, and African Canadian achievements. The course will be taught from a critical race and gender perspective, and will include readings about the diverse Black communities across Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000XY.06, or 1002.03/1003.03, SOSA 1050XY.06, or 1200XY.06

CROSS-LISTING: CANA 2115.03

### SOSA 2140.03: Going Global; Geography, Economy, and Work in the 21st Century.

This course will explore the economic, industrial and organizational transformations which have affected world economies since the 1980s. The spatial reorganization of the international division of labour has led to "world cities", and rural concentration and depopulation, as well as exploitative economic enclaves as endpoints in global commodity chains. The emergence of an increasingly integrated international economic order are associated, in the advanced economies, with a shift from manufacturing, for which automobile production has been the standard example, to a service-dominated economy, ranging from financial services, internet development and movie and music creation, to fast food chains and mass tourism. This industrial transformation has been accompanied by shifts in organizational structures, whether the emphasis has been on increased operational flexibility, or downsizing, one is continuously faced with the impact of new information technologies on the workplace. Does the electronic storage and transmission of information create acceptable efficiencies, or do they represent new methods for controlling and exploiting an increasingly vulnerable workforce, particularly lower-class women and/or immigrants? This course will employ the relevant portions of a standard Canadian sociological text to evaluate main tendencies, while selected anthropological case studies from different places will help understand the specific dynamics of a new, world economy."

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

### SOSA 2141.03: Good Jobs, Bad Jobs.

The course will focus on the new forms of post-industrial work are at the core of the advanced economies. While traditional jobs in the primary sector (fishing, farming, forestry), and in manufacturing are still components of contemporary societies, the attractive new work in the information economy, as well as the less desirable employment available in the low end service jobs, are the new prospects

we face. In addition, the intensified use of information technology has stripped away employment prospects, and is associated with increasing levels of unemployment, or with the double-edged transfer of paid work to the home. Higher rates of unemployment challenge the notion of increased leisure time in a materially abundant system, while changing gender relations reshape the meaning of unpaid work in the household.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### SOSA 2181.03: Explaining Crime and Criminal Behavior.

What is crime, why do rates of crime vary, why do people commit crimes and how do social, cultural, psychological and biological theories and research findings explain crime as social and behavioral phenomena? Criminology is an interdisciplinary attempt to answer these questions through the social scientific study and analysis of crime and criminal behavior. This class introduces students to a broad variety of critical thinking, disciplinary theories, research studies and social policies, in order to help you understand and explain crime and show how these understandings inform the policies and politics designed to manage and prevent crime. This class provides a general but primarily sociological understanding of crime.

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2180X/Y.06

### SOSA 2182.03: Exploring Crime and Criminal Behavior.

Though this is a stand-alone course it builds on the exploration of theories of crime addressed in 2181.03 and applies them to various "types" of crime and criminal behavior in Canada and elsewhere. This course pulls together various sources of knowledge to provide description and analysis of various patterns and types of crime and explores how this knowledge is being applied in specific policies and practices aimed at managing and preventing crimes: typically by the criminal justice system. The course content covers Violent crimes such as murder, sexual assault, domestic violence, robbery and gang violence; Property crimes such as burglary and motor vehicle theft; Organized crime, White Collar and Corporate crime and new forms of Global crime such as narco trafficking; human and arms smuggling and money laundering.

NOTE: Approved with Law and Society Minor.

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06 or SOSA 2181.03

EXCLUSION: SOSA 2180X/Y.06

### SOSA 2190X/Y.06: Comparative Perspectives on Gender.

Applying theoretical perspectives drawn from anthropology and sociology, this class considers the underlying conditions for and consequences of gender inequalities in different historical & cultural contexts. The class begins with an overview of the study of gender relations in anthropology and sociology. Themes around which the class will be organized include the relationship between gender and the following: culture and difference; sexuality and reproduction; labour; gender politics, power relations and political discourse; and gender in the global political economy. Approved with International Development Studies.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 2800X/Y.06

### SOSA 2221X/Y.06: Society and the Self.

Groups influence individuals and individuals react to these influences. This is the field of Social Psychology. The processes involved in such person-group relationships are explored in a number of different settings, such as the family, mental hospitals, and universities. The class will focus on a critical review of research and theorizing.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2220.03

### **SOSA 2260.03: Society, Politics, and Culture.**

SOSA 2260: Society, Politics and Culture

You may not think of yourself as political but power is a process of everyday life. Although it is often assumed to be located in economic and political institutions, it is also important to consider that “the personal is political” and this too contributes to the negotiation of power. This course will explore how social processes affect and are shaped by material, institutional, and normative pressures. Contemporary examples of the intersection of these social forces will show how sociology and social anthropology can be used to identify otherwise hidden relationships.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### **SOSA 2270.03: Introduction to Popular Culture.**

In this course, we will examine and discuss the various approaches and theories of popular culture in anthropology and sociology. Popular culture has been defined in multiple ways and attached to multiple objects and activities in society. We will consider how human beings take part in popular culture on one hand and how popular culture affects the rest of their lives on the other hand. Related themes include consumption, media, technology, communication, identity, ideology, stratification.

FORMAT: Lectures

PREREQUISITE: SOSA1000X/Y.06, or 1002.03/1003.03, SOSA1050X/Y.06, SOSA1100X/Y.06, SOSA1200X/Y.06

### **SOSA 2271.03: Popular Culture in a Global Context.**

The course explores many different theories and manifestations of popular culture in a wide range of contexts. Popular culture as it intersects with films, television, Internet, magazines, comics, cartoons, fashion, sports, music, etc., provides a rich platform for consideration of how popular culture influences individuals in their lives while simultaneously being shaped by those same individuals and their cultural contexts. We will also explore how individuals take on different roles in the production and consumption of popular culture.

PREREQUISITE: One of SOSA 100X/Y.06, SOSA 1002.03 and 1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### **SOSA 2291X/Y.06: Goblins, Ghosts, Gods, Gurus.**

Societies and groups within societies differ in terms of what their members believe, how people view the world and their place within it, the sources of knowledge, attitudes toward the supernatural and the sacred, the status and authority of different sources of knowledge and what it all means. What makes religion different from science? What makes them similar? What is commonsense? What are magic and witchcraft? What are the relations between belief and actions? What is the status of religious authority and power? What are altered states of consciousness? What are religious groups all about? Why do people belong to them, join them, leave them? What is involved in conversion and commitment? This class considers such questions drawing on a wide variety of societies, cultures, and groups, western and non-western.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06 or SOSA 1200X/Y.06

CROSS-LISTING: RELS 2291.06

### **SOSA 2300X/Y.06: Introduction to Social Problems.**

The study of social problems uses sociological theory and research to examine the social dynamics and consequences of a variety of contemporary issues. Though the class content will vary year by year, students can expect to deal with social problems such as poverty, drug abuse, gender and race relations, work and alienation, and environmental issues.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 2400X/Y.06: Health and Illness Across Cultures.**

Every culture has its own concepts of health and nutrition, its own treatments and practices. The strengths and weaknesses of our own system grow clearer when medical anthropologists compare it with that of other societies. This class's specific topics vary from year to year but always include: native theories of the etiology of illness, transcultural versus culture-specific disease syndromes, pregnancy and childbirth in other cultures and our own; senescence and death viewed cross-culturally, the conflict between traditional medical systems and the

Western physician and hospital, patients' expectations and the medical subculture, the physician as secular priest, and food and nutrition across cultures. Approved with International Development Studies.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 2401X/Y.06: Food and Eating Across Cultures.**

Our bodies determine nutrition, our environments limit what may be available, and our cultures decide what is to be considered "food." This class is an introduction to the anthropology and sociology of food. Topics include evolution and human nutrition, social change and food, famine and the world food system, food in contemporary film, food taboos, age and gender differences in food prescriptions and proscriptions, dieting and obesity, cannibalism, the symbolic meaning of eating and food, and vegans vs. carnivores. Approved with International Development Studies.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

### **SOSA 2402.03: Food Through Time and Space.**

In this course we examine the concept of "food" through time and space. We explore topics such as ancient food entitlements, foodways, classification systems, concepts of nutrition, and how culture and social location shape food practices and beliefs.

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, 1100X/Y.06, SOSA 1200X/Y.06

EXCLUSION: SOSA 2401X/Y

### **SOSA 2403.03: Food Activism.**

In this course we will explore food movements and alternative food practices, especially in relation to the modern food system. We will discuss the key characteristics and critiques of the food system and focus on case studies of cultural practices and food activism from around the world which challenge or provide alternatives to the current food system.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100 X/Y.06, SOSA 1200 X/Y.06

EXCLUSION: SOSA 2401X/Y.06

### **SOSA 2502.03: Biomedicine and the Illness Experience.**

This course provides an introduction to the sociology of medicine, patienthood, and practitioner-patient relationships. The course is organized into two sections. The first section analyses the theory and practice of medicine, our society's dominant system for addressing health problems. In the second section, we examine illness and the experience of receiving medical care. We will cover such topics as: the biomedical model; medical school; the experience of chronic illness; medical science and technology; models of the doctor-patient relationship; and mental illness.

INSTRUCTOR(S): Staff

FORMAT: Lecture

EXCLUSION: SOSA 2501X/Y.06, SOSA 2500.03

### **SOSA 2503.03: Health and Society.**

This course examines the social foundations of health and illness, community responses to health problems, and the structure of health care in Canada and internationally. Topics to be covered include: morality and health, social inequality and the political economy of health and health care, the multinational pharmaceutical industry, environmental health, and the development of and 'crisis' in the Canadian Medicare system.

EXCLUSION: SOSA 2501.03

### **SOSA 2993.03: Health and Illness through Cultural Time.**

This course explores health illness and aetiology through culture and time with a focus on ancient and pre-capitalist societies. Topics may vary from year to year but we will invariably explore different ensibilities of what it meant to feel healthy and "well" through an examination of religion, culture and efficacy; cultures of colours, smells; tastes and health and wellness (proxemics; kinetics-how wellness, health and illness are embodied through time, space and culture); narratives of

health (literature, poetry, music, oral genres); pregnancy; birth and rearing of children; senescence and death and the morality of care. The weaknesses and strengths of our own system become clear when medical anthropologists compare it with the science and health systems of other societies.

FORMAT: Lectures

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, SOSA 1002 and 1003, (must have both sections),

EXCLUSION: SOSA 2040X/Y.06

### **SOSA 2996.03: Health and Illness through Culture and Space.**

Every culture has its own concepts of health and nutrition, its own treatments and practices. This course explores health aetiologies through contemporary culture and space. Topics may vary from year to year but we invariably will learn about contemporary cultures around the world in relation to sensibilities of what it means to feel healthy and “well” in the content of rapid economic and social change. We will explore religion, culture and efficacy; cultures of colours, smells; tastes and health and wellness (proxemics; kinetics-how wellness, health and illness are embodied through time, space and culture); narratives of health (poetry, music, oral genres); pregnancy; birth and rearing of children; senescence and death; the content of public health systems and the extent to which they incorporate these practices and beliefs. The weaknesses and strengths of our own system become clear when medical anthropologists compare it with the science and health systems of other societies.

FORMAT: Lectures

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, SOSA 1002 and 1003, (must have both sections)

EXCLUSION: SOSA 2400X/Y.06

### **SOSA 3002.03: Native Peoples of Canada.**

This class uses an ecological perspective to describe the cultures and peoples occupying Canada at the time Europeans came to this continent. As time permits, some ethnohistory and the situation of contemporary Native peoples is also discussed. Films will be used to supplement lectures and readings. Approved with Canadian Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2350.03

### **SOSA 3005.03: Knowledge, Work and Culture in the Contemporary World.**

Since the publication of Daniel Bell's book, *The Coming of Postindustrial Society*, studies of the economic structure of the advanced societies have addressed the question of the extent to which we are living through a transition to a new, knowledge-driven economy which may be qualitatively distinguished from the system of industrial capitalism which has characterized North America and western Europe for most of this century. Whether one uses terms like “postindustrialism”, “postmaterialism” or “postmodernism”, debates have centered on the question of fundamental alterations in the economic, cultural and political organization of technologically advanced societies. Are we witnessing the creation of an “information economy”, are we observing the emergence of a new “knowledge class”, which rules by virtue of its educational skills and credentials, is there a new underclass being excluded from paid employment of any form, and is government being privatized to facilitate new forms of global economic integration? Are new types of social movements arising in response to basic changes in our society? This class will address the above questions, with particular emphasis being devoted to discuss issues in contemporary political economy.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### **SOSA 3006.03: Comparative Perspectives on Gender and Work.**

This class will use comparative perspectives to explore a range of topics relating to the gendering of work- wage-work, household-based labour, the informal sector, masculinity and femininity in the work place, occupational segregation, employment policies directed at changing the status quo (such as affirmative action, pay equity), and unionization. The context will be the changing global political economy and its consequences for the strategies of different groups (such as nation states, but also trade unions, feminist groups and employer groups). Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 3006.03

### **SOSA 3008.03: Canadian Society and Politics.**

This class about the nature of Canadian society has as its focus the study of structures and events which shape social and political organization in Canada. There is not only one way to understand Canadian society: generations of historians, political scientists and economists have provided valuable insights as to why Canadians have believed or acted or voted in one way or another. Sociology and Social Anthropology have helped to understand Canada in terms of contexts and conditions of life which have shaped the evolution of society as we know it. The class explores issues, events, discontents and groups which have produced the recurrent themes that underlie social life in Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

RECOMMENDED: SOSA 2110 or another course on Canadian society and/or politics.

CROSS-LISTING: CANA 3008.03

### **SOSA 3009.03: Public Opinion in Canada.**

This class will introduce students to the study of public opinion in Canada and impact on informed decision making. In particular, the focus will be upon ideas and issues which have been held by groups and been influenced by the media. The lectures would explore the basis of our knowledge about the formation and change of public opinion relative to other forms of collective behaviour. We will present and analyze data relating to the role of public opinion in explaining and predicting political events.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, 1100X/Y.06, 1050X/Y.06 and 1200X/Y.06

CROSS-LISTING: CANA 3009.03

### **SOSA 3013.03: Religion in Contemporary Society.**

Religion is alive and well in society today; some religious organizations are in decline but others appear to be flourishing. How can these tendencies be accounted for? Do we live in a secular age or is that just a flip expression? What does religion mean to people in contemporary society? Is there a search going on for spiritual growth, spiritual awareness, spiritual expression? If so, what forms does this search take? What can we learn by thinking about religion sociologically? What are the trends in religion telling us about the character of late twentieth century society?

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, RELS 1000.06, or permission of the instructor

CROSS-LISTING: RELS 3013.03

### **SOSA 3014.03: Rethinking Culture and Class.**

Critical cultural studies has become a vigorous focus of interdisciplinary scholarship drawing on the fields of history, anthropology, sociology, geography, and literary criticism. Researchers in all of these areas are reconsidering the significance of symbolic aspects of social life and how the collective experiencing of cultural forms is related to changes in capitalism and modernity. For example, what is the significance of popular music in different class, gender, and ethnic contexts? How do commitments to kin and community relate to expressions of culture and class consciousness? Are boundaries between work and leisure mutable in terms of class, gender and ethnic processes? Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3015.03: Popular Memory.**

This class considers history-writing as a social and cultural process operating at personal, group and national levels. It examines theoretical, methodological and political questions raised in work on popular memory. Readings and films address the problems of: official history, public history (museums, national monuments), “history from below,” and oral history. Cases will be taken from across the globe. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100Z/Y.06, SOSA 1200X/Y.06

**SOSA 3031.03: Social Problems and Social Policy.**

This class focuses on the nature of social problems and social policy in advanced industrial societies. It adopts a social movement perspective, exploring the processes whereby agitation on behalf of undesirable but remedial social conditions leads to changes in social policy. Among the areas treated in depth are crime prevention, the quality of work life, race relations, deviance, and poverty and inequality.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 3060.03: Social Change and Development.**

This class considers theories of social change and development; approaches to the analysis of rural and urban livelihoods at the micro level; and the examination of community, class, patronage and gender relations in both their economic and cultural aspects. The constructive uses of social analysis in the support and design of development initiatives are also discussed. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or INTD 2001.03 or INTD 2002.03

**SOSA 3071.03: Human Nature and Anthropology/ Sociology.**

Do social anthropology and sociology suffer from “biophobia”? Can evolutionists explain why we feel sexual jealousy or why we tend to follow a dominant leader in times of stress? Can the theories that explain why we have finger prints and flat nails account for why we are cultural animals? This class reviews theory and data on the evolution of human mind and culture in order to construct a theory of human nature and to argue that ethnographers vastly exaggerate the extent to which human societies differ from one another. Its perspective and contents include much of what some have categorized as “Human Sociobiology”, “Biosociology”, “Darwinian Anthropology”, “Darwinian Psychology”, and “Darwinian Medicine”.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200.06; or an introductory class in either Psychology or Biology

**SOSA 3085.03: Self and Society.**

This class explores the relationship between the self and the larger social context. It considers the dynamic interplay of personal experiences, interpersonal relations, group affiliation, and larger socio-cultural conditions. It examines how such interactions and institutions shape our conceptions of who we should be, who we are, or who we might become. In addition the relationship between changes in society and changes in the self are explored. The course may consider these questions cross-culturally.

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1100X/Y.06, SOSA 1050X/Y.06 or SOSA 1200X/Y.06

**SOSA 3091.03: The Sociology of Culture.**

Does culture permeate all aspects of social life or are there specialized social domains which are “cultural”? What is the connection between societies and “cultures” and the “culture” of music or art? This course explores the question of how one can sociologically study culture. The course reviews classical and contemporary theoretical approaches to the social production, distribution and reception of culture. Broad themes include the discussion of cultural consumption, cultural identity, cultural change, and notions of cultural resistance. Specific “cultural objects” of study may include fashion, sport, class, and social problems. The course concludes with analysis of the intersection of the fields of sociology and cultural studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 3096.03: Introduction to Demography.**

This class will explore the demographic techniques and theory used to describe the dynamics of population structure. Various demographic sources ranging from census to church records will be examined. Basic techniques for determining rates and measures of fertility, mortality, morbidity, and growth. Students will be expected to complete a project using primary sources.

FORMAT: Seminar/discussion

CROSS-LISTING: SOSA 5096.03

EXCLUSION: SOSA 3095X/Y.06

**SOSA 3100.03: Feminist Perspectives in Sociology and Anthropology.**

This course will begin with an overview discussing what is feminism? There is no way to come to a definitive answer to this question, therefore the first month of classes will focus on readings and discussion of feminism from an historical perspective. We will investigate the three historical waves of feminism and the diversity of feminism found in the social sciences. After this brief introduction we will concentrate on gender and sex, clearly dominant themes found in feminist works. We will approach this by critically exploring sociocultural constructions of sex and gender, which in turn will shed critical light on feminist perspectives about the relationship between these two concepts.

FORMAT: Lecture

PREREQUISITE: SOSA 1000.06, or 1002.03/1003.03, SOSA 1050.06, SOSA 1100.06, SOSA 1200.06

**SOSA 3105.03: Media and Society.**

This course provides an introductory overview to the theoretical and practical issues that concern media and society. It examines contemporary theories of mass communications and popular culture and engages the political economy of media, their impact on audiences, and the role they play in the political process.

FORMAT: Lecture

PREREQUISITE: SOSA 1000.06, or 1002.03/1003.03, SOSA 1050.06, SOSA 1100.06, SOSA 1200.06, or permission of instructor.

**SOSA 3116.03: Issues in Social Research.**

This course consists of the intensive examination of a selected area in social research. Since the specific topic which will receive special attention will differ from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 1200X/Y.06

**SOSA 3120.03: Social Conflict.**

This class introduces students to the various analytical perspectives sociologists have employed to understand the patterning and consequences of conflict in society. In this regard particular attention is devoted to the functional, coercion, and Marxian theories of conflict. This class is also concerned with conflict in contemporary society, with special reference to patterns of conflict and change in Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 3135.03: The Social Organization of Health Care.**

The social organization of medicine and the politics of health are examined. Particular attention is paid to environmental and occupational health issues in light of technological and social change. Epidemiological patterns of morbidity and mortality are assessed. Students are responsible for seminar presentations in areas of interest.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

**SOSA 3143.03: Health, Illness and the World System.**

Placing the political economic bases of health and illness in ethnographic context, this course is concerned with the ways that afflictions of poverty become naturalized as biomedical experiences. Core questions pursued are as follows: 1) how is relative health affected by the world market pressures in diverse global contexts? 2) how do afflictions of poverty become naturalized as biomedical experiences? 3) how do patients and communities activate alternative health infrastructures as they resist their marginalization in neo-liberal political agendas? 4) what kinds of illnesses are characteristic of capitalism and wage labour migration (e.g. HIV/AIDS; SARS)? 5) how have market pressures and profit seeking retarded the progress of scientific inquiry into modern illness? We will elucidate these questions by looking at case studies from Canada, South Africa, Sri Lanka, Spain and Brazil.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06



### SOSA 3145.03: Gender and Health.

This course aims to reflect upon and challenge our taken-for-granted assumptions about the gendered dimensions of health and healthcare. Rather than take the categories of 'women's health' and 'men's health' as its foundation, the course revolves around two main questions: (1) how does the field of health and healthcare define and enforce the very categories of 'women' and 'men'; (2) how does gender, thus defined and enforced, affect the health, healthcare, and health work of those defined as men, women, or other? We will consider these questions by examining particular health topics that have a strongly gendered component, such as sexual health, reproductive health, and disability. Throughout the course, we will explore the theoretical perspectives used in the field; the two-sex model and challenges to it; the gendering of particular health problems and health professions; the medicalization of womanhood and, more recently, manhood; and the relationships between gender and other forms of social classification (e.g. race, class, sexual orientation). It is recommended that students take SOSA 2501 or SOSA 2400 prior to taking this class.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 3800.03

### SOSA 3147.03: Social Gerontology.

This class considers human aging in a broad socio-cultural context. Course emphasis will be on historical, philosophic, and demographic aspects of aging, theories of social gerontology, attitudes toward aging and the aged, cross-cultural perspectives on aging, the socio-cultural analysis of retirement, and aging and the community. This class is designed as an overview of the major issues of aging in society.

The course will examine the condition of the elderly in contemporary society, noting both attitudes toward the elderly and the objective state of the elderly, and assess the manner in which these conditions are affected by variables such as race, class, and gender. The social implications of population aging for society will be highlighted as well as identifying the roles and importance of the elderly within the basic social institutions of the family, the economy, and the political system, and discussing the ways in which these institutions have adapted to the elderly and population aging. We will attempt to explain how social factors that affect successful aging are modified by such variables as social class and health status.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: HLTH 4900.03

### SOSA 3148.03: The Sociology of Addiction: Drugs, Health and Society.

This course explores how the meaning and significance of various drug-taking practices and addictive experiences are shaped by the social, cultural, political and economic contexts in which they take place. It also examines how perceptions of different drugs and addictions have changed over time, and how complex and competing political, cultural and economic forces shape drug law and policy. The general aim of the course is to de-individualize and de-pathologize drug use and addiction, to better understand and address their health consequences.

FORMAT: Lecture

PREREQUISITE: One SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### SOSA 3149.03: Childhood in Cross Cultural Perspective.

This course explores childhood as an important reflection of socialization and thus a nexus of cultural and social values, ideas, and histories. In examining pregnancy, birth, infant development and socialization patterns, we ask: What is universal, what is near universal, and what is indisputably variable? The course tries to maintain a balance among three perspectives: those of the infant; those of the parents; and relevant cultural and historical factors that shape both of these. The course also seeks to maintain a balance between the biological, cultural and social nature of human behavior. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000.06, or 1002.03/1003.03, SOSA 1050.06, SOSA 1100.06, SOSA 1200.06

### SOSA 3150.03: Sociology and Anthropology of the Body.

This class will consist of a micro-sociological examination of the human body as a socio-cultural construction. Topics include: bodily self image, cultural definitions of physical attractiveness, stigmatization, proxemic behaviour, non-verbal

communications, body hygiene and pollution taboos, and cultural aspects of human reproduction and sexuality. Special attention will be paid to class, gender and ethnicity and their relationship to body politics.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 3150.03

### SOSA 3165.03: Peoples and Cultures of the World: Selected Area Studies.

This class examines a specific geographic and/or culture area. The class begins with background material on geography and history. Its focus is on the people themselves, their social organization and political, economic, and cultural systems. How they relate to globalization and development will also be examined. Consult the Department to find which region is to be covered in a particular year. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06; or 1002.03/1003.03, 1050X/Y.06; 1100X/Y.06; 1200X/Y.06

CROSS-LISTING: GEOG 3165.03

### SOSA 3168.03: Issues in Latin American Society.

This course introduces students to case studies on contemporary Latin America. The goal of the course is to familiarize students with key social and cultural issues in the region. The focus of the course will change from year to year, and may include a particular country or region, or a theme or topic. Students should contact the department for details on the specific theme of the course in a given year.

Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1100X/Y.06, or 1002.03/1003.03, SOSA 1500X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

### SOSA 3175.03: Sociology of Education.

This course is intended to develop students' knowledge about the relationships between schooling and other aspects of society. We will achieve this, in part, by examining the theoretical perspectives and practical implications of knowledge in and outside of schooling as a basis for the development of autonomous and creative individuals. Topics may include: social stratification, cultural demands and constraints, relations between family, community and educational attainment, and the changing social conditions that have had an impact on educational institutions.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 1200X/Y.06

### SOSA 3180.03: Special Topics in Sociology and Social Anthropology.

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One or SOSA 1000X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100X/Y.06, or 1200X/Y.06

### SOSA 3181.03: Special Topics in Sociology and Social Anthropology.

This course consists of an intensive examination of a selected substantive issue within Sociology and Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### SOSA 3182.03: Special Topics in Sociology and Social Anthropology.

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3183.03: Special Topics.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3184.03: Special Topics in Sociology and Social Anthropology.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3185.03: Issues in the Study of Indigenous Peoples of North America.**

This seminar is concerned with the historical background of the Native-European situation in North America and with issues arising from this background. Students will research issues which are significant to themselves and important to Native groups. Topics covered may vary from year to year, but will normally include a combination of historical issues such as culture change and contemporary issues such as land claims, self-determination and government policy, and social conditions of Natives. Approved with International Development Studies and Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: CANA 3185.03

### **SOSA 3186.03: Special Topics in Sociology and Social Anthropology.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, SOSA 1050 X/Y.06, SOSA 1100 X/Y.06 or SOSA 1200 X/Y.06

### **SOSA 3187.03: Special Topics in Sociology and Social Anthropology.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3188.03: Special Topics in Sociology and Social Anthropology.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3189.03: Special Topics in Sociology and Social Anthropology.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000 X/Y.06, or 1002.03/1003.03, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

### **SOSA 3190.03: Social Movements.**

The general topic of unstructured group activity encompasses phenomena traditionally classified as collective behaviour incidents, as well as reformist and revolutionary social movements. Although there is considerable overlap, the collective behaviour literature tends to focus on relatively brief and spontaneous activities, such as panics, disasters, and crazes, while work on social movements examines relatively more organized and enduring group activities which still fall outside the realm of normal institutions. This class investigates problems emerging from both areas of concern. Emphasis is given to relevant Canadian materials.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3200.03: Environmental Anthropology.**

Humans are aware as never before of their impacts on the environment, and their dependence on the other things and beings with which they coexist. In this class we explore the ways that Social Scientists are rethinking the relationship between humans and the non-humans, whether they are carbon atoms, computers, amphibians, mushrooms or ecosystems.

PREREQUISITE: One SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SODA 1200X/Y.06

### **SOSA 3206.03: Ethnicity, Nationalism and Race.**

This class looks at the social construction and present relevance of the categories "ethnicity", "nation", and "race". The current prevalence of identity politics and ethnic nationalism suggest the extent to which these categories are both profoundly political and deeply personal. By looking at case studies from Canada and around the world we examine these ideas and their implications. Topics will vary from year to year, but may include Quebec nationalism, multiculturalism, "ethnic" warfare in Rwanda or Bosnia, and race politics. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

### **SOSA 3211.03: Continuity and Change in Rural Societies.**

The majority of the world's population, even today, lives in rural settings and depends upon primary production as the principal source of livelihood. This does not mean, however, that rural life has remained static and unchanging over the centuries. All rural societies, even those remote from centres of world power, have long been caught up in the world economic system and involved, in particular ways, with capitalist relations of production. This class examines continuity and change in a range of rural contexts across several continents including North America, and encourages students to consider the notion of "development" from alternative perspectives. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or INTD 2000X/Y.06

### **SOSA 3214.03: Living in a Globalized World.**

This course examines various definitions and approaches to globalization as a multidimensional process. Students will discuss topics such as: global culture (identity, migration, hybridity, homogenization, heterogenization), global risks (pollution, health, food, unemployment, poverty), global regulations and norms (international organizations, international regimes, global forums), global technology (computer networks, cyberspace, information age, global media), and global international order (global terrorism, war, security). Students will also explore political movements that demand globalization be made a more equitable process. Finally, while learning more about the complex reality of today's world, students will engage in critical reflections and debates about some of the most fundamental concepts in social sciences like society, culture, nation, state, territory, space and democracy.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 1200X/Y.06

### **SOSA 3215.03: Migration and Identity.**

This class explores the inter-relating of migration and identity under conditions that are now described as globalization. Migrants become immigrants in particular places. Most depart as citizens of one country seeking temporary refuge, employment, or new citizenship at their destination. As they travel, migrants negotiate the multiple (sometimes competing) demands of kin, employers, and policies set by more than one state. Because commitments and obligations they

experience straddle the borders they have crossed, migrants lives are transnational. their ideas of “home” and identity are also reworked as they travel and can be conflicted as their circumstances change. Some writers have concluded contemporary migration is both turbulent and chaotic compared with historical examples. This class begins with review of some historical migration examples and critically reviews how these differ from current globalization flows. However, the main focus is on particular instances of migration as described in ethnographic and sociological case studies. Some key concepts to be discusses in the course are diaspora, transnationalism, and ethnoscape. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3220.03: Coastal Communities in the North Atlantic.**

Coastal communities as a social/ecological type are examined as populations, and social structures (territorial, economic, occupational, political) as they have developed in response to particular ecological and social circumstances. Various perspectives which have been applied to coastal communities are examined with regard to the contribution they may make to understanding the dynamics of these communities. The focus is on North Atlantic communities.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: ENVI 5180.03, GEOG 3220.03, CANA 3220.03

### **SOSA 3225.03: Culture, Rights and Power.**

The class examines the interrelation of culture, rights and power cross-culturally. It thus considers how the idea and exercise of rights can vary across cultures. It also addresses the ways in which rights and relations of power make themselves felt in people's everyday lives. Finally, it considers the variety of experiences and understandings of these issues across societies and social groups. Examples may be drawn from social and cultural groups within or outside of Canada. Approved with International Development Studies and Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, or SOSA 1200X/Y.06 or permission of the instructor

### **SOSA 3228.03: Belief Systems: Symbol, Myth, and Meaning.**

Emphasis will be placed upon how belief systems and their symbolic representations give meaning to the universe and one's place in it. Topics may include the nature of ritual, the structure of myth, religion and symbols, religion and healing, magic, sorcery, and witchcraft, and how all these phenomena relate to cultural and social change. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06 or 1200X/Y.06

### **SOSA 3245.03: Women and Aging.**

As women grow older, the experience of aging is difficult. This class will explore the issues related to socio-economic factors that are major determinants of the well-being of aging women. Topics will include: aging as a process; menopause; violence against older women; older women and housing; self-image and sexuality; health and the aging woman; and older women and poverty.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or two classes in Gender and Women's Studies

CROSS-LISTING: GWST 3810.03, NURS 4370.03

### **SOSA 3250.03: Beyond Genes and Circuits: The Anthropology and Sociology of Technoscience.**

This course uses the tools of the social sciences to understand the cultural and institutional practices of science and technology. Technology and science both drive and are driven by socioeconomic and cultural change. Little in our lives is unaffected by "technoscience": the toys children play with, the scale of habitus and identity, the substances we eat, entertainment sports, the distribution of our friendships and the sources of our information, the illnesses we get and the treatments they receive, how we make love and how we make war.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 1200X/Y.06 or permission of the instructor.

### **SOSA 3275.03: Crime and Public Policy.**

This class deals with the dynamics of change in the criminal justice system that reflect three major factors namely social movements (e.g. the victims movement, the women's movement), social forces (e.g. aging, multiculturalism), and internal processes (e.g. professionalism, rationalization). The class focuses on how outside pressures modify, and are channelled by, the criminal justice system. Approved with Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3281.03: Youth Crime.**

This class deals with criminal offenses committed by young persons. Etiologies drawn from various disciplines are examined and evaluated. A secondary focus concerns the criminal justice system as it applies to young offenders. Approved with Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3283.03: Globalized Security and Justice: the Challenge of Global Crime and Terrorism.**

Since the terrorist attacks of 9/11, the relationship between global processes and the issues of crime and terrorism have become more explicit. As new or enhanced global economic, political, cultural and environmental processes facilitate profound social and cultural change, new pressures and opportunities for both traditional and new kinds of crime and various forms of political and religious violence are being created. This course examines how globalization influences the various global and local conditions that create these new kinds crime and terrorism by exploring various theoretical explanations, and more empirically based case studies of different global crimes and terrorism movements. In addition we will explore how global organized crime and terrorism challenges the ability of western societies and states to ensure political order and security and examine how they are reconfiguring both the rhetoric and reality of state governance and justice.

INSTRUCTOR(S): C. Murphy

### **SOSA 3284.03: Living in Cities.**

2008 marked the first time in history that more of the global population lived in cities than in rural areas. What perspectives to anthropology and sociology offer on cities and their inhabitants? This course explores the social dynamics that constitute 'the city' and surveys how social scientists have studied and engaged with cities and city-dwellers. It approaches 'the city' both as a whole and through its constituent parts: people and places. Examples may be drawn from cities large and small, near and far - including Halifax.

INSTRUCTOR(S): M. Radice

FORMAT: Lecture and Seminar

PREREQUISITE: One of SOSA 1000.06, or 1002.03/1003.03, SOSA 1050.06, SOSA 1100.06 SOSA 1200.06 FYP or PLAN 2005.03

CROSS-LISTING: GEOG 3284.03

### **SOSA 3285.03: Sociology of Law.**

This course is a sociological examination of law both as a mechanism of social regulation and as a field of knowledge. It explores classical and contemporary theoretical contributions to Sociology of Law. Some specific issues to be analyzed include law and social control, law and social change, social reality of the law, the profession and practice of law, violence against women, and the influence of race, gender and social status in the outcome of legal decisions.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3295.03: Society and the Police.**

The police play an increasingly powerful role in the maintenance of social order in contemporary Canadian society. This class introduces students to sociological theory and research on: (a) the role of police in social development and social control; (b) the historical and political development of public policing; (c) the nature and structure of police work; (d) control and accountability and (e) selected issues in policing such as, policing the family, minorities and the police, community based policing and police discretion. Approved with Law and Society minor.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

### **SOSA 3310.03: Indian Society: Change and Continuity.**

The objective of this class is to introduce students to the society and culture of India from an interdisciplinary perspective. India presents a society of enormous complexity and an unbroken living civilization. Approved with International Development Studies.

FORMAT: Lecture and Seminar

PREREQUISITE: Second-year Arts and/or Science class

### **SOSA 3400.03: History of Anthropological Theory.**

This class considers the foundations and development of social anthropology. Major theoretical schools and the work of prominent anthropologists in those schools are considered, including Cultural Evolution, Historical Particularism, Functionalism, Culture and Personality, Structuralism, Symbolism, Cultural Materialism, and the directions in which contemporary sociocultural anthropology point.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

### **SOSA 3401.03: History of Sociological Thought.**

Towards the middle of the nineteenth century a novel way of thinking about human existence began to emerge. Primacy was given to the understanding that humans are social beings, their lives and thoughts bounded and patterned by their social environments. This approach formed the basis for a new discipline of analysis eventually named Sociology. This class considers some of the main ideas of the earlier contributors to the new way of thinking: Comte, Marx, Durkheim, Weber, Simmel, Mead, Mannheim and, more recently, Parsons and Schutz. Modern sociology rests largely on the intellectual legacy of these thinkers. They raise questions and formulate answers to them which remain relevant to the sociological enterprise today.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

### **SOSA 3402.03: Figuring Out Society.**

This class provides an introduction to issues of research design, including the relationship of theory to the choice of methodology. Students are exposed to basic tools and procedures which will help them to analyze the numerical tables and graphs they may come across in sociological or anthropological journals. Other relevant issues will be included, such as, whether it is possible to achieve scientific objectivity when studying human behaviour. It is assumed students enrolled in this class possess basic computer skills.

FORMAT: Lecture/lab as required

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

### **SOSA 3403.03: Qualitative and Field Methods.**

Research is a craft requiring many skills. This class focuses on skills complementary to those discussed in SOSA 3402.03 (Figuring out Society). Topics may include- theory and the choice of method; applied social science; field work; ethnography; use of interpreters; interviewing; life histories; note taking; analysis of texts; feminist methodologies.

FORMAT: Lecture/lab as required

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06.

### **SOSA 3405.03: Contemporary Social Theory.**

A variety of approaches constitute theory in contemporary sociology. Among them are those called interactionist, ethnomethodological, structuralist, critical, feminist, rational choice, and post-modernist. This class considers the contributions of these approaches to the enterprise of modern sociology. What are the main premises of particular sociological theories? What are their implications for the study and understanding of the social world? What are the issues that evoke debate between different schools of theory?

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; and SOSA 2001X/Y.06 or 2002X/Y.06

### **SOSA 4000X/Y.06: Honours Seminar in Social Anthropology.**

This seminar provides an opportunity for students to engage in sustained investigative scholarship through independent research initiative. The first term concentrates on locating the student's work within a broader set of theoretical and methodological debates in the discipline, while the second term is devoted to

students' research and writing activities in preparing the thesis required for honours graduation. In the second term, class time is used for students to make "in progress" reports and presentations about their chosen topics. The class carries two separate grades, one for the class and the other for the thesis, appearing on the transcript as "honours qualifying examination" (a University requirement for all honours students SOSA 8880.00).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: Honours registration in Social Anthropology and SOSA 2001 (recommended) or SOSA 2002, and two of SOSA 3400, SOSA 3402 and 3403. or permission of the instructor

### **SOSA 4001.03: Quantitative Analysis for the Social Sciences I.**

This class will introduce quantitative analysis. It will engage issues of research design, the relationship between samples and populations, statistics and inference, as well as basic tests of statistical significance. The course will also introduce tabular, graphical, and bi-variate linear analysis, using computer software. It will encourage secondary data analysis of available datasets, evaluation of surveys, and develop skills through a series of class projects.

FORMAT: Seminar

PREREQUISITE: SOSA 3402.03 and fourth year Major or Honours standing in Sociology and/or Social Anthropology

CROSS-LISTING: SOSA 5001.03

### **SOSA 4002.03: Quantitative Analysis for the Social Sciences II.**

This course will focus on the use of quantitative methods in social science research. It will introduce students to regression techniques and concentrate on the assumptions motivating quantitative analysis. The course will also look at regression diagnostics and critically weigh options available to researchers when "normal" assumptions are broken. The class will be split into lectures and computer labs using statistical software. The labs will apply methods covered in class and explore potential secondary data resources. The class will develop these skills through a series of class projects.

FORMAT: Seminar

PREREQUISITE: SOSA 3402.03, SOSA 4001.03 and fourth year Major or Honours standing in Sociology and/or Social Anthropology

CROSS-LISTING: SOSA 5002.03

### **SOSA 4003.03: Contemporary Perspectives in Ethnography.**

Ethnographies and critical writings which grapple with questions of theory and interpretation in a range of contexts - near and far, familiar and strange, local and global - will be examined in this class. Approved with International Development Studies.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; SOSA 2001X/Y.06 or 2002X/Y.06; and fourth year Honours standing in Sociology and/or Social Anthropology

CROSS-LISTING: SOSA 5003.03

### **SOSA 4004.03: Capital, Class, Community-Mobilities, Immobilities**

Commencing from a review of the multiple meanings of neoliberalism, this course will examine changing relationships to employment and 'home' under conditions of economic insecurity. Such conditions have long been prevalent in what is termed the 'global south' but are now more obviously present in class-divided northern economies, Canada included. How do people, men and women, young and old, react to increasingly precarious conditions of employment and uncertain futures? Is employment-related mobility becoming an accepted pattern of living, even in stable communities where people had previously relied on secure livelihoods shared between generations? How does migration and immigration shape new understandings of community? Have people's sense of themselves and others, their subjectivities, been reshaped through new political and economic realities? In addition to some key theoretical readings, we will explore these issues through a close reading of several critical ethnographies.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Honours standing in Sociology and/or Social Anthropology

**SOSA 4005.03: Issues in Social Justice and Inequality.**

Each year, this "issues" class focuses on a different specific topic within the general area. In past years topics have addressed the social and moral problems of social inequalities of various kinds viewed in a context of global changes. Sample topics include but are not restricted to: gender, minority and class inequalities; struggles over rights; social movements; social scenarios surrounding citizenship, migration and immigration; multiculturalism; and border and security studies. Consult Department for specific topic.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Honours standing in Sociology and/or Social Anthropology

**SOSA 4006.03: Issues in Critical Health Studies.**

Each year, this "issues" class focuses on a different specific topic within the general area. In past years topics have addressed how health is socially and culturally constructed, the differential social and cultural affects of health knowledges and power relationships, and how various perspectives on health are challenged from within and beyond the health professions. Consult Department for the specific topic.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Honours standing in Sociology and/or Social Anthropology

**SOSA 4012.03: 4013.03: Issues in Sociology and Social Anthropology.**

This seminar consists of an intensive examination of selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem which receives special treatment will differ from year to year, students are advised to consult the department prior to registration.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, and fourth year Major or Honours standing in Sociology and Social Anthropology

**SOSA 4014.03: Special Topics.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture and seminar

PREREQUISITE: SOSA 1000X/Y.06 or 1002.03/1003.03, or SOSA 1050, or SOSA 1100 or SOSA 1200 AND SOSA 2001 or 2002

**SOSA 4015.03: Special Topics.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture and seminar

PREREQUISITE: SOSA 1000X/Y.06 or 1002.03/1003.03, or SOSA 1050, or SOSA 1100 or SOSA 1200 AND SOSA 2001 or 2002

**SOSA 4016.03: Special Topics.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

FORMAT: Lecture and seminar

PREREQUISITE: SOSA 1000X/Y.06 or 1002.03/1003.03, or SOSA 1050, or SOSA 1100 or SOSA 1200 AND SOSA 2001 or 2002

**SOSA 4017.03: Special Topics.**

This course consists of an intensive examination of a selected substantive issue within Sociology and Social Anthropology. Since the specific topic or research problem will vary from year to year, students are advised to consult the department prior to registration.

**SOSA 4031.03: Social Policy Research Seminar.**

One of the distinctive features of the social sciences has been the use of social research as a basis for the development and reform of social policy. Though the relationship of social research to social policy has changed and evolved with changes in the politics and process of policy making, it still remains a core activity for many social scientists. Using a variety of academic and applied research

sources, the seminar will examine the politics of policy research, uses of social research knowledge, policy research models and research strategies and the policy outcomes of social research. In addition to reviewing the critical literature on social policy research, students will do case study analysis of a major policy research project. The course will selectively draw on faculty, government and private sector policy researchers and policy makers to help ground discussion and research in actual policy research experience.

FORMAT: Seminar

PREREQUISITE: SOSA 1000X/Y.06, or 1002.03/1003.03, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

CROSS-LISTING: SOSA 5031.03

**SOSA 4205.03: Moral Panics as a Social Phenomenon.**

If we relied solely on news reports emanating from the mass media, we might well form the impression that every few years a particular form of allegedly immoral and/or unlawful behavior becomes so widespread as to endanger the very foundation of society. Where such socially shared fears and concerns are exaggerated—i.e., all out of proportion to the actual threat when judged from a rational or empirical perspective — social scientists refer to them as “moral panics.” This class will apply sociological analysis to documented case studies of such panics, both past and present. Examples would include public anxiety about communist infiltration of the U.S. government in the 1950s or, more recently, popularized scares over child sexual abuse, satanism, or serial killing. Particular attention will be paid to the social processes that generate, sustain, and erode adherence to such beliefs.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

**SOSA 4210.03: Tourism and Development.**

Tourism is now the most lucrative industry in the world. Around the globe, companies chase the tourist's dollar offering the best deals on wide range of destinations tailored to a variety of different experiences from sex tourism to eco-tourism. This class will explore the relationship between tourism and development. Topics under discussion will include the definitions of hosts and guests, the commodification of tourist sites and the tourist experience, and the relationship of tourism to sustainability, environmentalism, and globalization. Approved with International Development Studies.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, or 1002.03/1003.03, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

CROSS-LISTING: SOSA 5007.03

**SOSA 4211.03: Embodying the body : The Human body for Anatomists and Humanists.**

This course explores form and function of the human body and how these relate to broader issues associated with what it means to be human. The course begins with an anatomical exploration of the body, then expands into contemporary issues about the body and embodiment, including gender identity, beauty, etc. (This course does not fulfill the 4000 level elective requirement for Sociology and Social Anthropology honours students.)

INSTRUCTOR(S): Wassersug, R.

FORMAT: Lecture/labs

PREREQUISITE: SOSA 2501X/Y or SOSA 3150, permission of the instructor required

CROSS-LISTING: ANAT 5555

**SOSA 4400X/Y.06: Applying Sociology and Social Anthropology Inside, Outside, and Beyond University.**

This is a "capstone" class for SOSA majors and double majors in their fourth and final year of undergraduate studies. The class should be especially relevant to students hoping to enter social work, law, business administration, counselling, community organizing, public service, occupational therapy, medicine or other health professions. The primary focus in the first term will be to introduce, reflect upon, and discuss students' university and life experiences, vocational plans beyond university, and responsibilities as a citizen in democratic society. Work in the second term of the class will revolve around the choosing, planning, execution, and analysis of an experiential learning project. This project might involve volunteering at a community service agency, serving as a tutor or mentor to first-year Dalhousie students, or doing a piece of applied social research for a campus or community organization. This project will culminate in the preparation and

presentation of a major essay outlining what students have learned from this exercise. Throughout the year every effort will be made to improve students' abilities for introspection, written and oral communication, critical thinking, and group leadership.

The class will be strictly limited to a maximum of 20 students. Enrolment in the class requires instructor's permission.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: SOSA 2001X/Y.06 or 2002X/Y.06 and fourth-year standing in the SOSA 20-credit major/double major program.

EXCLUSION: SOSA 4000X/Y.06, 4500X/Y.06

### **SOSA 4500X/Y.06: Honours Seminar in Sociology.**

This seminar provides an opportunity for students to engage in sustained investigative scholarship through independent research initiative. The first term concentrates on locating the student's work within a broader set of theoretical and methodological debates in the discipline, while the second term is devoted to students' research and writing activities in preparing the thesis required for honours graduation. In the second term, class time is used for students to make "in progress" reports and presentations about their chosen topics. The class carries two separate grades, one for the class and the other for the thesis, appearing on the transcript as "honours qualifying examination" (a University requirement for all honours students SOSA 8880.00).

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar

PREREQUISITE: Honours registration in Sociology and SOSA 2002 (recommended) or SOSA 2001 and two of SOSA 3401, SOSA 3402, SOSA 3403 and SOSA 3405. or permission of the instructor

### **SOSA 4510.03: 4520.03: Readings in Sociology/Social Anthropology.**

In a reading class the student is assigned to a member of staff for regular meetings to discuss readings in a selected area. Papers and research projects are expected. FORMAT: Individual instruction

PREREQUISITE: Honours registration in Sociology or Social Anthropology, permission of the instructor and permission of the Undergraduate Coordinator

## **Spanish and Latin American Studies**

Location: 6135 University Avenue, Room 3025

PO Box 15000

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### **Chair**

Fierlbeck, K. (494-6631)

### **Undergraduate Advisor**

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### **Professors**

Kirk, J. M., BA (Sheff), MA (Queen's), PhD (UBC)

Rogers, D. M., BA (Waterloo), MA (Western Ontario), PhD (Toronto)

### **Associate Professor**

Giménez, M. J., BA, MA, PhD (Université de Montréal)

### **Assistant Professor**

Pifano, D., BA, MA, PhD (Ottawa)

### **Lecturers**

Cubillos, C., BA, (Universidad de los Andes), MA (Alberta)

Santos-Montero, E., BA, MA (Salamanca)

### **Senior Instructors**

De Antueno, L., BA (NU of La Plata)

Rafales, C., BA (Barcelona)

### **Instructor**

Dam-Mazzi, M., BA (Lima), MA (Salamanca)

## **I. Introduction**

Spanish opens the doors for you into exciting and diverse cultures in more than 20 countries - it is the first language of over 400 million people, and the second most widely spoken language in the world (after Chinese).

The Spanish-speaking world is home to fascinating people, traditions and institutions, and the Department of Spanish and Latin American Studies is your gateway into this vibrant world.

We warmly welcome students interested in starting Spanish as well as those who already have some experience with the language. Our degree options for the study of the language, literatures and cultures of the Spanish-speaking world are highly practical choices, and also complement studies in such diverse disciplines as political science, sociology and social anthropology, literature, linguistics, history, international development studies, intercultural communication, economics, commerce, and many others.

Fluency in Spanish will be useful to all students seeking careers in the foreign service and NGOs, in business and banking, as entrepreneurs, interpreters, translators, teachers, professors, editors, journalists, and many others. Our language classes emphasize skills acquisition and communicative competence; once you have mastered the fundamentals, a whole world of diverse interests is open for you to engage with: history, politics, social issues, international development, literature, film, art, business and many others.

## II. Certificate of Proficiency in Spanish

This certificate is normally awarded by the Department to students who are not specializing in Spanish but who, having taken several Spanish classes at Dalhousie, wish to have their proficiency officially acknowledged. However, Major and Honours students who do so wish can also be awarded a certificate, provided all the requirements are met. A candidate's superior performance will be reflected by a specific distinction appearing on the certificate.

### Requirements

#### 1. Classes:

- 1000 level: SPAN 1020X/Y.06 (or equivalent)
- 2000 level: SPAN 2020X/Y.06
- 3000 level: SPAN 3020.03 or 3025.03, 3035.03, 3036.03

#### 2. Exam

A written and oral Examination with a minimum average of B- on each part. Students who fail the Examination on the first attempt will be allowed to take it over after one year. No one is entitled to take the Examination without having done the class work.

Administration: Please contact the Spanish and Latin American Studies Department for details.

## III. Diplomas of Spanish as a foreign Language (DELEs)

These diplomas were created in 1991 by the Ministry of Education and Culture of Spain, designed and evaluated by the University of Salamanca and administered by the Instituto Cervantes and the Spanish Embassies. They offer an internationally recognized accreditation on the degree of mastery of the Spanish language for citizens of countries where Spanish is not the official language. They test your ability to read, write, speak and understand Spanish. The DELEs are offered on three levels:

#### 1. The *Diploma de Español (Nivel Inicial)*

accredits the sufficient knowledge of the language to be able to cope with a range of situations which require an elementary use of the language.

#### 2. The *Diploma de Español (Nivel Intermedio)*

accredits a sufficient knowledge of the language that allows communication in customary situations of everyday life where specialized use is not required.

#### 3. The *Diploma de Español (Nivel Superior)*

accredits the necessary knowledge of the language as to allow communication in situations which require an advanced use of Spanish and knowledge of its cultural background.

The examinations are offered in about 50 countries at accredited centres around the world. The Department of Spanish and Latin American Studies at Dalhousie University organizes the examinations every May.

The exam for obtaining the DELEs consists of five tests: reading comprehension, written expression, listening comprehension, grammar and vocabulary, and oral expression. A grade of "apto" (satisfactory) in each of the sections is required to pass the entire exam.

Please contact the Department DELE Co-ordinator for further details. For additional information visit the Embassy of Spain website: <http://www.DocuWeb.ca/SpaininCanada/english/educat/dele.html> and <http://www.diplomas.cervantes.es>

## IV. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA (15 credit) Minor in Spanish Language

Three credits in Spanish Language  
(See below, Section F for requirements)

### B. BA (20 credit) Major in Spanish

(Minimum six credits; maximum nine credits in Spanish, including at least three credits at the 3000 level)

#### Core Major Requirements

- 2000 level: SPAN 2020X/Y.06, or equivalent/SPAN 2090.03
- 3000 level: SPAN 3020.03 or SPAN 3025.03/SPAN 3035.03/SPAN 3036.03
- .5 credit in Spanish or Spanish-American literature
- .5 credit in Spanish or Spanish-American civilization

#### Departmental Requirements

- an additional .5 credit in literature (student must take a class in each of Spanish literature and Spanish-American literature)
- an additional .5 credit in civilization (student must take a class in each of Spanish civilization and Spanish-American civilization)
- one additional Spanish credit at the 3000 or 4000 level

### C. BA (20 credit) Double Major in Spanish

(Combination of 10, minimum of five credits in Spanish)

#### Core Major Requirements

- 2000 level: SPAN 2020X/Y.06, or equivalent/SPAN 2090.03
- 3000 level: SPAN 3020.03 or SPAN 3025.03/SPAN 3035.03/SPAN 3036.03
- .5 credit in Spanish or Spanish-American literature
- .5 credit in Spanish or Spanish-American civilization

#### Departmental Requirements

- any other advanced Spanish credits

### D. Bachelor of Arts with Honours in Spanish

(Minimum nine credits in Spanish)

#### Core Major Requirements

- 2000 level: SPAN 2020X/Y.06, or equivalent/SPAN 2090.03
- 3000 level: SPAN 3020.03 or SPAN 3025.03/SPAN 3035.03/SPAN 3036.03
- .5 credit in Spanish or Spanish-American literature
- .5 credit in Spanish or Spanish-American civilization

#### Departmental Requirements

Students seeking entrance to the Spanish Honours Program are expected to have and to maintain a general A- average in Spanish. Classes taken abroad do not count towards this average.

- an additional .5 credit in literature (student must take a class in each of Spanish literature and Spanish-American literature)
- an additional .5 credit in civilization (student must take a class in each of Spanish civilization and Spanish-American civilization)
- four optional Spanish credits (includes classes taught in English)
- Honours thesis

### E. Bachelor of Arts with Combined Honours

(Combination of 11 credits; if Spanish is Primary, minimum six credits in Spanish and thesis completed in the Spanish and Latin American Studies Department; If Spanish is Secondary, minimum five credits in Spanish)

#### Core Major Requirements

- 2000 level: SPAN 2020X/Y.06, or equivalent/SPAN 2090.03
- 3000 level: SPAN 3020.03 or SPAN 3025.03/SPAN 3035.03/SPAN 3036.03
- .5 credit in Spanish or Spanish-American literature
- .5 credit in Spanish or Spanish-American civilization

#### Departmental Requirements

Students seeking entrance to the Spanish Honours Program are expected to have and to maintain a general A- average in Spanish. Classes taken abroad do not count towards this average.

If Spanish is Primary:

- an additional .5 credit in literature (student must take a class in each of Spanish literature and Spanish-American literature)
- an additional .5 credit in civilization (student must take a class in each of Spanish civilization and Spanish-American civilization)
- one additional Spanish credit at the 3000 or 4000 level
- Honours thesis

If Spanish is Secondary:

- One additional credit

## F. Minor in Spanish Language

- SPAN 2020.06
- SPAN 2030.03
- SPAN 3035.03
- SPAN 3036.03
- SPAN 3020.03 or SPAN 3025.03

## G. Minor in Hispanic Literature

- SPAN 2020.06
- SPAN 2090.03
- SPAN 2500.03
- SPAN 2510.03
- SPAN 3215.03 or SPAN 3510.03
- SPAN 3500.03 or SPAN 3525.03

## H. Minor in Hispanic Cultures

- SPAN 2100.03
- SPAN 2200.03

And any two credits from:

- SPAN 2040.03
- SPAN 2069.03
- SPAN 2070.03
- SPAN 2105.03
- SPAN 2109.03
- SPAN 2110.03
- SPAN 2130.03
- SPAN 2150.03
- SPAN 3095.03

## I. Minor in Latin American Studies

- SPAN 2020.06

Any any two of:

- SPAN 2069.03
- SPAN 2070.03
- SPAN 2109.03
- SPAN 2110.03
- SPAN 2130.03
- SPAN 2200.03
- SPAN 2510.03
- SPAN 3215.03
- SPAN 3510.03

Any any two credits from:

- HIST 2381.03
- HIST 2386.03
- HIST 3390.03
- HIST 4300.03
- INTD 3302.03
- INTD 3303.03
- INTD 3304.03
- INTD 3310.06
- INTD 3401.03
- POLI 3360.03
- SOSA 3168.03 (or Xlist code GWST 3168.03)

At least .5 credit must be at the 3000 level or above.

## J. Minor in Spanish for Students in the Faculty of Management

- SPAN 2020.06
- SPAN 2040.03
- .5 credit in Spanish or Spanish-American Civilization (this includes SPAN 2069, 2070, 2109, 2110, 2100, and 2200)
- SPAN 2090.03
- .5 credit in Spanish or Spanish-American Literature
- SPAN 3020.03
- SPAN 3035.03

- SPAN 3036.03

## K. Minor in Spanish for Students in the Faculty of Computer Science

- SPAN 2020.06
- .5 credit in Spanish or Spanish American Civilization (this includes SPAN 2069, 2070, 2109, 2110, and 2200)
- SPAN 2090.03
- .5 credit in Spanish or Spanish-American Literature
- SPAN 3020.03
- SPAN 3035.03
- SPAN 3036.03

## V. Programs and Classes Abroad

### A. The Salamanca Program at the Universidad de Salamanca

The Salamanca Program is a special inter-disciplinary program of instruction designed to allow Dalhousie students to undertake both an intensive study of the Spanish language and classes in Spanish culture. Students must have completed SPAN 2020X/Y.06 with at least a standing of B-. The program takes place during the fall, winter, spring or summer term, and is offered at the Universidad de Salamanca in Salamanca, Spain. Dalhousie University will grant three credits to those students who successfully complete their classes in Spain. Enquires and applications should be addressed to the coordinator of the Program. Students will register via Letter of Permission and will receive grades on a Pass/Fail basis. The classes will be noted on the student's academic record as a transfer credit.

Students must take the equivalent of three full classes.

#### Compulsory classes:

- Lengua española (1.5 cr)

Students will then select ONE class from each of the following three Options.

#### Option 1

- Conversación y redacción (.5 cr)
- La mujer en la historia de España (.5 cr)
- Historia de la España contemporánea (.5 cr)

#### Option 2

- Cultura española (.5 cr)
- Literatura española e hispanoamericana (.5 cr)
- El mundo árabe en el mundo hispánico (.5 cr)
- Destrezas orales y escritas (.5 cr)

#### Option 3

- Historia del arte español (.5 cr)
- Español de los negocios (.5 cr)
- Cine español e hispanoamericano (.5 cr)

### B. The Cuba Program at FLACSO/Havana

This program is given by FLACSO/Havana and generally takes place in the fall and winter terms. All class work is conducted in the Spanish language. Students must have completed SPAN 2020X/Y.06 with at least a standing of B-. See class descriptions for INTD 3301.03, 3302.03, 3303.03, 3304.03, and 3306.06 in the International Development Studies Section of this Calendar. For more information, please contact the Department of International Development Studies.

### C. The Mexico Program at the University of Campeche

This program, designed for students with a minimum of two years' university-level Spanish, is located at the Universidad Autónoma de Campeche, in the southwest of the Yucatán peninsula, in Mexico. Students must have completed SPAN 2020/XY.06 with at least a standing of B-. It started in the Fall of 1998, and is administered by the university's Centro de Español y Maya. Students can be located with Mexican families if they desire. They are also encouraged to travel and see the superb Maya architectural sites in the Yucatán region. The city of Campeche, situated on the Caribbean coast, has a population of approximately 190,000. It was founded in 1540. The cities of Halifax and Campeche twinned in



1998, and there have been several educational, political, and commercial exchanges. This program is offered in the fall semester only. Students will register for classes via Letter of Permission and will receive grades on a Pass/Fail basis. The classes will be noted on the student's academic record as a transfer credit.

Classes taken at the University of Campeche are:

- Gramática Intensiva (1 cr)
- Vocabulario Intensivo (1 cr)
- Historia Mexicana (1 cr)

## D. The Peru Program at the Pontificia Universidad Católica del Perú

This program takes place for four weeks in July in Cusco, a city of about 359,000 in the Andes of southeastern Peru (elevation 3400 m). Cusco was the capital of the Inca empire and is well situated for visits of cultural and historic importance (museums, Inca archaeological sites, colonial sites) in and around the city. Students will study Spanish and Inca culture; all classwork is conducted in Spanish. Students must have completed SPAN 2020 X/Y.06 with at least a standing of B-. Students will register for classes via Letter of Permission and will receive grades on a Pass/Fail basis. The classes will be noted on the student's academic record as transfer credits.

Classes taken at the Pontificia Universidad Católica del Perú are:

- Intermediate or Advanced Spanish (.5 cr)
- Inca Culture (.5 cr)
- Practical Experience (.5 cr)

## E. SPAN 3310.06: Cuban Culture and Society.

See class description for INTD 3310.06 in the International Development Studies section of this calendar.

## VI. Classes Offered on Campus

### PLEASE NOTE:

If you have taken two or more years of Spanish in High School or have studied it previously in another institution, you need to take the **Spanish Placement Test (SPT)**.

The **Spanish Placement Test** is a one and a half hour standardized multiple-choice test that is designed to assess your current level in Spanish and place you in the class better suited to your needs. Students who wish to register for a language class before taking this test may do so, but care should be taken in choosing it. Please read the class descriptions below carefully and try not to underestimate your knowledge.

This test is administered online. Please contact our Academic Advisor ([spanish.advising@dal.ca](mailto:spanish.advising@dal.ca)) to register for the test. Scores from this test are normally available within a day, and are considered valid for up to a year from the date it was taken.

Students who are taking or have taken any language class at Dalhousie do NOT need to take this test.

Not all classes are offered every year. Please consult the current timetable.

### SPAN 1020X/Y.06: Beginning Spanish.

For students wishing to achieve proficiency in both spoken and written Spanish. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Open to students with no knowledge or only a slight knowledge of Spanish

### SPAN 1025.03: Advanced Beginning Spanish.

For students with some slight prior knowledge of Spanish. Students join, at mid-year, classes of SPAN 1020X/Y.06 already in progress.

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Knowledge of Spanish to the equivalent of first half of SPAN 1020X/Y.06

EXCLUSION: SPAN 1020X/Y.06

### SPAN 1200X/Y.06: Spanish for Reading.

For students who wish to acquire reading knowledge of Spanish for general academic purposes. Overview of fundamentals of Spanish grammar and vocabulary, with emphasis on reading for comprehension of texts in the arts, humanities and social sciences. This course does not satisfy the Bachelor of Arts Language Requirement (see SPAN 1020).

NOTE: Credit can be given for this class only if X and Y are completed in consecutive terms; partial credit cannot be given for a single term.

FORMAT: Lecture/discussion, conducted in English

PREREQUISITE: None. Open to students in all departments. No prior knowledge of Spanish is necessary

### SPAN 2020X/Y.06: Intermediate Spanish.

This class continues the work done in SPAN 1010.03 or SPAN 1020.06.

Supplementary readings as necessary.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Spanish 1020X/Y.06, or equivalent

### SPAN 2025.03: Advanced Intermediate Spanish.

For students with sufficient knowledge of Spanish that surpasses the basic admittance requirement to SPAN 2020X/Y but insufficient for third year courses. Students join, at midyear, classes of SPAN 2020X/Y.06 already in progress.

FORMAT: Discussion/conversation, language lab and computer assisted language learning as needed

PREREQUISITE: Knowledge of Spanish to the equivalent of the first half of SPAN 2020X/Y.

EXCLUSION: SPAN 2020X/Y

### SPAN 2030.03: Integrated Skills.

The objective of this course is to reinforce grammatical concepts through the development of the four language skills in a practical setting. Students enrolled in SPAN 2020X/Y.06 are encouraged to take this class in the same academic year.

This course is particularly useful to students planning to take any of our programs abroad. The class will be organized in thematic units in which authentic materials will be used to practice Oral and Written Expression, and Listening and Reading Comprehension, thus activating the mechanisms of language acquisition and integrating students' skills in a cohesive way.

INSTRUCTOR(S): E. Santos-Montero

FORMAT: Lecture/discussion

PREREQUISITE: SPAN 1020X/Y.06 or equivalent

### SPAN 2040.03: Spanish for Business.

Spanish for business and international trade. Introduction to the Spanish of international business and to the social cultural norms of negotiation in Spanish-speaking countries.

INSTRUCTOR(S): L. De Antueno

FORMAT: Lecture/discussion

PREREQUISITE: SPAN 2020.06

### SPAN 2069.03: Central America to 1979.

Events in Central America are frequently covered in our media, causing people to believe that "the unrest" there is recent. This class seeks to examine the historical roots of the conflict from the colonial period until the 1970s. The aim of the class is to provide students with a background knowledge of this area, so that they can better understand current developments there.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion/conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary

CROSS-LISTING: HIST 2382.03

### SPAN 2070.03: Area Studies on Mexico and Central America.

Following an examination of the indigenous heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Somoza dynasty, Nicaragua under the Sandinistas, the impact of NAFTA, the "democracy" of Mexico, the U.S. role in the region, the human rights situation in Central America, and probable developments in the region. The class is designed to provide an understanding of the contemporary reality of this volatile region, in many ways a microcosm of the crucial situation of Latin America as a whole.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion/conducted in English  
PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary  
CROSS-LISTING: HIST 2383.03

### **SPAN 2090.03: Introduction to Hispanic Literary Study.**

This course will introduce students to literary analysis and critical writing in Spanish. Readings will include works from a variety of periods, genres and regions.

NOTE: Does not fulfill the literature requirement for any Spanish degree programs.

INSTRUCTOR(S): D. Pifano, M.J. Gimenez

FORMAT: Lecture

PREREQUISITE: SPAN 2020X/Y.06

### **SPAN 2100.03: Evolving Spain: History, Culture, Society.**

This class provides an overview of the major sociopolitical and cultural elements, from the Middle Ages to the present, that formed contemporary Spain.

INSTRUCTOR(S): M.J. Gimenez, D. Rogers

FORMAT: Lecture/discussion/conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary.

### **SPAN 2105.03: Catalan Language and Culture.**

Introduction to Catalan, the Romance language spoken by some 8 million people in northeastern Spain-Barcelona and Catalonia - southern France, the Balearic Islands and Sardinia. Elementary Catalan language and an introduction to Catalan culture.

INSTRUCTOR(S): C. Ráfales

FORMAT: Lecture/discussion

PREREQUISITE: 2 years' study of any Romance language, or permission of instructor

### **SPAN 2109.03: Cuba from Colonial Times to 1961.**

While many people are aware of the impact of the Cuban Revolution of 1959, few are aware of the kind of society that existed in Cuba beforehand. This class seeks to examine the historical roots of the country from the colonial period until the 1960's, with particular attention being paid to socio-cultural aspects. The objective is to provide students with a background knowledge of this country and its current reality.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion/conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary

CROSS-LISTING: HIST 2384.03

### **SPAN 2110.03: The Cuban Cultural Revolution.**

Cuba, the only Communist society in the Western Hemisphere, has undergone a dramatic political and economic transformation. The Revolution has also brought about changes in education, the arts, the role of women, race relations, and athletics. The class focuses on the problems and achievements of the Revolution, the peculiarities of Communism in a Caribbean society, and its effect on literature and the arts.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion/conducted in English

CROSS-LISTING: HIST 2385.03

### **SPAN 2130.03: Latin American dictators: From Fact to Fiction.**

The history of Latin America since Independence has been characterized by the rise to power of countless dictators. Some of the best Latin American novels portray these almost mythical figures who to this day wield absolute power in many countries. The class examines the literature and history of this phenomenon with particular attention to the twentieth century, and attempts to discover its roots in militarism, underdevelopment, and imperialism.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion/conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary

CROSS-LISTING: HIST 2388.03

### **SPAN 2150.03: Hispanic Identities Through Film.**

This course focuses on the concept of Hispanic identity, through the study of contemporary and historical sociocultural and geopolitical issues, as manifested in cinema from around the Spanish-speaking world.

INSTRUCTOR(S): M. Dam-Mazzi

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2020.06

### **SPAN 2200.03: Latin American Culture: From the Maya to the 21st Century.**

The aim of this class is to provide basic understanding of this varied and historic area. This class examines the development of Latin America from pre-Columbian times to the present. It also examines the way in which the reality of Latin America has shaped a continental cultural identity.

INSTRUCTOR(S): J. Kirk, D. Pifano

FORMAT: Lecture/discussion/conducted in English

PREREQUISITE: No prerequisite. Open to students in all departments. No knowledge of Spanish necessary.

### **SPAN 2500.03: Introducción a la literatura española.**

This class is an introduction to Spanish literature presenting selected works of prose, poetry and theater from Spain. This is a survey of literature from the Middle Ages to the 20th century. Entirely conducted in Spanish, normally taken in the second or third year of study, the everyday work in this class involves group discussion and lectures. The aim of this class is to introduce students to general notions of literary history and to the basic concepts involved in reading literary texts with particular emphasis on the development of both oral and written linguistic expression.

INSTRUCTOR(S): M. J. Giménez

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

### **SPAN 2510.03: Introducción a la literatura latinoamericana.**

This is a panoramic course that serves as an introduction to Latin American literature. It is based on a selection of prose and poetry from the most representative periods and authors, spanning from pre-Columbian times to the twentieth century.

INSTRUCTOR(S): D. Pifano

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

### **SPAN 3020.03: Translation.**

Exercises in translation, from Spanish to English.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

### **SPAN 3025.03: Traducción: Inglés-Español.**

The objective of this course is to develop basic translation skills through the practice of translating English texts into Spanish. The approach would be methodological and practical: theoretical issues will be discussed to solve translation problems. After establishing the fundamental concepts, the course will progress to examine a series of important aspects of translation; cultural transposition, phonic, graphic and prosodic problems, grammatical and lexical issues, language variety in texts, etc. Each aspect outlined will have a practical component in which students are given a concrete translation task to solve. Group and class discussions will follow.

The aim of the course is to provide students with a general view of the mechanics of translation to then encourage the creative aspects of the process.

INSTRUCTOR(S): E. Santos-Montero

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 3035.03 or equivalent

### **SPAN 3035.03: Advanced Spanish I.**

The objective of this course is to reinforce and expand students' skills in listening, speaking, reading, writing, integrated with an advanced grammar review and extended vocabulary.

INSTRUCTOR(S): Staff

FORMAT: Lecture/conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

EXCLUSION: SPAN 3010.03, SPAN 3015.03, SPAN 3030.03, SPAN 3060.03

**SPAN 3036.03: Advanced Spanish II.**

A continuation of SPN 3035. The objective of this course is to reinforce and expand further students' skills in listening, speaking, reading, writing, integrated with an advanced grammar review and extended vocabulary.

INSTRUCTOR(S): Staff

FORMAT: Lecture/conducted in Spanish

PREREQUISITE: SPAN 3035.03. or equivalent

EXCLUSION: SPAN 3010.03, SPAN 3015.03, SPAN 3030.03, SPAN 3060.03

**SPAN 3090.03: Spanish Phonetics and Pronunciation.**

This class seeks to introduce students to the analysis of the sound system of Spanish. Students will learn to identify and adjust non-native patterns of pronunciation through contrastive analysis, transcriptions and pronunciation practice. Students will master basic concepts and techniques of phonetic analysis and the general phonological characterization of Spanish dialects. The course will focus on the attributes of Spanish sounds, differences between the English and the Spanish sound systems, and the main differences among varieties of Spanish.

INSTRUCTOR(S): D. Rogers

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06 or equivalent

**SPAN 3095.03: Evolution of Spanish.**

This class offers a panoramic study of the evolution of spoken Latin into modern Spanish (no prior knowledge of Latin required). Topics covered will include: the major historical events that influenced the evolution of Spanish; phonological change; morphological and syntactic change; lexical borrowings from other languages; and semantic change.

INSTRUCTOR(S): D. Rogers

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2020 X/Y.06 or equivalent

**SPAN 3110.06: Advanced Grammar II.**

This class is designed for advanced students who have already completed one such program abroad which included SPAN 3100.06 (Advanced Grammar I), and who are now undertaking another, more advanced class. The skills of Spanish language performance, both active and passive, are practiced and enhanced through various means of instruction in an environment of total immersion.

FORMAT: Lecture

PREREQUISITE: SPAN 3100.06

**SPAN 3215.03: Seminario de literatura latinoamericana.**

This class studies the work of Latin American women writers. It seeks to introduce students to critical approaches and recurring themes in Latin American women's literature. Representative works are studied within their historical and cultural context. Readings include novels, short stories, plays and caricatures.

INSTRUCTOR(S): D. Pifano

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

**SPAN 3310.06: Cuban Culture and Society.**

See class description for INTD 3310.06 in the International Development Studies section of this calendar.

**SPAN 3500.03: Literatura española contemporánea.**

This class is a survey of the most important authors of Spanish contemporary literature. Students will study internationally well known writers such Rosa Montero, Arturo Pérez-Reverte, Manuel Vázquez Montalbán, and others. Areas of special focus may include the writings of Antonio Muñoz Molina and Eduardo Mendoza, both of whom are considered representative of the Spanish transition period. The aim of this class is to introduce students to a specific area of Spanish literature focusing on the historic context in which the novels are written.

INSTRUCTOR(S): M. J. Giménez

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

**SPAN 3510.03: Literatura hispanoamericana contemporánea.**

This is a panoramic course that studies Latin American literature from the "boom" to the present. It is divided into five sections, each of which will focus on a literary genre: short stories, essays, journalism, theatre and novels.

INSTRUCTOR(S): D. Pifano

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

**SPAN 3520.03: Topics in Culture & Identity in the Spanish-Speaking World.**

A broad outline of the interaction between culture and identity in the Hispanic world. Focus will be on the end of the 19th and the 20th centuries, and the connection between artists and identity in relation to political, culture and social forces. Selected works of artistic expression (art, literature, music, etc.) become the point of departure for understanding the Spanish-speaking world. Specific topics may vary.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2020.06 and SPAN 2090.03

**SPAN 3525.03: Historia e historias: la literatura como alternativa.**

This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. During this course students will explore the relationship between science and literature, especially subversive representations of History in fictional texts during the 20th century. Lectures will be organized on a chronological basis and will cover different Spanish-speaking cultural areas. The aim of this class is to introduce students to a specific area of Hispanic literature focusing on the historic facts included in novels and essays.

INSTRUCTOR(S): M. J. Giménez

FORMAT: Lecture/discussion/conducted in Spanish

PREREQUISITE: SPAN 2090.03

**SPAN 3905.06: Estudios hispánicos avanzados.**

This class offers the student an opportunity to study aspects of Hispanic culture not already included in other language offerings or in literature classes more narrowly defined by period, genre, etc. It takes advantage of special research interest of staff or the unique expertise of visiting faculty to provide instruction not regularly available here.

FORMAT: Lecture/conducted in Spanish

**SPAN 3920.03: Experiential Learning.**

Experiential learning combines formal learning with practical experience using the Spanish language; students are required to volunteer/intern for a minimum of 60 hours over the term, or approximately 4-5 hours per week. Students will also compile a portfolio under the supervision of the course instructor, to include relevant readings and assignments (these may include reading responses, reports, presentations, essays).

INSTRUCTOR(S): Staff

FORMAT: Discussion, conducted in Spanish

PREREQUISITE: SPAN 2020.06

**SPAN 3970.03: Lecturas dirigidas de literatura Hispanoamericana.****SPAN 3975.03: Estudios hispánicos dirigidos.****SPAN 3980.03: Lecturas para especialistas.****SPAN 4985.03: Lecturas para estudiantes de honores.****SPAN 4990.03: Honours Reading.**

# Theatre

Location: Dalhousie Arts Centre, 5th Floor  
6101 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2233  
Fax: (902) 494-1499  
Website: <http://theatre.dal.ca>

## Dean

Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Chair

McClure, R. (494-1494)

## Undergraduate Advisor

Nicol, D. (494-1491)

## Professor Emeritus

Perina, P., MA, Dip. Scenography (Prague)

## Professor

Gantar, J., BA, MA (Ljubljana), PhD (Toronto)

## Associate Professors

Barker, R., BA (King's), MA (Dalhousie), PhD (Birmingham)  
McClure, R., BA (Queen's), BED (Toronto), MA (Toronto), Dip. (NTS)  
Sorge-English, L., BA (King's/Dalhousie), MA (NYU), PhD (Oxford Brookes)  
Stackhouse, S., BA (Dal), Dip. (NTS), ADVS (CSSD)

## Assistant Professors

Brownlee, S., BA (King's), MA (York), PhD (UC Santa Cruz)  
Dionne, M., CEGEP (McGill), BFA (NCSA), MEd (Fordham)  
Nicol, D., BA (Wales), MA (Birmingham), PhD (UCE)

## Lecturer

Edgett, K.

## Senior Instructor

Kristoff, D., BHEC (MSVU), DCS (Dalhousie), MSc (Manitoba)

## Instructor

Henderson, A., BA (Dalhousie), MA (NSCAD)

## Special Instructors

Buzek, T., BA (Dalhousie)  
MacLennan, B., BA (Dalhousie)  
Robb, M., Dip. (Sheridan)

## I. Introduction

The Dalhousie Theatre Department offers many ways to study the theatre or some aspect of it in tandem with other disciplines offered by the university.

1. You can undertake programs that lead to a university degree: an Honours or Combined Honours BA (four years), a BA with Major (four years), a General BA (three years);
2. You can enroll in a Diploma program in Costume Studies (two years) which combines academic study and research skills with creative design interpretation and applied skills;
3. You can select certain theatre classes to reinforce and complement your studies in other disciplines offered by the university;

The degree programs involve a curriculum of Theatre classes and a selection of other classes in different disciplines. The University has Academic Regulations which specify how these programs must be arranged. These regulations are all

listed earlier in this Calendar, and prospective students should refer to them to become aware of the opportunities offered. There are a surprising number of different ways to arrange one's studies; recommended here are the paths you can follow if Theatre is your primary interest.

## Facilities

The Department is located in the Theatre wing of the Dalhousie Arts Centre. The Theatre wing is a self-sufficient unit involving one proscenium theatre, two studios, and supporting workshops. Teaching spaces for costume studies are currently located off-campus. The main Departmental office is in Room 5-32 of the Arts Centre.

Because of the work involved, some theatre classes have a limited enrolment. All students wishing to take any practical class in Theatre should, therefore, first consult with the department.

PLEASE NOTE: Theatre by its nature requires evening work. Students, especially in Acting, Scenography, and Costume classes, are advised not to undertake other evening commitments.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA Honours in Theatre

#### 1. Theatre Studies

This degree is designed for students who wish to follow a program of theatre studies that keeps the whole of theatre in perspective, is academically oriented, and serves as a strong foundation for graduate degrees in Theatre and Drama, or as a good preparation for a variety of professional and education degrees. Honours students must maintain at least a B+ average in all of their advanced Theatre classes.

##### Year 1

- THEA 1000X/Y.06
- one other full class in THEA at 1000-level
- three classes in other subjects

##### Year 2

- THEA 2011.03
- THEA 2012.03
- THEA 2901.03
- THEA 2902.03
- three full classes in other subjects

##### Years 3 and 4

- THEA 3200X/Y.06
- THEA 3501.03
- THEA 3502.03
- THEA 3600X/Y.06
- THEA 4500.03
- THEA 4501.03
- three full advanced electives in THEA
- one full advanced class in dramatic literature from another department (ENGL, CLAS, RUSS, SPAN, FREN, GERM, etc.)
- two full classes in other subjects, including THEA

An additional credit (the Honours Qualifying Project) consists of fulfilling the function of a dramaturge or assistant director on one of DalTheatre productions.

NOTE: Applications for Honours in Theatre are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

#### 2. Acting

The main objective of the Acting Program is to satisfy the needs of those students who have decided to pursue a career as performers in the professional theatre. The program is progressive in nature, culminating in a company of student actors who perform in three shows in the DalTheatre season in their fourth year. Third year students in the Acting Program will participate in the third show of the DalTheatre season. Fourth year students in the Acting Program will participate in a Class Project Workshop. Auditions are held at the end of the first year for admission into

the upper years of study. In addition to meeting degree requirements, students must achieve a B in all Acting Program classes, and must also be recommended by the Acting Faculty in order to advance to the next year's class of study. The program provides these students with professional training and the benefits of a liberal-arts education at a major Canadian university. Honours students must maintain at least a B+ average in all of their advanced Theatre classes.

#### **Year 1**

- THEA 1000X/Y.06
- THEA 1800X/Y.06
- three full classes in other subjects

#### **Year 2**

- THEA 2011.03
- THEA 2012.03
- THEA 2800X/Y.06
- THEA 2810X/Y.06
- THEA 2820X/Y.06
- one full elective in other subject

#### **Year 3**

- THEA 3800X/Y.06
- THEA 3810X/Y.06
- THEA 3820X/Y.06
- MUSC 1081.03
- 1.5 classes in other subjects

#### **Year 4**

- THEA 4800X/Y.06
- THEA 4840X/Y.06
- THEA 3501.03
- THEA 3502.03
- two classes in other subjects (one of these can be in THEA)

Honours Acting students will qualify for Honours with the satisfactory completion of a professional portfolio.

NOTE: Applications for Honours in Theatre are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

### **3. Technical Scenography**

This degree is designed for students wishing to pursue careers in technical theatre and stage design. The Technical Scenography section encompasses all areas of specialization that work together in the production of live performance. Set design, scenic carpentry, scenic painting, lighting, sound, props and stage management are taught through lectures and hands-on labs. Students in the first year of the program are required to work on one DalTheatre production, and those in second and third years work on four DalTheatre productions each year. All students must maintain at least a B- average in all Technical Scenography classes to move on to the next year, and Honours students must maintain at least a B+ average in all their advanced Theatre classes.

#### **Year 1**

- THEA 1000X/Y.06
- THEA 1050X/Y.06
- three full classes in other subjects

#### **Year 2**

- THEA 2011.03
- THEA 2012.03
- THEA 2060X/Y.06
- THEA 2070X/Y.06
- THEA 2700X/Y.06
- one full elective in other subject

#### **Year 3**

- THEA 3060X/Y.06
- THEA 3070X/Y.06
- THEA 3710X/Y.06
- two classes in other subjects

#### **Year 4**

- THEA 3501.03
- THEA 3502.03

- two full advanced level electives in theatre
- two full classes in other subjects, including up to 1 in theatre.

The Honours Qualifying Project in Technical Scenography consists of designing either set or lighting for one, or assistant-designing for two, DalTheatre productions.

NOTE: Applications for Honours in Theatre are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

NOTE: Interested students studying Technical Scenography may find occasional, paid employment with Neptune Theatre, the Rebecca Cohn Auditorium and IATSE Local 680 (International Alliance of Theatrical Stage Employees), organizations with which the Department of Theatre has a close connection.

### **4. Costume Studies**

This program combines the academic study and research skills necessary to the understanding of costume in its broadest context with the creative interpretation of design and the applied skills of the costumer whose goal is to work in the theatre, film, museums, or historical animation. Some classes in Costume Studies are open to general BA students. See individual class listings. Honours students must maintain at least a B+ average in all of their advanced theatre classes

#### **Year 1**

- THEA 1000X/Y.06
- THEA 1450X/Y.06
- TEXTL 3320 (NSCAD)
- TEXTL 2100 (NSCAD)
- two full classes in other subjects

#### **Year 2**

- THEA 2011.03
- THEA 2012.03
- THEA 2400X/Y.06
- THEA 2406X/Y.06
- THEA 2411.03
- THEA 2451X/Y.03
- one full class in other subjects

#### **Year 3**

- THEA 3401X/Y.06
- THEA 3451X/Y.06
- THEA 3454.03
- THEA 3455.03
- two full classes on other subjects

#### **Year 4**

- THEA 3501.03
- THEA 3502.03
- THEA 4406X/Y.06
- THEA 4450.03
- THEA 4452.03
- two full classes in another subjects

Upon acceptance into their program, students should contact the undergraduate advisor in the Department of Theatre for information on registering for required classes that take place at NSCAD University.

Honours students in Costume Studies will be awarded the Honours Qualifying Project upon successful completion of a 20-page research paper on an aspect of theatrical costume or historical dress, with a related applied skills project.

NOTE: Applications for Honours in Theatre are not considered by the Department until the winter term of the student's third year. Please enquire at the Department for the relevant deadline.

### **B. BA Combined Honours**

Dalhousie and University of King's College students can also combine their Theatre degrees with a number of other disciplines at the two institutions. For more specific instructions on how to set up a Combined Honours degree in Theatre and another subject, please consult the relevant departments' Undergraduate Advisors. In principle, a student who wishes to graduate with this degree must fulfil at least the minimal requirements for a three year BA and have, in the two subjects combined, the required distribution of classes.

## 1. Music and Theatre

In addition to these Combined Honours degrees, the Departments of Theatre and Music also offer a highly specialized four year BA with Combined Honours in Music and Theatre which blends the principal classes of the Bachelor of Music minor in voice with Theatre classes in Acting, Movement and Voice and Speech. Students must audition for both the Music and Theatre Departments: a maximum of five students will be selected for entrance into the program each year. The graduate of this program will advance toward a professional career in the performing arts equipped with a foundation in music and theatre.

Students must successfully complete the audition/entrance tests for the first year of the Music Program. Students must also audition for, and be accepted into, the Acting Program in the Department of Theatre. The prerequisite for auditioning is the successful completion of THEA 1800X/Y.06.

Students planning to take this program must advise the Theatre Department Student Advisor.

To qualify for graduation a student must participate by having a significant role in at least one staged musical production (either as an integral part of DalTheatre Productions, or Opera Workshop).

NOTE: Students having to withdraw from this Program through failure to achieve the required standards in Theatre classes must re-audition if they wish to complete a Degree Program in Music. Students having to withdraw from this Program through failure to achieve the required standards in Music Classes must re-apply to the Department of Theatre if they wish to complete a Degree Program in Theatre.

### Year 1

- MUSC 1101X/Y.06
- MUSC 1201.03
- MUSC 1202.03
- MUSC 1270X/Y.03
- MUSC 1271X/Y.03
- THEA 1000X/Y.06
- THEA 1800X/Y.06
- Ensemble: Chamber Choir/Opera Workshop

### Year 2

- MUSC 2101X/Y.06
- MUSC 2201.03
- MUSC 2202.03
- MUSC 2270.03
- MUSC 2271X/Y.03
- THEA 2800X/Y.06
- THEA 2820X/Y.06
- Ensemble: Chamber Choir/Opera Workshop

### Year 3

- MUSC 3101X/Y.06
- THEA 3800X/Y.06
- THEA 3820X/Y.06
- one required full elective
- Ensemble: Chamber Choir/Opera Workshop

### Year 4

- MUSC 4101X/Y.06
- THEA 4800X/Y.06
- THEA 4840X/Y.06
- two remaining required full electives
- Ensemble: Chamber Choir/Opera Workshop
- Honours Music and Theatre students will complete the Honours Qualifying Project by their satisfactory participation in DalTheatre productions.

## C. BA (20 credit) Major in Theatre

A student may take a 20 credit Major program in Theatre (in Theatre Studies, Acting, Scenography and Technical Scenography or Costume Studies), following consultation with the Departmental Undergraduate Advisor. As in the case of a BA with Combined Honours, it is also possible to set up a Double Major in Theatre and another subject. In this case, a student must fulfil at least the minimal requirements for a three year BA and have the required distribution of classes in the two majoring subjects as outlined in the Degree Requirements section of this Calendar.

## D. BA (15 credit) Minor in Theatre

This degree is designed for students who want to take a general liberal-arts degree in Theatre, would like to acquire a broad and varied knowledge of its various aspects, or are not interested in specializing. Students are advised to take THEA 1000X/Y and one other full credit in THEA at the 1000 level, although these do not count toward the minor.

See requirements below.

## E. Minor in Theatre

Three full credits at or above the 2000 level, to be selected from:

- THEA 2000X/Y.06: Theatre Performance
- THEA 2011.03: Classical Theatre
- THEA 2012.03: Early Modern Theatre
- THEA 2020.06: Jazz Dance I
- THEA 2214X/Y.06: Shakespeare
- THEA 2229.03: Tragedy
- THEA 2313.03: Shakespeare and his Contemporaries on Film
- THEA 2400X/Y.06: Cave to Cafe: Costume and Identity from Antiquity to 1700
- THEA 2411.03: Designers' Language
- THEA 2700X/Y.06: Scenography I
- THEA 2841.03: Speak with Confidence: Voice for Non-Majors
- THEA 2901.03: Production Dramaturgy
- THEA 2902.03: Play Analysis for Directing
- THEA 2911.03: Stars and Stardom in Stage and Screen
- THEA 3010X/Y.06: The History of Musical Theatre
- THEA 3015.03: Renaissance Drama
- THEA 3020.06: Jazz Dance II
- THEA 3200X/Y.06: The Director in the Theatre
- THEA 3401X/Y.06: Dress and Identity: King's Court to Mass Culture, 1700-Present
- THEA 3501.03: The Modern Theatre 1: Realism and Responses
- THEA 3502.03: The Modern Theatre 2: High Modernism
- THEA 3600X/Y.06: The Playwright in the Theatre
- THEA 3751X/Y.06: Modern German Drama
- THEA 3911.03: Gender in Theatre: A Cross-Cultural Survey
- THEA 3912.03: Gender Theory and Contemporary Performance
- THEA 3913.03: English Drama 1660-1800
- THEA 3914.03: Topics in Italian Drama and Spectacle
- THEA 4500.03: Canadian Theatre to 1968: Performing the Nation
- THEA 4501.03: Canadian Theatre Since 1968: Interrogating Identities
- THEA 4700X/Y.06: Special Topics I
- THEA 4735X/Y.06: Advanced Seminar in Baroque Culture
- THEA 4900X/Y.06: Theory and Criticism of Drama and Theatre
- THEA 4921.03: Special Topics II
- THEA 4922.03: Topics in Theatre History
- THEA 4923.03: Topics in Dramatic Literature
- THEA 4931.03: Contemporary Theatre

## F. Minor in Popular Culture Studies

### Requirements

Students seeking a minor in Popular Culture Studies will be expected to take 3.5 credits beyond the 1000 level, with one full credit at or above the 3000 level, and with no more than 1.5 credits taken in a single department. Appropriate courses can be chosen from the following list (22 credits):

2.5 credits from:

- CTMP 2336/CHIN 2052.03: East Meets West in Popular Culture
- EMSP 2313: The Vampire
- EMSP 2320: Witchcraft in Early Modern Europe
- EMSP 2480: The Pirate and Piracy
- ENGL 2006: Cultural Studies
- ENGL 2080: Cartoons & Comics
- ENGL 2095: Narrative in the Cinema
- ENGL 2231: Foundations of Science Fiction
- ENGL 2232: Contemporary Science Fiction
- ENGL 2235: Tolkien: Fantasy & Medievalism
- MUSC 2016: Topics in Music and Cinema
- MUSC 2018: Popular Music Until 1960
- MUSC 2019: The Rock'n'Roll Era and Beyond

- MUSC 2020: The History of Jazz
- \*THEA 2360: Popular Cinema

One full credit from:

- CTMP 3322: Representations of the Holocaust: Remembrance
- CTMP 3305: Modern Film and the Theory of the Gaze
- ENGL 3300: TV: Theory & Criticism
- ENGL 3301: Graphic Novels
- FREN 3750: Littérature industrielle, roman populaire et roman de consommation. - Popular Literature and the Rise of Mass Culture
- FREN 3730: La bande dessinée franco-belge - The Franco-Belgian Comic Strip
- JOUR 3560: Great Journalists
- MUSC 4354: Popular Music Analysis
- THEA 2400X/Y: Cave to Café: Costume and Identity from Antiquity to 1700
- THEA 2911: Stars and Stardom on Stage and Screen
- THEA 3912: Gender Theory and Contemporary Performance
- THEA 4391: Special Topics in Popular Cinema

## G. Costume Studies, Diploma in two years

After successful completion of this program, students may upgrade their DCS to a BA in Theatre (Costume Studies). Students pursuing the Diploma in Costume Studies are required to combine the classes in the following manner:

### Year 1

- THEA 1450X/Y.06
- THEA 2400X/Y.06
- THEA 2406X/Y.06
- THEA 2411.03
- THEA 2451X/Y.03
- TEXTL 3320 (NSCAD)
- TEXTL 2100 (NSCAD)

### Year 2

- THEA 3401X/Y.06
- THEA 3451X/Y.06
- THEA 3454.03
- THEA 3455.03
- THEA 4406X/Y.06
- THEA 4450.03
- THEA 4452.03

## III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable to determine if these classes are offered in the current year.

### THEA 1000X/Y.06: Introduction to Theatre.

The purpose of this class is twofold: first, to introduce students to the study of theatre through analysis of a range of plays related to the DalTheatre season; and second, to instruct students in the methodology of writing in the humanities. Students will learn about the theatrical production process and practice skills of script and performance analysis. Students will address specific problems within their papers and discuss questions on an individual basis in writing tutorials. This class fulfills the writing requirement of Dalhousie University and is a prerequisite for all Theatre majors.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing Requirement, lecture/tutorial 3 hours

### THEA 1050X/Y.06: Introduction to Theatre Organization and Stagecraft.

This class takes the student behind the scenes to understand how a play is brought to life. Scenography is discussed and explored. Students are introduced to scenic design and scenic carpentry, props, sound, lighting, stage management and costume. How a script is staged determines how an audience will understand the ideas inherent in the script. Methods and procedures for theatre productions make up the substance of this class. Students are expected to work with power tools and are required to work on one DalTheatre Production, which will include evening and weekend work outside of class time. Some supplementary equipment is required for this class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture 2 hours, lab 4 hours

### THEA 1300X/Y.06: Introduction to Film.

This class is a general introduction to film studies. It examines film genres and history, the component elements of film, the diversity of cinema industries and institutions, and the medium's impact on society. It also instructs students in the methodology of writing in the humanities and fulfils the writing requirement of Dalhousie University.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Writing Requirement, lecture/tutorial 3 hours

### THEA 1450X/Y.06: Introduction to Costume Studies.

This class serves as an introduction to costume in its broadest context, enabling students to acquire a basic understanding of creating costume for the stage. Both modern and historical costume creation techniques are explored and mastered by students in preparation for more advanced study of costume in subsequent years of the Costume Studies Programme. This class is a prerequisite for all other Costume Studies classes.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture/lab 4.5 hours

### THEA 1800X/Y.06: Introduction to Acting and Performance.

This class is designed to provide the beginning acting student with an understanding of what it is to act, and to introduce some basic performance techniques. The approach will be practical, focusing on three major sections throughout the year: Space, Character, and Action. Each unit will be comprised of exercises and scene study, the texts of which will range from classical to contemporary. Explorations will be centred on group dynamics, requiring commitment, concentration, and full-bodied participation, which will strengthen communication, teamwork and improvisational skills. Students will challenge themselves physically, vocally, and imaginatively, while working with others to create a safe, dynamic environment.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. THEA 1800X/Y.06 is the pre-requisite for an audition for the Acting Program.

FORMAT: Lab/seminar 3 hours

### THEA 2000X/Y.06: Theatre Performance.

This class is designed to provide experience in performance outside the Acting Programme. Through practical theatre exercises and performance assignments, students experience and discuss elements which contribute to theatre performance. This class will not serve as a prerequisite to the Acting Programme, but is suitable for students having completed THEA 1800, or any student interested in cultivating self-confidence, communication, and performance skills.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture/lab 3 hours

RESTRICTION: Students cannot register for THEA 1800 and THEA 2000 at the same time.

### THEA 2011.03: Classical Theatre.

This class gives students an opportunity to study the dramatic literature, staging practices, and theoretical foundations of the early history of theatre. Specific topics covered include ancient Greek, Roman, and medieval European performance, as well as classical Indian and Japanese theatres. Although there is no formal prerequisite for the class, students should normally be in their second year of study. A background in theatre, history, and/or dramatic literature will be an advantage.

FORMAT: Lecture/seminar 3 hours

### THEA 2012.03: Early Modern Theatre.

This class is in a sense the sequel to THEA 2011.03, though that class is not a prerequisite. It aims to study the development of dramatic literature, staging practices, and criticism from the theatres of the Italian Renaissance and of Shakespeare to European Romanticism, as well as early modern Asian theatres. There is no formal prerequisite, but students should normally be in at least the second year of study. A background in history, theatre and/or dramatic literature will be an advantage.

FORMAT: Lecture/seminar 3 hours

### THEA 2020.06: Jazz Dance I (Spring Session Only).

This class is a practical exploration into the Luigi Jazz Dance technique, incorporating the use of space, rhythm, and correct body alignment. Emphasis is

on the development of personal expression through the medium of dance. Students are expected to develop an awareness of dance terminology and vocabulary.  
 FORMAT: Lab/demonstration/lecture  
 CROSS-LISTING: MUSC 2130.06

### **THEA 2060X/Y.06: Technical Scenography I.**

The theories behind the operation of lighting, sound, construction, and properties, as well as the advances in technology and their expense and adaptability, form part of this class. Lecture periods are concerned with stage management, lighting and sound, construction, properties, and other related topics.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/lab 6 hours  
 PREREQUISITE: THEA 1050X/Y.06  
 CO-REQUISITE: THEA 2070X/Y.06

### **THEA 2070X/Y.06: Performance Technology I.**

This class is concerned with the more complex problems of the preparation of theatre production in lighting, sound, scenic carpentry, scenic painting, and properties. Workshop preparation in light and sound, properties, and construction is integrated with crew responsibilities in department productions. Students are required to work on four (4) productions staged under Departmental supervision. These productions will require work outside of class time on evenings and weekends. This class is the practical application of THEA 2060X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lab 6 hours  
 PREREQUISITE: THEA 1050X/Y.06  
 CO-REQUISITE: THEA 2060X/Y.06

### **THEA 2214X/Y.06: Shakespeare.**

An introduction to Shakespeare's career as a playwright, through discussion and interpretation of a dozen or more of his plays.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000X/Y.06; or any two of ENGL 1010.03, 1020.03, 1040.03, or THEA 1000X/Y.06; or the King's Foundation Year Program  
 CROSS-LISTING: ENGL 2214.06

### **THEA 2229.03: Tragedy.**

This class studies a representative selection of texts from various historical periods in order to arrive at an understanding of the meaning of tragedy. Various definitions of tragedy will be examined along with such possible questions as: how has tragedy changed over time, and what is tragicomedy.

FORMAT: Lecture/discussion  
 PREREQUISITE: ENGL 1000X/Y.06; or any two of ENGL 1010.03, 1020.03, 1040.03, or THEA 1000X/Y.06; or the King's Foundation Year Program  
 CROSS-LISTING: ENGL 2229.03  
 EXCLUSION: ENGL 2226.06

### **THEA 2301.03: Film History I.**

This course surveys the history of film from its invention in the 1890s to the 1950s. Students will learn about the aesthetic, social and technological changes that affected the development of cinema. The course includes the study of silent film and the Classical Hollywood cinema, as well as artistic movements such as Expressionism and Soviet Montage.

FORMAT: Lecture/discussion  
 EXCLUSION: THEA 2300X/Y.06 and NSCAD AHIS 2800.03

### **THEA 2311.03: Film Analysis.**

This course introduces students to the close textual analysis of narrative films. To this end, a few films will be studied in depth. Their formal properties, such as mise-en-scène, sound, cinematography, and editing, will be analyzed and situated in social and historical context. Through screenings, readings, lectures, discussions and exercises, students will develop their technical vocabulary and skills in film interpretation.

FORMAT: Lecture/discussions

### **THEA 2314.03: Survey of Italian Cinema.**

Class to be held in English; with part of the course work in Italian for Italian majors. Survey of the Italian Cinema from the origins onwards. Focus: the 'golden age' of Italian silent movies; visual culture under fascism; Italian neo-realism; the impact of television.

FORMAT: Lecture  
 CROSS-LISTING: ITAL 2600.03

### **THEA 2336.03: Russian Film I.**

This course surveys Russian film from the Silent Era to "Thaw" (1900-1960s). Its goal is to develop students' knowledge of cinema in its historical and cultural context through critical watching, reading, thinking, and writing. The course will concentrate on the development of main genres and styles in Russian and official Soviet Cinema, major directors and styles. Full versions of films will be screened each Monday night. Later in the week they will be followed by a lecture, discussion, and viewing additional short clips.

FORMAT: Lecture/discussion  
 CROSS-LISTING: RUSN 2036

### **THEA 2337.03: Russian Film II.**

This course will provide an overview of the most significant trends and periods in the development of Russian cinema since the 1960s until the latest blockbusters. The course will concentrate on the development of main genres and styles, major directors and productions, issues of race, gender, war and violence in Soviet, post-Soviet and new Russian cinema.

FORMAT: Lecture/discussion  
 CROSS-LISTING: RUSN 2037.03

### **THEA 2346.03: East European Cinema: War, Love, and Revolutions.**

This course brings post-Berlin Wall European film into the fray of current debates on cultural identity, transnational cinema, and postcolonialism. Despite the state control, the filmmakers of communist Europe were often more bold, honest and provocative than their profit-driven Hollywood counterparts. By drawing on political, cultural, and philosophical discourses, the course will offer pointed analyses of most significant East European films that touch upon issues of ethnicity, gender, and overcoming censorship.

FORMAT: Lecture/discussion 3 hours  
 CROSS-LISTING: RUSN 2046.03

### **THEA 2350.03: Studies in Film Directors.**

This course offers students the opportunity to study in detail the work of an individual film director. Aesthetic, political, philosophical and/or ethical issues related to the director's work will be studied via close analysis of his/her most significant films. The identity of the director to be studied will be posted on the Academic timetable.

FORMAT: Lecture/discussion

### **THEA 2360.03: Popular Cinema.**

This course helps students develop their critical understanding of popular cinema. It introduces different approaches to the analysis of popular film, and considers principles of production, distribution, exhibition and reception in major industries such as Hollywood and popular Hindi and Hong Kong cinemas. Throughout, it addresses the implications of the concept of "popular cinema."

FORMAT: Lecture/discussion  
 EXCLUSION: THEA 2320.06

### **THEA 2370.03: Animated Film.**

This course is an overview of different forms of animated film and key topics and debates in the field of animation studies. Emphasis is on Canadian, US American and Japanese animation, but examples will be drawn from a variety of regions, and will range from old to new and popular to experimental. The course will focus on cultural approaches, theoretical questions posed by specific types of animation, and historical developments.

FORMAT: Lecture, discussion, screening

### **THEA 2400X/Y.06: Cave to Café: Costume and Identity from Antiquity to 1700.**

An introduction to the study of human social behaviour and its relationship to the development of body coverings, this survey class begins with the earliest Mediterranean cultures, Ancient Egypt, Greece and Rome, and continues through to the end of the seventeenth century. This class may be taken by general BA students, and is also part of the Costume Studies Programme.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion 3 hours  
 PREREQUISITE: General BA students must have completed the writing requirement.

For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06

For Diploma in Costume Studies: See Costume Studies class combinations.



### THEA 2406X/Y.06: The Aesthetics of Contemporary Dress.

By examining the aesthetics of contemporary dress, this class will enable the student to understand established systems used to create clothing, utilizing body image as principle means. Through the study and application of systematic principles, the student will gain a better understanding of people's need to define body image in terms of ornamental self-expression and social identification. This class is also part of the Costume Studies Programme.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 4.5 hours

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06

For Diploma in Costume Studies: See Costume Studies class combinations.

RESTRICTION: Costume Studies degree or diploma students only

### THEA 2411.03: Designers' Language.

This class explores components of costume design, offering a discourse on design language, color theory, structure, and decoration as they relate to costumes for the theatre. Through lecture and practical application, the student will learn how to design costumes, choose fabrics, interpret scripts and develop characters, leading to a better understanding of theatrical characterization. This class may be taken by general BA students, and is also a part of the Costume Studies Programme.

FORMAT: Lecture/demonstration 3 hours

PREREQUISITE: General BA students must have completed the writing requirement.

For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06

For Diploma in Costume Studies: See Costume Studies class combinations.

### THEA 2451.03: Costume in Performance I.

In this year the student will apply the knowledge from THEA 1450X/Y to research, illustrate and create modern and historical costume designs for the stage. In addition, students work on productions in order to understand the integral role played by costume in staging a play, in an actor's character development, and in body image and representation.

This class is part of the Costume Studies Program.

FORMAT: Lecture 3 hours

PREREQUISITE: For BA in THEA (Costume Studies) Students: THEA 1000.06, THEA 1450.06

CO-REQUISITE: For Diploma in Costume Studies Students: THEA 1450.06, THEA 2400.06, THEA 2406.06, THEA

2411.03, TEXTL 2000 (NSCAD), TEXTL 2100 (NSCAD)

RESTRICTION: Limited to BA in Theatre (Costume Studies) and Diploma in Costume Studies students

### THEA 2700X/Y.06: Scenography I.

This course is designed to acquaint the student with the language, techniques and conventions involved in the field of scenography. In the first semester, students will develop basic abilities in visual composition, watermedia and drafting. In the second half, model building, text analysis, research and three-dimensional space development will be taught. Assignments will emphasize practical skills and will culminate in a full design process.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 6 hours

### THEA 2800X/Y.06/THEA 2810X/Y.06/THEA 2820X/Y.06: The Discovery Year.

The second year of the Acting Program introduces students to the fundamental principles of acting through the study of Shakespearean text, voice and movement. Emphasis is placed on the discipline and dedication that is the basis for a career in the professional theatre. In addition to meeting degree requirements, students must achieve a B in all Acting Program classes, and must also be recommended by the Acting Faculty in order to advance to the next year's class of study.

NOTE: Students taking these classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

### THEA 2800X/Y.06: Acting II.

The second year of the Acting Programme introduces students to classical theatre performance approaches through the exploration of the texts of William Shakespeare. Using his sonnets, soliloquies and scenes, students will discover performance clues within the author's text and explore characterization, dramatic situations and action, and the interpretation of dramatic text. Emphasis is placed

on the need for clarity in expressing and communicating these works and on the dedication to craft and discipline necessary to do so.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 6 hours

PREREQUISITE: THEA 1800X/Y.06 and audition

CO-REQUISITE: THEA 2820X/Y.06, THEA 2810X/Y.06

### THEA 2810X/Y.06: Voice and Speech II.

This class focuses on developing the speaking voice. It is an introduction to mind/body/voice awareness, the anatomical and physiological aspects of phonation, and the care of the voice. This introduction includes exploration and drilling of the primary breathing and phonating muscles with the object of releasing the voice and developing an open, flexible sound. Focusing of the mind, alignment of the spine, releasing of unnecessary and habitual tensions, exploration of resonating cavities, pitch, volume/power, and articulation, as well as exploration of a variety of text will all be investigated.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 1800X/Y.06 and audition

CO-REQUISITE: THEA 2800X/Y.06, THEA 2820X/Y.06

### THEA 2818X/Y.06: Voice and Speech II.

This class focuses on developing the speaking voice. It is an introduction to mind/body/voice awareness, the anatomical and physiological aspects of phonation, and the care of the voice. This introduction includes exploration and drilling of the primary breathing and phonating muscles with the object of releasing the voice and developing an open, flexible sound. Focusing of the mind, alignment of the spine, releasing of unnecessary and habitual tensions, exploration of resonating cavities, pitch, volume/power, and articulation, as well as exploration of a variety of text will all be investigated.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 1800X/Y.06 and audition

CO-REQUISITE: THEA 2800X/Y.06, THEA 2820X/Y.06

### THEA 2820X/Y.06: Dance and Movement II.

The class is designed to develop and enhance the acting student's practical knowledge of movement through the discipline of jazz dance. This is manifest through a practical exploration of the Luigi jazz dance technique, incorporating the use of space, rhythm, and correct body alignment. Students are expected to develop a working vocabulary of dance terminology.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab/demonstration/lecture 3 hours

PREREQUISITE: THEA 1800X/Y.06 and audition

CO-REQUISITE: THEA 2800X/Y.06, THEA 2810X/Y.06

### THEA 2841.03: Speak With Confidence: Voice for Non-Majors.

This class is designed to enable the student to use the speaking voice effectively, to communicate freely and easily, with clarity and conviction, thereby strengthening his or her presentation skills. This course will be practical in nature. Exercises and explorations will initially be centred on group dynamics and will require commitment, concentration and full-bodied participation. Many aspects of voice use will be covered, including release of the body, alignment of the spine, breathing, resonance, pitch, volume and power, articulation, working with an intention, and care of the voice. The focus of the class will be on self-discovery as well as awareness of others. Students will also have the opportunity to make individual presentations and receive feedback accordingly. Guest speakers/artists may be invited to visit the classroom.

FORMAT: Lecture/lab 3 hours

EXCLUSION: All advanced Acting classes

### THEA 2901.03: Production Dramaturgy.

This course introduces students to the dramaturgical work of dramaturges and directors in the theatre. Students will learn skills including the presenting of research, the preparation of playtexts, the adapting of playtexts for new theatrical contexts, and the creation of theatrical seasons and programs.

FORMAT: Lecture/discussion

PREREQUISITE: THEA 1000.06 or permission of the instructor

EXCLUSION: THEA 2900.06

**THEA 2902.03: Play Analysis for Directing.**

This class introduces students to the director's process in analyzing a dramatic script for performance. Working with plays from a range of periods and genres, students will explore key theoretical approaches to directorial analysis, will learn the director's core vocabulary, and will apply these discoveries to practical scene work.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: THEA 1000.06 or Permission of the Instructor

EXCLUSION: THEA 2900.06

**THEA 2911.03: Stars and Stardom on Stage and Screen.**

What makes a 'star' actor? How do stars' gifts and idiosyncrasies interact with the possibilities of their media and with market forces to create celebrity? This course explores stage and screen stardom as historical, aesthetic, and economic phenomena that illuminate shifting constructions of beauty, class, gender, sexuality, race, and ethnicity.

FORMAT: Lecture/discussion 3 hours

**THEA 3015.03: Renaissance Drama.**

This class will explore the richness and strangeness of some of the playwrights too often obscured by Shakespeare's shadow. Between the opening of the first professional playhouse in London (1576) and the closing of the theatres by Parliament (1641), the Globe was only one of many venues catering to an avid theatre-going public, and the first English play by a woman was circulated in manuscript. Playwrights to be studied include Christopher Marlowe, Ben Jonson, Thomas Middleton, John Webster, Elizabeth Cary and John Ford.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06; or any two of ENGL 1010.03, 1020.03, 1040.03, or THEA 1000X/Y.06; or the King's Foundation Year Program

CROSS-LISTING: ENGL 3015.03

**THEA 3020.06: Jazz Dance II. (Spring Session only).**

The class is the continued practical exploration into the Luigi Jazz Dance Technique at the intermediate level. Emphasis is on the development of personal expression through the medium of dance. Students must have a basic foundation in dance technique.

FORMAT: Lab/demonstration/lecture

PREREQUISITE: THEA 2020 or approval of instructor (interview)

CROSS-LISTING: MUSC 3130.06 (spring session only)

**THEA 3060X/Y.06: Technical Scenography II.**

This class is designed to supplement Performance Technology II and is a continuation of THEA 2060X/Y.06 covering the topics in greater detail. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 6 hours

PREREQUISITE: THEA 2060X/Y.06, THEA 2070X/Y.06

CO-REQUISITE: THEA 3070X/Y.06

**THEA 3070X/Y.06: Performance Technology II.**

This is an advanced class in production technology. Students work intensively in the areas of: scenic carpentry, scenic painting, props, lighting and sound, or stage management. Students are required to work on four (4) productions staged under Departmental supervision. These productions will require work outside of class time, on evenings and weekends. Each student also serves as a crew head where possible for at least two (2) productions staged under Departmental supervision. NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab 6 hours

PREREQUISITE: THEA 2060X/Y.06, THEA 2070X/Y.06

CO-REQUISITE: THEA 3060X/Y.06

**THEA 3200X/Y.06: The Director in the Theatre.**

This class explores in theoretical and practical terms the various functions of the director in creating a theatrical event. Topics include the historical role of the director, conceptualizing scripts, working with a dramaturg, relationships with actors, and the script development process. Laboratory exploration of practical problems related to the above topics will form an integral part of the class.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 2901.03, THEA 2902.03, and permission of instructor

**THEA 3301.03: Film History II.**

This course surveys the history of film from the 1950s until the present day. Students will learn about the aesthetic, social and technological changes that affected the development of cinema. The course includes the study of radical 1960s movements such as the French New Wave, and the birth of auteurist cinema in the European and Hollywood film industries. It also introduces students to the concept of national cinema with a study of global film industries, and concludes with a study of the digital revolution in contemporary cinema.

FORMAT: Lecture/discussion

PREREQUISITE: Recommended THEA 2301.03

EXCLUSION: THEA 2300X/Y.06 and NSCAD AHIS 2810.03

**THEA 3313.03: Documentary, Experimental and Animated Film.**

This course introduces students to the historical, social, ethical and aesthetic dimensions of documentary, experimental and animated cinema. The course is taught through lectures, discussions, film screenings and readings.

FORMAT: Lecture/discussion

PREREQUISITE: THEA 2311.03 or permission of the instructor

EXCLUSION: THEA 2312.03 and NSCAD AHIS 3850.03

**THEA 3314.03: Shakespeare and his Contemporaries on Film.**

This course will study the adaptation of Shakespeare and his contemporaries to the medium of cinema, focusing on the differences between theatre and cinema, the process of textual adaptation, the updating of classic stories to modern settings, and the close analysis of the performer's choices.

FORMAT: Lecture/seminar

PREREQUISITE: Experience in Shakespeare at any level OR experience in Film Studies at any level.

CROSS-LISTING: ENGL 3314.03

EXCLUSION: THEA 2313.03, ENGL 2313.03

**THEA 3320.03: Italian National Cinema.**

The focus of the course: the New Wave of Italian cinemas, which has received international recognition since the 1960s. Its aim to investigate Italian film production within the social and cultural climate of contemporary Italy.

FORMAT: Lecture/seminar

PREREQUISITE: ITAL 2010

CROSS-LISTING: ITAL 3600

**THEA 3330.03: Film Theory I.**

This course will survey and discuss the major cinematic theories of the twentieth century: from formalism and realism to Lacanian psychoanalysis and post-structuralism, from film semiotics and feminist theory to postmodern debates and approaches which sought to define new terminology and new methodologies for the study of the moving images.

FORMAT: Lecture/Discussion

PREREQUISITE: Previous Film Studies course or permission of the instructor

**THEA 3331.03: Film Theory II: Desire in Cinema.**

This course focuses on theories of gender, sexuality and desire in the cinema. It addresses debates around the representation of gender, sexuality and desire on screen, as well as theories of spectatorial desire.

FORMAT: Lecture/discussion

PREREQUISITE: Previous Film Studies course or permission of the instructor

CROSS-LISTING: GWST 3331.03

**THEA 3350.03: Topics in Asian Cinema.**

Each year will focus on specific topics as explored in the cinema of various Asian countries. Particular attention will be paid to how Asian filmmakers employ different cinematic genres in their treatments of diverse aspects of Asian societies and cultures.

FORMAT: Film screening with lecture/discussion

CROSS-LISTING: CHIN 3050.03

**THEA 3351.03: The Cinema of David Lynch.**

David Lynch is one of the most fascinating filmmakers alive today. His work includes relatively mainstream and popular successes, such as *The Elephant Man* and the TV series *Twin Peaks*, along with more difficult cult films such as *Eraserhead*, *Lost Highway* and *Mulholland Drive*. In this course, students will engage in close analysis of Lynch's works, his source material, and his inspirations.

FORMAT: Lecture/discussion

PREREQUISITE: Any of the core courses in the Film Studies Minor (THEA 2301, 2311, 3301, 3313) or permission of the instructor.  
EXCLUSION: THEA 3311 X/Y.06

### THEA 3371.03: Experimental Film.

This is a survey of experimental cinema. The films studied attempt to revise the basic grammar of film; they do not assume that film is about narrative or even representation, but that it is a fundamentally visual art, often closer to painting or printmaking than to the novel or the theatre. The course will cover films from a range of time periods and regions, and examine a variety of experimental movements.

FORMAT: Lecture, discussion, screening

PREREQUISITE: THEA 2311

### THEA 3401X/Y.06: Dress and Identity: King's Court to Mass Culture, 1700-Present.

This is a survey class which will trace the development of dress through the eighteenth, nineteenth, and twentieth centuries, showing its evolution from the period when the fashion aesthetic was determined by the Courts, to the time of the rise of the common man as the arbiter of taste. Concentration in this class will be placed on dress worn in England and France, but students may explore costume from other countries as individual topics of research. Emphasis will be placed on the social and cultural aspects of dress history, using slides of representative works of art, films, and artifacts as visual documentation for each period.

NOTE: Students registering in this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture 3 hours

PREREQUISITE: General BA students must have completed the writing requirement. For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03.

For Diploma in Costume Studies, see Costume Studies class combinations in calendar.

EXCLUSION: THEA 4400X/Y.06

### THEA 3451X/Y.06: Costume in Performance II.

In this class students will demonstrate their fluency in costume creation with design interpretations for theatrical production. Students will examine problems related to costume as an expression and extension of theatrical character development. The Theatre Department productions provide a venue for students to develop interpersonal and technical skills. Students work as an integral part of a team. This class is part of the Costume Studies Programme.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 8 hours

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03.

For Diploma in Costume Studies: See Costume Studies class combinations.

EXCLUSION: THEA 3540.06

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 3454.03: Body-Shaping Through Historical Tailoring II.

This class introduces the student to the process of tailoring as it originated in the Renaissance, and its development down to the twentieth century. Emphasis is placed on the purpose of underpaddings, understructures and the techniques of fixing them in place. This class is part of the Costume Studies Programme.

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, THEA 1450X/Y.06, THEA 2011.03, THEA 2012.03, THEA 2400X/Y.06, THEA 2406X/Y.06, THEA 2411.03, 2451X/Y.03

For Diploma in Costume Studies: See Costume Studies class combinations.

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 3455.03: Body-Shaping Through Historical Tailoring I.

The "Systems" of Pattern Drafting from the early nineteenth century to the twentieth century. Utilizing traditional tailoring techniques, the process of creating professional tailored garments is studied in detail. This class is part of the Costume Studies Programme.

FORMAT: Lecture/lab 4.5 hours

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03.

For Diploma in Costume Studies: See Costume Studies class combinations.

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 3500X/Y.06: The Modern Theatre.

From the rise of realism in the 1870s to the emergence of postmodern performance one hundred years later, modernist theatre was characterized by successive bursts of creative energy and experiment. This class gives an opportunity to study these developments in detail and to examine several important theatrical theories and their application.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: THEA 2011.03 and THEA 2012.03 or permission of the instructor

### THEA 3501.03: The Modern Theatre 1: Realism and Responses.

From the 1870s until the coming of the First World War, the theatre underwent a series of radical transformations. This class explores the key theatrical movements of this period, including realism, naturalism, symbolism, and expressionism, and compares the theories behind them to the plays, stagecraft, and performance techniques they produced.

FORMAT: Lecture/seminar/discussion 3 hours

PREREQUISITE: THEA 2011.03 and THEA 2012.03 or permission of the instructor

CROSS-LISTING: ENGL 3501.03

EXCLUSION: THEA 3500 X/Y.06

### THEA 3502.03: The Modern Theatre 2: High Modernism.

From the close of WWI to the 1960s, theatrical modernists sought new artistic forms for a rapidly changing world. This class introduces students to major forms of theatrical modernism from Dada and Theatre of Cruelty through Epic Theatre and Biomechanics to Absurdism, and considers their legacy for the contemporary stage.

FORMAT: Lecture and seminar

PREREQUISITE: THEA 3501.03 or Permission of the Instructor

CROSS-LISTING: ENGL 3502.03

EXCLUSION: THEA 3500 X/Y.06

### THEA 3600X/Y.06: The Playwright in the Theatre.

This class studies the play as a vehicle for performance rather than as a literary work. Through weekly writing exercises dealing with specific dramaturgical problems, the craft of play-writing is explored. With this background, the class then writes plays which are revised, critiqued, and given a public presentation.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 2901.03, THEA 2902.03, and/or permission of the instructor

### THEA 3710X/Y.06: Scenography II.

This class is for theatre honours and special scenography students only. It builds on the knowledge gained in the previous class in the field, THEA 2700X/Y.06, as far as visual knowledge is concerned, and from technical knowledge acquired in THEA 2060X/Y.06/THEA 2070X/Y.06.

The goal of this course is to expose, explore and develop methods of visual communication within the design process of scenography. Students are given a schedule that will foster quick solutions, creating an environment conducive to the project or play assigned. Students will then begin to learn how to find and apply research as it relates to a design. The second portion of the course will provide students with experience in drafting and model building that will culminate in several portfolio-quality design projects in the spring semester.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 6 hours

PREREQUISITE: THEA 2060X/Y.06, 2070X/Y.06, 2011.03, 2012.03, 2700X/Y.06

### THEA 3751X/Y.06: Modern German Drama.

An historical study of modern German Drama from the 1770s to the twentieth century. Works by J.M.R. Lenz, J.W.V. Goethe, H.V. Kleist, G. Büchner, G. Hauptmann, E. Toller, B. Brecht and B. Strauß will be discussed. The notion of Freedom (Freiheit) and its apparent impossibility in the nineteenth and twentieth century is central. The texts are read in English translation with the German originals as backup.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
 FORMAT: Seminar  
 CROSS-LISTING: GERM 3050X/Y.06

### **THEA 3800X/Y.06/THEA 3810X/Y.06/THEA 3820.06/ MUSC 1081.03: The Transformation Year.**

The third year of the Acting Program is structured to build on the knowledge acquired in the previous two years. Students learn how to integrate what they have discovered as they gain further understanding of skills, techniques and creative expression. Third-year students perform in one show of the DalTheatre season and may be invited to perform in others, depending upon the needs of the plays chosen and the student's readiness for the performance situation as assessed by the faculty.

In addition to meeting degree requirements, students must achieve a B in all Acting Program classes, and must also be recommended by the Acting Faculty in order to advance to the next year's class of study.

NOTE: Credit can only be given for X/Y classes if completed in consecutive terms and partial credit cannot be given for a single term.

### **THEA 3800X/Y.06: Acting III.**

This course aims to strengthen the actor's instrument and creative response, while further developing acting technique through practical experience in Mask, Mime and Period Study. "Acting" is expanded upon to include Script Analysis, with materials being drawn from classical and contemporary texts, ensuring that the 'inner' work of characterization feeds the 'outer' work, and vice versa.

NOTE: Students taking these classes must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: THEA 2800X/Y.06, THEA 2820.X/Y.06, THEA 2810X/Y.06 and permission of the Acting Faculty.

CO-REQUISITE: THEA 3810X/Y.06, THEA 3820X/Y.06, MUSC 1081.03

### **THEA 3810X/Y.06: Voice and Speech III.**

This class is a continuation of 2810X/Y.06. Emphasis is on freeing the voice by combining newly developed skills that constitute "good use": releasing the mind and body; aligning the spine, and accessing primary breathing muscles. Attention is paid to vocal support, clarity of the sound, flexibility and range, and the power behind the sound. A voice warm up is designed and instructed by each student. Ways of accessing oral, nasal and pharyngeal cavities are explored. Phonetics, speech and accents/dialects are introduced. Much of the work involves application to a variety of texts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: THEA 2800X/Y.06, THEA 2810X/Y.06, THEA 2820X/Y.06, and permission of the Acting Faculty

CO-REQUISITE: THEA 3800X/Y.06, 3820X/Y.06, MUSC 1081.03

### **THEA 3820X/Y.06: Dance and Movement III.**

The class is designed to develop and enhance the acting student's practical knowledge of movement through the discipline of Jazz Dance. This is manifest through the continued practical exploration of the Luigi Jazz Dance Technique. Emphasized are the performer's building blocks: a strong body alignment, a healthy stretching regimen, and an expanding skill repertoire. Explorations commence into dance choreography and performance.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab/demonstration/lecture 3 hours

PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, and THEA 2820X/Y.06, and permission of the Acting Faculty

CO-REQUISITE: THEA 3800X/Y.06, 3810X/Y.06, MUSC 1081.03

### **THEA 3911.03: Gender in Theatre: A Cross-Cultural Survey.**

This seminar class examines the roles gender has played in the shaping of world theatre alongside the roles the theatre has played in the shaping of various cultural conceptions of gender. By exploring plays and performances from Europe, North America, China, Japan, India, Iran and/or other traditions, we will strive to understand the ways in which various forms of representation reflect their cultures' governing images of masculinity and femininity. In the process, we will interrogate the historical and cultural variability of the notion of "gender" itself. The main objective of the seminar will be to ask how gender determines

performers' choices in various cultures, and to see how gender itself can actually be shaped by performance.

FORMAT: Lecture/seminar, 3 hours

CROSS-LISTING: GWST 3911.03

### **THEA 3912.03: Gender Theory and Contemporary Performance.**

This seminar class offers students an opportunity to encounter some of the most provocative and challenging gender theory of recent years in relation to contemporary theatre, film and performance art. Students will read considerations of the relationship between gender, performance and identity by such authors as Jacques Lacan, Michel Foucault, Hélène Cixous, Luce Irigaray, Julia Kristeva, Judith Butler, Peggy Phelan and Camille Paglia, among others. Alongside these works, we will examine contemporary performances from the popular to the oppositional. Through this intertextual exploration of theory and performance, we will aim to expand our understanding of the ways in gender roles are created, maintained, questioned and changed in contemporary culture(s).

FORMAT: Lecture/seminar, 3 hours plus bi-weekly screenings

CROSS-LISTING: GWST 3912.03

### **THEA 3913.03: English Drama 1660-1800.**

A survey of plays produced during the Restoration and eighteenth century. Concentrating on the London scene from the first appearance of actresses on the stage to the burning of the Haymarket theatre in 1789, this class introduces students to the period's various dramatic forms, the literary influences and controversies, and the many women and men who penned for the stage.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06; or any two of ENGL 1010.03, 1020.03, 1040.03, or THEA 1000X/Y.06; or the King's Foundation Year Program

CROSS-LISTING: ENGL 3020.03

EXCLUSION: ENGL 3225.06

### **THEA 3914.03: Topics in Italian Drama and Spectacle.**

This class focuses on Italian drama and performance. The topic will vary from year to year and may include topics such as Italian Renaissance theatre, the Commedia dell'arte, Pirandello's productions and contemporary Italian spectacle. The class will examine the selected topic while placing Italian theatre into a broader European context; students will acquire reading strategies for drama and spectacle and learn to consider the works from a theoretical perspective. The class is held in English but Italian majors will be required to read the texts in the original.

FORMAT: Lecture

CROSS-LISTING: ITAL 3700.03

### **THEA 4390.03: Special Topics in Film Studies.**

This is an advanced seminar in film studies which examines one topic in depth from formal, political, and historical perspectives. Topics may include but are not limited to: animated film; political cinema; montage; screen acting; film adaptation; the work of a particular director; or a film movement. The topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable.

FORMAT: Seminar

PREREQUISITE: THEA 2311.03 and one other film course (3000-level or above recommended)

### **THEA 4391.03: Special Topics in Popular Cinema.**

This advanced seminar addresses an issue in popular cinema. Topics may include but are not limited to: critical perspectives on a particular set of films; the relation between "independent" cinema and "mainstream" cinema; or the social and aesthetic impact of new technologies in popular cinema. The topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable.

FORMAT: Seminar

PREREQUISITE: THEA 2311.03 (+ THEA 2360.03 or THEA 2320.06 are recommended)

### **THEA 4406X/Y.06: The Aesthetics of Historical Dress.**

This class examines the aesthetics of historical dress, tracing the evolution of changing silhouettes and historical pattern design throughout the eighteenth and/or nineteenth centuries. The student will learn to carry out material-culture and textual analyses as historical source material with a view to re-creating character and dress of the eighteenth and/or nineteenth centuries. This class stresses research and academic skills, along with applied skills. Primary research forms a significant component of this class. This class is part of the Costume Studies Program.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/discussion/lab

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3401X/Y.06, 3451X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies, see Costume Studies class combinations in calendar.

EXCLUSION: THEA 3405X/Y.06

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 4450.03: Costume Technology.

This class extends the expertise in costume creation developed in THEA 1450X/Y.06, THEA 2451.03 and THEA 3451.06 to examine techniques of fine finish as students prepare their costume 'masterpiece.' This class is part of the Costume Studies Programme.

FORMAT: Lecture/lab 4.5 hours

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3401X/Y.06, 3451X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies, see Costume Studies class combinations in calendar.

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 4452.03: The Sculpture of Dress.

Based less in abstract principles and more in creativity, this class examines sculptural forms in a human context to facilitate modern and historical costume design. The student works directly on the human body or mannequin to gain proficiency in modelling textiles to shape costume. This class is part of the Costume Studies Programme.

FORMAT: Lecture/demonstration/lab 4.5 hours

PREREQUISITE: For BA in Theatre (Costume Studies) students: THEA 1000X/Y.06, 1450X/Y.06, 2011.03, 2012.03, 2400X/Y.06, 2406X/Y.06, 2411.03, 2451X/Y.03, 3401X/Y.06, 3451X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies, see Costume Studies class combinations in calendar.

RESTRICTION: Costume Studies degree or diploma students only.

### THEA 4500.03: Canadian Theatre to 1968: Performing the Nation.

Early Canadian theatre offers a fascinating example of a colonized nation's struggle to find its own dramatic voice in the face of powerful outside influences. This seminar class will explore the development of theatre in Canada from its roots in First Nations ritual and performance, to its encounters with British and European models and its eventual search for an independent identity via the Little Theatre movement, the Workers' Theatre movement and the Dominion Drama Festival. The class will close with a consideration of the influential Massey Commission and the birth of the Stratford Festival, Canada's first 'world class' theatre. Over the course of the term, special attention will be paid to the development of diverse dramatic traditions in French and English Canada. Drama by representative playwrights will be studied alongside primary sources in Canadian theatre history to give students an integrated perspective on the complex artistic and political debates that helped to determine the character of performance in Canada.

FORMAT: Seminar/discussion

PREREQUISITE: Permission of the instructor

CROSS-LISTING: ENGL 4500.03, CANA 4500.03

### THEA 4501.03: Canadian Theatre Since 1968: Interrogating Identities.

This seminar class will examine the ongoing emergence of uniquely Canadian forms of theatre in the years since the Massey Commission asserted the need to foster Canada's native talent. Topics to be considered will include: the controversial role of government subsidy and policy-making in Canadian culture; the differing models offered by the Stratford and Shaw Festivals, by the major regional theatres, and by 'alternate' and independent companies; the contrast between First Nations, English- and French-Canadian traditions; and the rise of the current 'Fringe' phenomenon. Drama by representative playwrights will be considered alongside post-colonial theory and primary sources in Canadian theatre history to help students consider what a genuinely 'Canadian' theatre might look like. Above all, the class offers an opportunity to consider the complex relationship between theatre and national identity: who are 'we,' and how might our theatre express or even shape 'us'?

FORMAT: Seminar/discussion

PREREQUISITE: Permission of the instructor

CROSS-LISTING: ENGL 4501.03, CANA 4501.03

### THEA 4700X/Y.06: Special Topics I.

In this full year seminar class, students focus on a particular topic in dramatic literature, film studies, theatre history, dramatic theory, or a related interdisciplinary subject in order to investigate it in great detail. The topic is assigned by the Department at the end of the preceding year and is then posted by the Department and in the University's timetable.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Seminar 3 hours

### THEA 4735.06: Advanced Seminar in Baroque Culture.

This course offers its students a survey of key aspects of seventeenth and eighteenth-century European history and society along with a first-hand view of some of the most important aspects of baroque style and material culture. It takes place in the town of Cesky Krumlov in the Czech Republic. The class introduces students to the socio-political conditions that led to the birth of Baroque civilization before entering into an exploration of the court life of seventeenth and eighteenth-century Europe. It then examines the cultural and artistic forms most characteristic of this period, with particular emphasis on theatre history and on the role of the 'theatrical' in the Baroque arts. As the course proceeds, students will have an opportunity to consider the connections between course material and the evidence of Baroque culture to be found in the Castle Theatre's scenographic machinery, its stock of original scenery and props, and its collection of historical costumes, as well as to witness an experimental Baroque opera performance. Finally, the course will include visits to Prague and other sites of interest to add to students' understanding of the Baroque and its legacy to subsequent periods.

FORMAT: Lecture/lab

PREREQUISITE: Permission of the Departments of Theatre, Music and/or History.

CROSS-LISTING: HIST 4162.06, MUSC 4360.06

RESTRICTION: 3rd and 4th year students only.

### THEA 4800X/Y.06/4840X/Y.06: The Interpretation and Performance Year.

In the final year of the Acting Program, students' studies are geared toward performance and entering the world of professional acting. The company of fourth year Acting Program students will be cast in three DalTheatre season shows. Classes are devoted to preparing the student actor for transition into the profession.

NOTE: Credit can only be given for these classes if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### THEA 4800X/Y.06: Acting IV.

The culminating course of the Acting Program focuses on the rehearsal and performance of three DalTheatre shows and a Class Project. This course provides students with the opportunity to earn their Honours credit by preparing professional portfolios and audition pieces under the tutelage of the Acting Program faculty. The class project is directed by an Acting Program faculty member and all written requirements for both the Dal Theatre season and the class project assessed by the Acting Program faculty. In its twofold function, this course is a bridge to the Acting profession.

NOTE: Students taking 4800X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture/lab 6 hours per week as well as up to 30 hours per week rehearsals week-nights and Saturdays

PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06, MUSC 1081.03 and permission of the Acting Faculty

CO-REQUISITE: THEA 4840X/Y.06

### THEA 4840X/Y.06: Advanced Performance Techniques.

This fourth-year Acting class is intended to provide production-related and movement instruction that will assist students with developing skills and techniques which can be applied in the DalTheatre season as well as in the professional theatre world. Production related instruction may vary from year to year, depending on the specific needs of each DalTheatre season.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab/lecture 3 hours

PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06, MUSC 1081.03 and permission of the Acting Faculty

EXCLUSION: THEA 4810X/Y.06, THEA 4820X/Y.06  
CO-REQUISITE: THEA 4800X/Y.06

### **THEA 4900X/Y.06: Theory and Criticism of Drama and Theatre.**

This is a writing intensive class that tackles the problems of evaluating theatre. It investigates critical strategies of the past and judges today's theatre criticism. Students will practice the craft of criticism and debate the role of theatre theory for contemporary audiences.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture/seminar 3 hours

### **THEA 4921.03: Special Topics II.**

In this seminar class, students focus on a particular topic in dramatic literature, film studies, theatre history, dramatic theory, or a related interdisciplinary subject, and investigate it in great detail. The topic is assigned by the Department at the end of the preceding academic year and is then posted at the Department and in the Faculty's timetable.

FORMAT: Seminar 3 hours

### **THEA 4922.03: Topics in Theatre History.**

In this seminar class, students focus on a particular topic in the field of theatre history and investigate it in great detail. The topic is assigned by the Department at the end of the preceding academic year and it is then posted at the Department and in the Faculty's timetable.

FORMAT: Lecture/seminar/discussion

PREREQUISITE: Permission of the instructor

### **THEA 4923.03: Topics in Dramatic Literature.**

In this seminar class, students focus on a particular topic in the field of dramatic literature and investigate it in a great detail. The topic is assigned by the Department at the end of the preceding academic year and it is then posted at the Department and in the Faculty's timetable.

FORMAT: Lecture/seminar/discussion

PREREQUISITE: Permission of the instructor

### **THEA 4931.03: Contemporary Theatre.**

This course will deal with the most recent developments in theatre, especially with those post-1970's trends that exercise a broad international influence. Each year, our investigation will begin with a brief look at postmodern theatre and cover topics such as performance art, physical theatre, and postdramatic theatre. The main focus of the course, however, will be dictated by what is currently happening on major stages across the world and may significantly change from one year to another. In the interest of a comprehensive and inclusive approach to the subject, both commercial and experimental theatres will be studied, and we will also examine some relevant works of criticism and theory. Since much of the material required for this course is not yet removed enough from our time to be accessible in scholarly literature, students should be prepared for alternative methods of research.

FORMAT: Lecture/seminar, 3 hours

# Faculty of Computer Science

Address: Goldberg Computer Science Building  
6050 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2093  
Fax: (902) 492-1517  
Website: <http://www.cs.dal.ca>

## Dean

Shepherd, M., MSc, PhD (Western)

## Associate Deans

Milios, E. E., Dipl Eng (National Technical University), SM&EE, PhD (MIT)  
Riordan, D., BSc, MSc (Port Elizabeth), PhD (Carleton)

## Administrative Assistant to the Dean

Publicover, A., BSc, BA (Dalhousie) Telephone: (902) 494-1199

## Departmental Secretary—Undergraduate

Bolivar, A., Telephone: (902) 494-2740

## Departmental Secretaries—Graduate

Conrod, K., Telephone: (902) 494-3702  
Teferra, M., Telephone (902) 494-643

## I. Introduction

Computer Science is a fundamental multi-disciplinary, high-technology discipline. Computer Science forms an integral and indispensable part of higher education. The Faculty of Computer Science provides high-quality education to our students in all areas of Computer Science and Informatics and conducts excellent research in specific areas of Computer Science, emphasizing major research programs with the support and participation of Industry and Government. Our modern award-winning Computer Science building and state-of-the-art equipment permit Computer Science to conduct primary research in Algorithms, Bioinformatics, Data Mining, Health Informatics, Human Computer Interaction, Information Retrieval, Network Centered Computing, Privacy and Security and Visualization.

The Faculty of Computer Science was formed on April 1, 1997, following the amalgamation of the Technical University of Nova Scotia (TUNS) and Dalhousie University. Its members came from the School of Computer Science at TUNS and the Computing Science Division of the Department of Mathematics, Statistics, and Computing Science at Dalhousie.

Significant growth has occurred in our formative early years. Our graduate and undergraduate programs include imaginative multi-disciplinary programs such as Electronic Commerce, Health Informatics, and Bioinformatics. The most up-to-date information on ongoing programs, ongoing curriculum revision, and general information about the Faculty can be found on our website: <http://www.cs.dal.ca>.

## II. Academic Regulations

In addition to the regulations below, please see the Academic Regulations section of the calendar.

### Workload

A normal class load is five classes during each study term.

### Class Selection

The content of every class that students take to meet degree requirements must represent new material: students may not take classes whose content is largely repetitive of, or more elementary than, a class taken earlier on the same topic, without permission of the Faculty.

Of the 40 half-credits required to complete any CS undergraduate degree, at least 20 must be taken from Dalhousie University.

## Computer classes in other departments

Computer classes offered by other departments (e.g., COMM 1502.03) cannot be taken for credit in the Faculty's degree programs without explicit permission of the Faculty of Computer Science.

## Grades

- Class instructors will describe methods of student evaluation during the first week of each class.
- Supplementary examinations are not given in Computer Science classes.
- A grade of at least C- is required for a class to satisfy a prerequisite condition for a CSCI/INFX class.
- A grade of at least C- is required in all Computer Science CSCI/INFX core classes to graduate with any Computer Science degree.

## Dismissal

A student who meets the conditions for dismissal as outlined in Section 20, Academic Dismissal, of the Academic Regulations will be dismissed from the program. A student who fails more than one co-op work term will be dismissed from the co-op program.

An application for readmission to the program may be considered two terms after dismissal. A student who has been dismissed and who has been required to withdraw from the university for one term or more may be readmitted to a program in the Faculty of Computer Science only once. A readmitted student is considered to be on probation.

# Computer Science

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Website: <http://www.cs.dal.ca>

## Professor Emeritus

Slonim, J., BSc, MSc (Western), PhD (Kansas)

## Professors

Abidi, S., BEng (N.E.D. Univ of Eng & Technology), MS (Miami), PhD (Surrey)  
Bodorik, P., BSc (Calgary), MEng, PhD (Carleton)  
Cox, P. T., BSc, MSc (Auckland), PhD (Waterloo)  
Farrag, A., PhD (Alberta)  
Gao, Q., MASC, PhD (Waterloo)  
Heywood, M., PhD (Essex)  
Janssen, J., MSc (Eindhoven), PhD (Lehigh), cross appointment with Department of Mathematics and Statistics  
Keselj, V., BSc (Belgrade), MMath, PhD (Waterloo)  
Milios, E. E., Dipl Eng (National Technical University), SM & EE, PhD (MIT)  
Rau-Chaplin, A., BCompSc (York), MCompSc, PhD (Carleton)  
Sampalli, S., BEng (Bangalore), PhD (Ind. Inst. of Sc.)  
Scrimger, J. N., BSc (UBC), MSc, PhD (Western Ontario)  
Trappenberg, T., MSc, PhD (Aachen)  
Wach, G., BA (Western Ontario), MSc (South Carolina), PhD (Oxford), cross appointment with Department of Earth Sciences  
Watters, C. R., BSc, MSc, MLS (Western Ontario), PhD (Technical University of Nova Scotia)  
Zincir-Heywood, A.N., BSc, MSc, PhD (Ege University)

## Associate Professors

Arnold, D., Diplom Computer Science (Dortmund), MSc (SFU), Dr. rer. nat. (Dortmund)  
Beiko, R., BSc (Dalhousie), PhD (Ottawa)  
Blouin, C., BSc (Laval), PhD (Dalhousie)  
Blustein, W. J., BSc, MSc, PhD (Western)  
Brooks, S., BSc (Brock), MSc (UBC), PhD (Cambridge)  
McAllister, M., BMath (Waterloo), MS, PhD (UBC)  
Mitnitski, A., MEng, PhD (Baltic State Tech University), cross appointment with Faculty of Medicine  
Selinger, P., Vordiplom Mathematics (Technische Hochschule Darmstadt), PhD (Pennsylvania), cross-appointed with Department of Mathematics and Statistics  
Zeh, N., Diplom-Informatiker (Friedrich-Scholler, PhD (Carleton)

## Assistant Professor

Hawkey, K., BSc, PhD (Dalhousie)  
He, M., BEng (Nanjing), M. Math, PhD (Waterloo)  
Reilly, D., BA (Waterloo), BA (McGill), BEd (Queen's), PhD (Dalhousie)

## Adjunct Professors

Borwein, J., BA (Western Ontario), MSc, PhD (Oxford)  
Cercione, N., BSc (Steubenville), MSc (Ohio), PhD (Alberta)  
Gentleman, M., BSc (McGill), MA, PhD (Princeton)  
Grundke, E. W., BSc, MSc (Dalhousie), PhD (Waterloo)  
Jost, A., BSc, MSc, PhD (Dalhousie)  
Rahman, M., BSc, MSc (Gauhati), PhD (Windsor)  
Silver, D., BSc (Acadia), CIM (SMU), MSc, PhD (Western)

## Adjunct Associate Professors

Oore, S., BSc (Dalhousie), MSc, PhD (Toronto)  
Wang, H., BSc (UNB), MSc, PhD (Toronto)

## Adjunct Assistant Professors

Abidi, S., MBBS (Dow), MSc (Malaysia), PhD (Dalhousie)  
Bardouille, T., BSc (Queen's), MSc (Dalhousie), PhD (Toronto)  
Jutla, D. N., BSc (U. W. Indies), MSc, PhD (TUNS)  
Liscano, R., BSc (UNB), MSc (Rhode Island), PhD (Waterloo)  
Lucic, V., Dipl. EE (Nis), MASC, PhD (Waterloo)  
Marchand, Y., MCS (Paris, D.E.A. (Caen), PhD (Compeigne)  
McIntyre, A., BSc (Mt. A), PhD (Dalhousie)  
Shafiei, M., BSc (Sharif), PhD (Dalhousie)  
Song, X., BSc (Tianjin), MSc (Chinese Academy of Science), PhD (UNE), MSCS (Dalhousie)  
Vaughn, P., HBA, MA (Guelph), MD (McMaster), MPH (Johns Hopkins)  
Wilson, G., BA, MCS, PhD (Dalhousie)  
Ye, Q., BEng, MEng (Harbin), PhD (Alberta)

## Senior Instructor

Brodsky, A., BMath (Waterloo), Msc, PhD (UBC)  
Kalyaniwalla, N., BSc (Bombay), M.S., PhD (Rensselaer)

## Instructor

Fleming, J., BComm, BA (SMU), MA (Dalhousie)

## I. General Interest Classes

The Faculty offers eight classes that should be of interest to students whose major field of study while at Dalhousie will not be Computer Science.

### CSCI 1106.03: Animated Computing.

The Animated computing course is a hands-on introduction to animated computing. Students will use applications to create web pages with animation and progress to the design of animated games and control of robots.

### CSCI 1107.03: Social Computing.

A hands-on course on technologies and the underlying infrastructure for social computing, including digital collaboration media, social networks and visualization, and their social impact. Students will use various applications, such as Twitter, YouTube, and wikis to examine their functionalities, and explore infrastructure technologies including databases, computer networks and Web-servers that facilitate their execution.

### CSCI 1200.03: Introduction to Computing for Non-Majors.

This is a class of technical computer literacy. Students can expect to learn about computers in a general way and how computers affect the way we live and work. Students will be given an opportunity to become familiar with typical applications of software such as word processors, spreadsheets and database applications. Other topics will include the use of the internet, creation of web pages, and simple programming concepts. No previous computer experience is required. This class is open to Arts and Social Sciences and Health Education students only. NOTE: This class cannot be counted towards the Bachelor of Commerce or a Minor in Business.

CROSS-LISTING: ASSC 1000.03

### INFX 1606.03: Introduction to Web site creation.

See calendar description for INFX 1601.03 in the Informatics section of this calendar.

CROSS-LISTING: CSCI 1206.03

EXCLUSION: INFX 1600.18

### INFX 1615.03: Concepts of Computing.

This course introduces some key concepts in computing and places them in context with a survey of applications. The skills developed in this course include research, redaction, problem solving and abstraction. The themes covered are the following: Data and storage, operating systems, networking and the Internet, database systems, artificial intelligence and computer graphics. This course is eligible to partially cover the writing requirement for students in the Bachelor of Computer Science, the Bachelor of Informatics and Bachelor of Science, Computer Science.

### INFX 1616.03: Applications of Computing.

This course covers professional aspects of the computing industry. The main themes are: project management, software engineering and computer languages. It explores how technological advances impact the workplace for non-technical people. It also includes a module on proofreading and editing. This course is



eligible to partially cover the writing requirement for students in the Bachelor of Computer Science, the Bachelor of Informatics and Bachelor of Science, Computer Science.

## II. Degree Programs

### A. Academic Regulations

For all variations of the Bachelor of Computer Science degree:

- of the 19 half-credit CSCI classes required at all levels, at least 10 must be chosen from Dalhousie CSCI class offerings, and
- of the 11 half-credit CSCI classes required at the 3000 and 4000 level, at least six must be chosen from Dalhousie CSCI class offerings.

### B. Bachelor of Computer Science

#### 1. Bachelor of Computer Science

The following regulations apply to students starting the program in September 2010 or after.

#### Faculty Requirements

##### 1000 Level

- CSCI 1100.03: Computer Science I
- CSCI 1101.03: Computer Science II

##### 2000 Level

- CSCI 2100.03: Communication Skills: Oral and Written
- CSCI 2110.03: Computer Science III
- CSCI 2112.03: Discrete Structures I
- CSCI 2121.03: Computer Organization with Assembly Language
- CSCI 2132.03: Software Development
- CSCI 2141.03: Introduction to Database Systems

##### 3000 Level

- CSCI 3101.03: Social, Ethical and Professional Issues in Computer Science
- CSCI 3110.03: Design and Analysis of Algorithms I
- CSCI 3120.03: Operating Systems
- CSCI 3130.03: Introduction to Software Engineering
- CSCI 3136.03: Principles of Programming Languages
- CSCI 3171.03: Network Computing

##### Other Required Classes:

- MATH 1000.03: Differential and Integral Calculus I
- MATH 1010.03: Differential and Integral Calculus II or CSCI 2113.03 Discrete Structures II
- MATH 2030.03: Matrix Theory and Linear Algebra I
- STAT 2060.03: Introduction to Probability and Statistics I
- One full credit or two half credits of a science class with a lab from a list provided by the Faculty of Computer Science
- One full credit to satisfy the writing requirement
- One half-credit class in humanities or social science at or above the 1000 level
- Two half-credit classes in business, science, or engineering at or above the 1000 level
- One half-credit class in business, science or engineering at or above the 2000 level
- Two half-credit electives of computer science at or above the 3000 level
- Three half-credit electives of computer science at or above the 4000 level
- Two free half-credit electives at or above the 1000 level
- Seven free half-credit electives at or above the 2000 level

CSCI 1502.03 may not be counted towards a Bachelor of Computer Science degree.

#### 2. Bachelor of Computer Science Honours

The purpose of the Honours program is to provide a more challenging degree program that prepares students for graduate school. The program provides greater rigour and more analytic content than the Bachelor of Computer Science degree.

To enter the Honours program a student must consult with the Honours Student Advisor and obtain the approval of the Faculty of Computer Science.

Each computer science class at or above the 3000 level must be passed with a grade of at least 2.0 (C). The cumulative GPA across all classes must be at least 3.0 (B).

The Honours program may be combined with co-op education.

#### Faculty Requirements

In addition to the normal requirements of the Bachelor of Computer Science degree, class selection must include six classes chosen as follows:

- five half-credit classes of computer science at or above the 4000 level chosen in consultation with the thesis supervisor to ensure that the student has the appropriate background
- CSCI 8873.03 (i.e., successfully complete and present an Honours Thesis)

Students who meet these requirements and who obtain a GPA of 3.7 (A-) or higher in all computer science classes will receive the degree Bachelor of Computer Science with First Class Honours.

#### 3. Minors for the Bachelor of Computer Science

Students in the Bachelor of Computer Science program may add a Minor in many subjects from the Faculties of Arts and Social Sciences, Management, Science and the College of Sustainability. Minors in the Faculty of Arts and Social Sciences are available in Classics, English, French, German, History, International Development Studies, Music, Philosophy, Political Science, Sociology and Social Anthropology, Spanish, Theatre, Gender and Women's Studies. Minors in the Faculty of Management are Business and Management. Minors in the Faculty of Science are available in Biology, Chemistry, Earth Sciences, Economics, Environmental Studies, Mathematics, Physics, Psychology, and Statistics. The minor in the College of Sustainability is Environment, Sustainability and Society. Environment, Sustainability and Society can be Subject B of a BSc double major or combined honours degree in Computer Science.

Students who are seeking the requirements for a minor in any of the above subject areas should consult the corresponding department's section of the undergraduate calendar or <http://www.cs.dal.ca>. The minor requirements are in addition to the normal Bachelor of Computer Science requirements. Students wishing to pursue a minor in any of these subjects should consult the relevant department and a Faculty of Computer Science academic advisor.

#### 4. Co-operative Education Programs

All programs in Computer Science have a Co-operative Education option. This requires the completion of three Co-op work terms.

The Co-op office receives requests from employers for Co-op placements and advertises these to qualifying students. Students apply for these positions and are interviewed by the employer.

Students interested in the Co-op program should apply to register for CSCI 8890.00 in their second year.

#### 5. Specializations

The following three specializations have been approved within the Bachelor of Computer Science Programs:

- Graphics, Gaming, and Media
- Artificial Intelligence and Intelligent Systems
- Communication Technologies and Cyber Security

The above three specializations have been approved for the following Bachelor of Computer Science programs: BCSC, BCSC Co-op, BCSC with Honours, BCSC Honours with Co-op, BCSC Honours Conversion, BCSC Honours Conversion with Co-op.

The specializations have the following requirements:

**Graphics, Gaming, and Media** specialization requires a student to take three compulsory and two electives from a list of elective classes. Required classes are:

- CSCI 3161: Introduction to Computer Graphics with Animation
- CSCI 3162: Digital Media
- CSCI 4168: Game Design and Development

Elective classes are:

- CSCI 3154: AI and Games
- CSCI 4160: Computer Graphics
- CSCI 4166: Visualization
- CSCI 4167: Advanced Computer Animation

**Artificial Intelligence and Intelligent Systems** specialization requires a student to take two compulsory and two electives at the fourth year level from a list of elective classes. Required classes are:

- CSCI 3151: Web Intelligence
- CSCI 3154: AI with Gaming Applications

Elective classes are:

- CSCI 4141: Information Retrieval
- CSCI 4144: Data Mining and Data Warehousing
- CSCI 4152: Natural Language Processing
- CSCI 4155: Machine Learning with Robots

**Communication Technologies and Cyber Security** specialization requires a student to take two required classes and three electives from a set of elective classes. Required classes are:

- CSCI 3120: Operating Systems
- CSCI 3171: Network Computing

Elective classes are:

- CSCI 3172: Web-Centric Computing
- CSCI 4116: Cryptography
- CSCI 4171: Networks and Communications
- CSCI 4174: Network Security
- CSCI 4176: Mobile Computing

### Degree Requirements and Specialization Requirements

Note that to obtain a degree, the degree requirements must be satisfied. To obtain a specialization certificate, requirements for the specialization, in addition to the degree requirements, must be satisfied. Students need to contact the Undergraduate Administrator to request a certificate and a note on their transcript.

Additional information on the specializations is available at <http://www.cs.dal.ca/undergraduate/specializations>.

## 6. Entry Points to Bachelor of Computer Science

There are multiple entry points into the Bachelor of Computer Science program.

**First-Year Entry**-Students are advised to apply directly to the Faculty of Computer Science but may take their classes within the BSc first year and transfer to Computer Science at the beginning of their second year.

Students who wish to transfer to the Bachelor of Computer Science program from other disciplines may be able to do so, but will have to make up any required classes that are missing.

See also the Academic Regulations section for the Faculty of Computer Science on page 31.

## 7. Accreditation and the Profession

Of particular importance to the Faculty is the accreditation of the undergraduate program by the Computer Science Accreditation Council (CSAC), which is responsible for accreditation of computer science programs in Canada. Accreditation provides our graduates with an accelerated path towards achieving the professional designation of Information Systems Professional of Canada (I.S.P.).

The Bachelor of Computer Science, Bachelor of Computer Science with Co-op, Bachelor of Computer Science with Honours, and Bachelor of Computer science with Honours and Co-op are accredited by CSAC.

The co-operative program offers work terms to our students, thus providing an additional link between the Faculty and the Profession.

## C. Bachelor of Science and Bachelor of Arts with Computer Science

### 1. Bachelor of Science Major in Computer Science

The Faculty of Computer Science offers a Bachelor of Science degree with a Major in Computer Science. The program of studies is similar to the Bachelor of Computer Science, but with more flexibility in selection of elective classes. The program may be of benefit for students who want to use it as a basis to enter other professional programs such as Education, Medicine, or Law. However, unlike the Bachelor of Computer Science degree, it does not meet CSAC accreditation requirements. Students interested in this degree option will find further

information on the Faculty website at <http://www.cs.dal.ca> and should consult with a Faculty advisor.

## 2. Double Majors and Combined Honours

The following degree programs are available to students interested in interdisciplinary studies where the larger number of majors credits is Computer Science: Bachelor of Science (20 credit) with Double Major, Bachelor of Science (20 credit) with Combined Honours, Bachelor of Arts (20 credit) Double Major and Bachelor of Arts (20 credit) Combined Honours.

### Combined Honours

Students interested in taking honours in Computer Science and another subject as a combined program should consult the honours advisor through whom a suitable class of study can be arranged.

A combined honours program may well be an appropriate choice for many students. If a student is contemplating graduate work, it should be borne in mind that the work in either subject of a combined honours program may be insufficient for entry to a regular graduate program, and that a qualifying year may be necessary.

Students who wish to arrange interdisciplinary programs (with fields such as Mathematics, Physics, Psychology, and others) are invited to discuss their interests with the appropriate department and the Undergraduate Chair of the Faculty of Computer Science.

## D. Scholarships

Scholarships and bursaries are available to both new and returning students. See the Awards and Financial Aid section of this calendar.

## E. Minor in Computer Science for Non-Computer Science Major BSc

The Minor in Computer Science is available to students registered in the BSc 20 credit major and honours programs offered by the Faculty of Science. The requirements are as for the appropriate program with the completion of the following classes to fulfil the Computer Science Minor:

- CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2132.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, CSCI 3136.03 and CSCI 3171.03
- One additional CSCI half-credit at or above the 3000 level
- One and one half additional CSCI credits at or above the 2000 level

The selection of CSCI classes for a minor in computer science excludes CSCI 2100.03 and CSCI 3101.03

## III. Class Descriptions

### CSCI 1100.03: Computer Science I.

This class provides a general introduction to computer science and the hardware and software of computers. The main focus is on programming skills and how to apply these skills in solving a variety of problems. Algorithmic concepts are stressed.

**PREREQUISITE:** Nova Scotia PreCalculus or Calculus Math or equivalent  
**EXCLUSION:** CSCI 1202.03

### CSCI 1101.03: Computer Science II.

This class is a continuation of CSCI 1100.03. It focuses on programming and linear data structures.

**PREREQUISITE:** CSCI 1100.03 or INFX 1600.03 or INFX 1604.03

### CSCI 1106.03: Animated Computing.

The Animated computing course is a hands-on introduction to animated computing. Students will use applications to create web pages with animation and progress to the design of animated games and control of robots.

### CSCI 1107.03: Social Computing.

A hands-on course on technologies and the underlying infrastructure for social computing, including digital collaboration media, social networks and visualization, and their social impact. Students will use various applications, such as Twitter, YouTube, and wikis to examine their functionalities, and explore

infrastructure technologies including databases, computer networks and Web-servers that facilitate their execution.

### **CSCI 1200.03: Introduction to Computing for Non-Majors.**

This is a class of technical computer literacy. Students can expect to learn about computers in a general way and how computers affect the way we live and work. Students will be given an opportunity to become familiar with typical applications of software such as word processors, spreadsheets and database applications. Other topics will include the use of the internet, creation of web pages, and simple programming concepts. No previous computer experience is required. This class is open to Arts and Social Sciences and Health Education students only.

NOTE: This class cannot be counted towards the Bachelor of Commerce or a Minor in Business.

CROSS-LISTING: ASSC 1000.03

### **CSCI 2100.03: Communication Skills: Oral and Written.**

This class is designed to help students become more successful communicators by examining the communication process from both a theoretical and practical viewpoint. Students learn to formulate communication goals, to examine their audience and to deliver accurate, effective messages. Written assignments and oral presentations allow for the development of these skills through practice. Students ultimately learn to communicate effectively and with confidence in a variety of settings.

PREREQUISITE: Students are expected to have completed their Writing Requirement.

CROSS-LISTING: ENGL 2100.03

EXCLUSION: COMM 2701.03, COMM 1701.03, COMM 1702.03

### **CSCI 2110.03: Computer Science III.**

This course provides a comprehensive introduction to data structures and algorithms, including their design, analysis, and implementation. In discussing design and analysis there is a strong emphasis on abstraction. In discussing implementation, general approaches that are applicable in a wide range of procedural programming language are emphasized, in addition to a focus on the details of implementations. Topics include an introduction to asymptotic analysis and a review of basic data structures (stacks, queues, lists, vectors), trees, priority queues, dictionaries, hashing, search trees, sorting (MergeSort, QuickSort, RadixSort) and sets, and graphs (traversals, spanning trees, shortest paths).

PREREQUISITE: CSCI 1101.03

### **CSCI 2112.03: Discrete Structures I.**

See the class description for MATH 2112.03 in the Mathematics section of this calendar.

CROSS-LISTING: MATH 2112.03

### **CSCI 2113.03: Discrete Structures II.**

See the class description for MATH 2113.03 in the Mathematics section of this calendar.

PREREQUISITE: See Mathematics section

CROSS-LISTING: MATH 2113.03

### **CSCI 2121.03: Computer Organization with Assembly Language.**

This class deals with the fundamentals of computer organization; assembly language is used as an aid to studying computer organization. Topics include digital logic, ALU and CPU design, object code, microprogramming, CISC, RISC, and parallel computers.

PREREQUISITE: CSCI 1101.03

CO-REQUISITE: CSCI 2112.03 and CSCI 2132.03

### **CSCI 2132.03: Software Development.**

This course presents techniques for programming and software development in a procedural language. It reviews the basics of procedural programming and introduces students to source code management, testing strategies, debugging, and basic scripting techniques.

PREREQUISITE: CSCI 1101.03 or suitable prior programming experience

### **CSCI 2141.03: Introduction to Database Systems.**

This course introduces students to the concepts of database management systems and database design. Topics include: Database (DB) components, DB design using entity-relationship (relational and object oriented), SQL, and transactional properties and techniques to support them. The concepts will be reinforced using one or more Database Management Systems.

PREREQUISITE: CSCI 1100.03

CROSS-LISTING: INFX 2640.03

EXCLUSION: CSCI 2140.03

### **CSCI 3101.03: Social, Ethical and Professional Issues in Computer Science.**

Computers can enable people to do things that our present laws and policies were not formulated to cover (hacking, sharing files on the internet, and companies sharing data). In such cases, people need to be able to decide for themselves the best course of action, and defend such decisions. This course aims at developing the ethical reasoning skills and sensitivities that computer professionals will need to make good decisions and to justify them. The course includes a general introduction to ethical theories and their use in making and justifying decisions.

We then consider various issues and case studies, illustrating the kinds of problems that can arise from the use and misuse of computers and technology: the responsibilities of computing professionals; ethics on the internet (hacking, computer crime, netiquette); privacy and information; intellectual property; social and political issues (digital divide, computers and work, the internet as a democratic technology).

CROSS-LISTING: PHIL 2490.03

### **CSCI 3110.03: Design and Analysis of Algorithms I.**

This class covers techniques for the design and analysis of efficient algorithms and data structures. Topics include asymptotic analysis, divide and conquer algorithms, greedy algorithms, dynamic programming, data structure design, optimization algorithms, and amortized analysis. The techniques are applied to problems such as sorting, searching, identifying graph structure, and manipulating sets.

PREREQUISITE: CSCI 2110.03 and CSCI 2112.03

### **CSCI 3111.03: Introduction to Numerical Linear Algebra.**

Floating point arithmetic. Numerical solution of linear systems of equations; Gauss elimination methods and iterative methods; condition numbers of problems and of algorithms; estimation of condition numbers. Numerical calculation of eigenvalues; QR and LR algorithms; singular value decomposition; Gram Schmidt orthogonalization. Use is made of program libraries such as Linpack, Eispack and Matlab.

PREREQUISITE: MATH 2030.03 and CSCI 1101.03

CROSS-LISTING: MATH 3170.03

### **CSCI 3120.03: Operating Systems.**

This class includes a review of I/O and interrupt structures. Topics covered include dynamic procedure activation, system structure and evaluation, memory management, process management, process scheduling, recovery procedures, concurrency, deadlocks, resource allocation, protection, and operating systems implementation.

PREREQUISITE: CSCI 2110.03, CSCI 2121.03, and CSCI 2132.03

### **CSCI 3121.03: Computer Systems Architecture.**

The primary objective of this course is to give a comprehensive understanding of the structure and function of a computer system from an architecture and integration viewpoint. It focuses on two broad architectural perspectives: the internal perspective, which entails the architecture and design integration of the data path logic, control path logic, memory and I/O; and the external perspective, which provides consumer views and system selection aspects. Examples of real machines are used in the course.

PREREQUISITE: CSCI 2121.03

EXCLUSION: ECED 3403.03

### **CSCI 3130.03: Introduction to Software Engineering.**

The class examines the process of software development, from initial planning through implementation and maintenance. A brief survey of available tools and techniques will be presented covering the topics of analysis, planning, estimating, project management, design, testing, and evaluation. Particular emphasis will be given to organizing and planning, team participation and management, top-down design and structure charts, system and information flow diagrams, walk-throughs and peer review, and testing and quality control.

PREREQUISITE: CSCI 2110.03, CSCI 2132.03, or INFX 3600.03

CROSS-LISTING: INFX 3630.03

### **CSCI 3132.03: Object Orientation and Generic Programming.**

This class deals with the fundamental concepts of object-oriented programming: behaviour, inheritance, encapsulation and polymorphism. There is a discussion of

the history of object-oriented programming, and introduction to some currently used object-oriented programming languages.

PREREQUISITE: CSCI 2110.03 and CSCI 2132.03

### **CSCI 3136.03: Principles of Programming Languages.**

This course provides a comparative study of advanced programming language features. Topics include statement types, data types, variable binding and parameter passing mechanisms. Formal methods for syntactic and semantic description of programming languages are examined.

PREREQUISITE: CSCI 2110.03, CSCI 2112.03, and CSCI 2132.03

### **CSCI 3151.03: Web Intelligence.**

The Web and on-line digital libraries constitute the largest repository of interconnected knowledge in text form mankind ever created. Search engines have made this knowledge accessible to the lay person. Social networks further enhance the exchange of knowledge among individual Web users. Mining the Web and associated digital libraries is the next challenge that promises to change the nature of scientific discovery, and to dramatically impact the way business is conducted. This course will introduce the core Artificial Intelligence concepts and algorithms in the context of Web and text mining: machine learning, natural language processing, semantic web, social networks and web usage mining.

PREREQUISITE: CSCI 2112.03, CSCI 2141.03, STAT 2060.03, and MATH 2030.03

### **CSCI 3154.03: Introduction to Artificial Intelligence with Gaming Application.**

This class covers the breadth of Artificial Intelligence techniques and as such is divided into roughly two parts: Symbolic AI and Machine Learning. Throughout the course the problem of decision making for Non-Play Characters in computer games will form the case study and application examples used to illustrate the AI techniques studies. Symbolic AI will cover First-order Logic, Forward/Backward chaining, Rule-based systems and Fuzzy Logic. The relative trade offs in the application of such architectures to NPC decision making will be developed. The role of Planning systems in Goal orientated decision making will also be introduced, where this also makes use of search based problem solving and the A\* algorithm. Search and its utility in evaluation of next moved in turn-wise games will also be specifically investigated as well it introduction to Bayesian Decision making will be made, where this leads to causal reasoning and adaptation. The second half of the course will introduce Machine Learning from the basic design decisions of Representation, Credit assignment and Cost Function. Two paradigms will be investigated in particular - Gradient decent Neural Networks and Evolutionary computation - where these illustrate the relative trade offs implicit in the three ML design decisions. Case studies and laboratories illustrating these properties include learning to play checkers, recognizing Poker hands, learning NPC behaviors through evolution.

PREREQUISITE: CSCI 2110.03, CSCI 2112.03, and CSCI 2132.03

EXCLUSION: CSCI 4154.03

### **CSCI 3160.03: User Interface Design.**

This class deals with concepts and techniques underlying the design of interactive systems. Both human factors and the technical methods of user interface design are covered. Students will learn how to apply various techniques through the design, creation, and testing of a prototype system.

PREREQUISITE: CSCI 2132.03 or INFX 1616.03

CO-REQUISITE: CSCI 2140.03 or CSCI 2141.03

### **CSCI 3161.03: Computer Animation.**

The course provides students with a practical foundation in high-level computer animation programming. Through the development of a significant project using industry standard graphics libraries, students will learn proven techniques that have become common currency in the field of computer animation.

PREREQUISITE: CSCI 2110.03, CSCI 2132.03 and MATH 2030.03

### **CSCI 3162.03: Digital Media.**

This class covers technical aspects of digital media, including images, video, and sound. Topics covered include digital representation, processing, compression, and multimedia generation.

PREREQUISITE: MATH 1000.03, MATH 2030.03, CSCI 2110.03

EXCLUSION: CSCI 4165.03

### **CSCI 3171.03: Network Computing.**

This class gives students a foundation in computer networks. It presents a top-down view of the layered architectural elements of communication systems, focusing on the Internet and TCP/IP. Topics include client/server systems, packet

switching, protocol stacks, queuing theory, application protocols, socket programming, remote service calls, reliable transport, UDP, TCP, and security.

PREREQUISITE: CSCI 2110.03, CSCI 2132.03 and STAT 2060.03

### **CSCI 3172.03: Web-Centric Computing.**

This course provides a solid grasp of core WWW technologies and a conceptual framework for understanding the development of the WWW and working with future web technologies. The course explores interactive and non-interactive web applications built using various technologies and architectural models. We explore the significance of web design and programming concepts in terms of accessibility issues both from the perspective of web robots and end-users. Web caching, proxy techniques, and security issues are also discussed.

PREREQUISITE: (CSCI 2140.03 or CSCI 2141.03) and CSCI 3171, or INFX 2691.03 and INFX 2601.03

CO-REQUISITE: CSCI 3171.03 may be taken as a co-requisite

### **CSCI 3190.03: Community Outreach.**

This is a project-oriented class where the result of the project is a real-world implementation that meets the requirements of a community group such as a charity, non-profit organization, or educational institution. Students work in teams on the entire application development life cycle from requirements analysis through to maintenance. Lectures cover a range of topics such as practical application of requirements analysis, systems design, and database design methodological skills developed in prerequisite courses or from prior equivalent experience. This course cannot be counted towards a Bachelor of Informatics degree.

PREREQUISITE: CSCI 2100.03, CSCI 2132.03, and (CSCI 2140.03 or CSCI 2141.03)

### **CSCI 3191.03: Community Outreach II.**

CSCI 3191 is a continuation of CSCI 3190, allowing students to undertake projects lasting two terms or to work on a second, more advanced project. When CSCI 3190 and CSCI 3191 are offered concurrently, they are jointly scheduled, and project teams are drawn from both classes, with more responsibility given to students enrolled in CSCI 3191 (e.g., team leadership). This course cannot be counted towards a Bachelor of Informatics degree.

PREREQUISITE: CSCI 3190.03 or permission of the instructor

### **CSCI 4112.03: Theory of Computation.**

This is a class on formal languages and computational models. Topics covered include finite automata, pushdown automata, Turing machines, undecidability and recursive and recursively enumerable functions. Some applications to computer science are also discussed such as compiler design and text processing.

PREREQUISITE: CSCI 2112.03 and CSCI 3136.03

CROSS-LISTING: MATH 4660.03

### **CSCI 4113.03: Design and Analysis of Algorithms II.**

This class covers advanced techniques for the design and analysis of efficient algorithms. Problems are taken from a wide range of areas including combinatorics, numerical computation, graph algorithms, string matching, approximation algorithms, computational geometry, and NP-Completeness.

PREREQUISITE: CSCI 3110.03

CROSS-LISTING: MATH 4130.03

### **CSCI 4114.03: Formal Aspects of Software Engineering.**

This class deals with formal specifications of software, techniques for verification of computer programs and software testing.

PREREQUISITE: CSCI 3130.03

### **CSCI 4115.03: Topics in Graph Theory.**

See the class description for MATH 4330 in the Mathematics section of this calendar.

PREREQUISITE: See Mathematics section

CROSS-LISTING: MATH 4330.03

### **CSCI 4116.03: Cryptography.**

See the class description for MATH 4116 in the Mathematics section of this calendar.

PREREQUISITE: See Mathematics section

CROSS-LISTING: MATH 4116.03

### **CSCI 4117.03: Advanced Data Structures.**

Data structures play a central role in many modern applications, and are essential building blocks of efficient algorithms. This course covers classical results and

recent advancements on data structures. Topics covered include the  $O(\lg n)$  barrier in sorting and searching, online optimization of search structures, fast text retrieval, space efficient data structures for large data sets, and persistent data structures.

PREREQUISITE: CSCI 3110.03

### **CSCI 4121.03: Advanced Computer Architecture.**

The class will focus on the basic principles of computer architecture with an emphasis on quantitative analysis of the effect of architectural design decisions on system performance and the price/performance trade-offs necessary in real computer design. This includes instruction set design issues (CISC vs. RISC), instruction level parallelism, implementation methods, pipelining, pipeline hazards, interrupts, the relationship with compiler technology, and memory system design. Several representative architectures will be used as examples, with emphasis on modern RISC processors.

PREREQUISITE: CSCI 3121.03

### **CSCI 4122.03: Software Design Methods for Real Time Systems.**

This class will include the following topics: real time executives, architectures for real time systems, design methods, concurrency and synchronization, resource allocation, error handling and safety issues.

PREREQUISITE: CSCI 3120.03, CSCI 3130.03 and permission of the instructor

### **CSCI 4126.03: Ubiquitous Computing.**

Ubiquitous Computing moves computing off the desktop and into the fabric of our everyday lives. This course explores both systems and human-centric advances in Ubiquitous Computing, including sensing, middleware, locative applications, smart environments, ambient displays, and tangible interaction. Students will design and implement a Ubiquitous computing application prototype.

PREREQUISITE: CSCI 3160.03 and CSCI 3171.03

### **CSCI 4131.03: Compiler Construction.**

An introduction to the major methods used in compiler implementation. Topics include lexical analysis and parsing methods, symbol table construction, run-time storage management, and code optimization.

PREREQUISITE: CSCI 2110.03, CSCI 2121.03, CSCI 2132.03 and CSCI 3136.03

### **CSCI 4134.03: Software Architecture.**

Software Architecture is an important discipline for designers of software systems. It describes the abstractions, classifies the alternatives, enables tool support, and offers guidance about making choices appropriate to the software system design process. As software systems grow larger, good architectural design will play a major role in determining the success of a software system. This class covers four areas in software architectures: foundations of software architectures, tools for architectural design, analysis of software architectures, and "industry-rich" case studies.

PREREQUISITE: CSCI 3120.03 and CSCI 3130.03

### **CSCI 4136.03: Software Testing and Quality Assurance.**

This class addresses systematic testing for software defects. The purpose of this kind of testing is risk reduction. The course explores risks and techniques for reducing them. Topics include software testing processes in practice, including unit, integration and systems level testing as well as exploratory and regression testing; software testing methods and deliverables; software test tools; managing test technology; and other approaches to software quality assurance.

PREREQUISITE: CSCI 2132.03 and CSCI 3130.03

### **CSCI 4137.03: Software Deployment, Maintenance, and Evolution.**

This class addresses issues arising after the Factory Acceptance Test: deployment, field support, and upgrades. Commercial software products (especially product lines) are delivered to many sites in many versions and are subject to an ongoing schedule of enhancements. Enterprise applications with many users must evolve, may run at different sites, and may require different versions. Topics include technical challenges of rollout, technical challenges of maintenance and evolution, and technical challenges of upgrading fielded systems.

PREREQUISITE: CSCI 3130.03

### **CSCI 4138.03: Empirical Performance Modelling.**

This class addresses the testing of actual or simulated systems for quantitative measurement and prediction from empirical models. Topics include motivations for quantitative assessment; measures of load and performance; instrumentation

and challenges in measuring attributes of software artifacts; design of experiments for efficiently measuring software; and methods for analysis of observed data and interpretation of results.

PREREQUISITE: CSCI 3110.03 and either ENGM 2032.03 or STAT 2060.03

### **CSCI 4140.03: Advanced Database Systems.**

This course covers advanced Database (DB) topics including, but not limited to: DB design, normalization query processing and optimization, transaction processing, concurrency control and recovery, and distributed databases.

Additional topics may include object-oriented databases, multi-databases, data integration and data warehousing.

PREREQUISITE: CSCI 2141.03

EXCLUSION: CSCI 3140.03

### **CSCI 4141.03: Information Retrieval.**

This class examines information retrieval within the context of full text databases.

Topics include the major models of information retrieval, evaluation, searching and clustering, and hypertext.

PREREQUISITE: CSCI 2110.03 and (CSCI 2140.03 or CSCI 2141.03)

### **CSCI 4144.03: Introduction to Data Mining and Data Warehousing.**

This course reviews main concepts in data mining and data warehouses including objectives, architectures, algorithms, implementations, and applications. The topics covered include operational information process, decision-oriented information process, data warehousing and On-Line Analytical Process (OLAP), characterization mining, association rule mining, classification and predication and clustering. Selected system tools for data mining and data warehousing are introduced.

PREREQUISITE: CSCI 2141.03 or CSCI 3140.03

### **CSCI 4152.03: Natural Language Processing.**

This class presents strategies and techniques for natural language understanding by machines. The class will cover a selection of topics taken from the following three areas: parsing techniques used to represent sentence structure and discover ambiguities, the representation of word meanings and how sentence meaning can be derived from word meanings, and the application of context and world knowledge to the interpretation of language.

PREREQUISITE: CSCI 3110.03

### **CSCI 4155.03: Machine Learning with Robotics.**

This course discusses learning theories and demonstrates these strategies with robots. The topics include supervised learning, in particular maximum likelihood estimation in stochastic models and statistical learning theory including support vector machines, unsupervised learning which includes generative models, expectation maximization, and Boltzmann machines, and reinforcement learning including Markov decision processes and temporal difference learning. The course includes introductions to the MATLAB programming environment, a refresher of basic probability theory, and the use of a robotics environment.

PREREQUISITE: MATH 2030.03, CSCI 3154.03, STAT 2060.03

EXCLUSION: CSCI 4150.03

### **CSCI 4160.03: Computer Graphics.**

This class presents the theory and mathematical algorithms required to develop and build a graphics package. Emphasis is on either two or three dimensions and the transformations and manipulations necessary to lead to animation. The design platform and language are left as a student choice to ensure immediate familiarity and future development advantages.

PREREQUISITE: CSCI 2110.03 and CSCI 3130.03

### **CSCI 4163.03: Human-Computer Interaction.**

Human-computer interaction deals with human-computer communication and how to facilitate it. This class begins with a discussion of information processing characteristics important to human-computer interaction and formal models of human-computer interaction. Subsequent topics include dialogue techniques, response times and display rates, information presentation, interaction devices, computer training, help systems, computer supported co-operative work, information search and visualization, hypermedia, and the world wide web.

PREREQUISITE: CSCI 3160.03

### **CSCI 4166.03: Visualization.**

This course focuses on graphical techniques for data visualization that assist in the extraction of meaning from datasets. This involves the design and development of efficient tools for the exploration of large and often complex information domains. Applications of visualization are broad, including computer science, geography,

the social sciences, mathematics, science and medicine, as well as architecture and design. The course will cover all aspects of visualization including fundamental concepts, algorithms, data structures and the role of human perception.  
PREREQUISITE: CSCI 3161.03 or CSCI 4160.03

### **CSCI 4167.03: Advanced Computer Animation.**

The course introduces students to fundamental and advanced techniques and algorithms in Computer Animation. Topics include interpolation based and kinematic techniques, physically based modelling, motion capture, and character animation.  
PREREQUISITE: CSCI 3161.03

### **CSCI 4168.03: Game Design and Development.**

This course covers the fundamentals of digital game design with an emphasis on team-based development. In this course students will produce a significant game using techniques and principles derived from established state-of-the-art industry practices. Topics include an examination of game design theories, programming architectures, audio-visual design and game production.  
PREREQUISITE: CSCI 2110.03 and CSCI 3130.03

### **CSCI 4169.03: Usable Security.**

Human factors play an important role in the effectiveness of security and privacy solutions, and it is important for security and privacy experts to have an understanding of how people will interact with the systems they develop. This course is designed to introduce students to a variety of usability and user interface problems related to privacy and security, and to give them experience in designing studies aimed at helping to evaluate usability issues in security and privacy systems. Topics include human threat identification, security warning design, location privacy, privacy policies, web browser privacy and security, phishing, passwords, and secure communication.  
PREREQUISITE: CSCI 3160.03

### **CSCI 4171.03: Networks and Communication.**

The primary objective of this class is to give the student a comprehensive understanding and specialized knowledge in the field of computer networks and communications. The class teaches through a systems approach to networks by examining the hardware and protocol components that comprise a network. The class also examines the interactions and interdependencies between protocols. Topics covered in this class include network principles and concepts, transmission principles, network architecture, routers and routing protocols, direct link networks, wireless networks, internetworking, and emerging network technologies.  
PREREQUISITE: CSCI 2121.03 and CSCI 3171.03

### **CSCI 4174.03: Network Security.**

Security stands out as a critical issue in the design and deployment of information systems in general, and networks in particular. This class will deal with the design of secure information systems with emphasis on secure networking and secure information transfer. It will also include topical and emerging areas in security such as the establishment of an organization-wide security plan and bio-metric identification systems.  
PREREQUISITE: CSCI 3171.03

### **CSCI 4176.03: Mobile Computing.**

This course covers the principles of mobile computing and the concepts and techniques underlying the design and development of mobile computing applications. Mobile computing is discussed from technological, application, and user perspectives. Topics include mobile and wireless communication technologies, development environments, application design for resource limited and failure-prone environments, user interface issues in the mobile computing setting, and the future of mobile computing.  
PREREQUISITE: CSCI 2121.03 and CSCI 3171.03

### **CSCI 4180.03: Introduction to Computational Biology and Bioinformatics.**

This course introduces biology-related applications of computer science. No background in biology is assumed. The topics covered include the following: introductory molecular biology and evolution, genomics, similarity and homology, multiple sequence alignments, phylogenetics, structural bioinformatics and gene expression. The emphasis is on the applications of computer science to biology.  
PREREQUISITE: CSCI 2132 and STAT 2060

### **CSCI 4181.03: Bioinformatics Algorithms.**

The discipline of bioinformatics applies sophisticated computational and statistical techniques to problems in the biological domain. This course will focus on a few biosequence-related challenges in depth, examining the complexity and efficiency of different approaches, the relationship between statistical optimality and biological reality, and the consistency (or lack thereof) among methods.  
PREREQUISITE: CSCI 3110 or permission by instructor

### **CSCI 4190.03: Special Topics in Computer Science.**

This class examines topics determined by the interests of the students and the instructor.  
PREREQUISITE: Permission of the instructor

### **CSCI 4191.03: Application Development Project.**

This is a project-oriented class for students to participate in distributed software development projects, such as the Undergraduate Capstone Open Source Project ([www.ucosp.ca](http://www.ucosp.ca)) initiative. Students work as part of a development team on new or existing projects for real-world applications. In this class students learn how to work in large development teams, which may be geographically distributed. Students implement portions of a large software project and give a public presentation on their work. Students work under supervision of a faculty member. A specific development project must be approved by the undergraduate chair in consultation with the instructor.  
PREREQUISITE: (CSCI 3120.03, CSCI 3130.03 and CSCI 3171.03) or INFX 4600.03

### **CSCI 4192.03: Directed Studies.**

This class is a study of specific academic subject area not covered in another class offered at Dalhousie University, under close supervision of a faculty member. It typically consists of predetermined readings, discussions with the instructor, and a term paper summarizing the studied material. A specific directed studies class must be approved by the undergraduate chair in consultation with the instructor.  
PREREQUISITE: CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, CSCI 3136.03, CSCI 3171.03

### **CSCI 8873.03: Honours Seminar.**

This is a class through which students complete their Honours Thesis requirements. Honours students in Computer Science must register for this class or CSCI 8871/72. In this class, students complete their thesis research, write their honours theses, and give public presentations of their work. In a normal course sequence, the student should have taken CSCI 4192 under the direction of their thesis supervisor. During this course, the student should have acquired the necessary background knowledge for their thesis research and formulated a research plan for their thesis work. Deviations from this sequence are possible.  
PREREQUISITE: Permission of the Honours Coordinator

### **CSCI 8890.00: Co-Op Seminar.**

Students in the Bachelor of Computer Science Co-operative Education Programme must register for this class, which orients students to the co-op system. Pass/fail grading applies to this class.  
PREREQUISITE: Permission of the Faculty of Computer Science

### **CSCI 8891.00: Co-op Work Term 1.**

This class is the first work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.  
PREREQUISITE: CSCI 8890.00

### **CSCI 8892.00: Co-op Work Term 2.**

This class is the second work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.  
PREREQUISITE: CSCI 8891.00

### **CSCI 8893.00: Co-op Work Term 3.**

This class is the third work term for students in the Bachelor of Computer Science Co-operative Education Programme. Pass/fail grading applies to this class.  
PREREQUISITE: CSCI 8892.00

# Informatics

## I. Introduction

Informatics is the multidisciplinary study of how people transform technology, and how technology transforms us. It lies at the intersection of people, technology and information systems and focuses on the expanding relationship between information systems and the daily lives of people, both at home and at work.

Informatics helps develop new uses for information technology in order to design solutions that reflect the way people create, use and find information, and it takes into account the social, cultural and organizational settings in which those solutions will be used.

Informatics professionals have very diverse jobs. Some typical activities include:

- assess information needs of organizations
- manage information projects
- solve organizational information flow problems
- make software packages talk to each other
- model the information flows among a group of people
- design innovative user interfaces
- track health care resources
- design professional websites
- improve health care information systems
- develop business solutions

## II. Degree Programs

### A. Bachelor of Informatics

#### 1. Program Structure

There is a choice of majors: Environment, Sustainability and Society, Specialization of your own design and Software Systems. Students should consult with the Faculty of Computer Science for details on other options that are being developed.

Elective classes are any eight classes of your own choosing, although no more than four may be at the 1000 level. The electives allow you to explore possible specializations and to follow personal interests.

A **minor in Management** is available to students registered in the BInf program. For further information, please see page 459 in the Management section of this calendar.

The co-operative education program is a mandatory component of the Bachelor of Informatics. Students are required to complete three co-op work terms as part of their bachelor degree.

The co-op office receives requests from employers for co-op placements and advertises these to qualifying students. Students apply for these positions and are interviewed by the employer.

Co-op work terms are scheduled after terms 5, 6 and 7.

The normal academic sequence of terms follows:

Yr/Term	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	AT4	FREE
Year 3	AT5	WT1	AT6
Year 4	WT2	AT7	WT3
Year 5	AT8		

AT = Academic study term

WT = Co-op work term

#### 2. General Requirements

- STAT 1060.03 Introduction to Statistics
- CSCI 1100.03 Computer Science I

- CSCI 1101.03 Computer Science II
  - INFX 1606.03: Introduction to Web site Creation
  - INFX 1615.03 Concepts of Computing
  - INFX 1616.03 Applications of Computing
  - CSCI 2100.03 Communication Skills
  - CSCI 2112.03: Discrete Structures I
  - INFX 2601.03: Introduction to Information Security
  - INFX 2640.03: Use and Design of Databases
  - INFX 2670.03: Introduction to Server Side Scripting
  - INFX 2690.03: Integrated Studies 1
  - INFX 2691.03: Integrated Studies 2
  - HAHF 3100.03: Research Methods (or equivalent)
  - CSCI 3160.03: User Interface Design
  - CSCI 3172.03: Web-Centric Computing
  - INFX 3600.03: Project 3
  - INFX 3601.03: Project 4
  - INFX 3630.03: Software Engineering and Project Management
  - INFX 4600.03: Project 5
  - INFX 4601.03: Project 6
  - six full credits in credits specified by the major
  - two full credits of free electives at or above the 1000 level
  - 1.5 full credits of free electives at or above the 2000 level
  - Completion of three co-op work terms
- \* Neither CSCI 3190.03 nor CSCI 3191.03 can be counted towards a Bachelor of Informatics degree.

### 3. Major in Software Systems

The Major in Software Systems follows the general Bachelor of Informatics requirements and must include the following classes:

- CSCI 2110.03: Computer Science III
- CSCI 2132.03: Software Development
- CSCI 3132.03: Object Orientation and Generic Programming
- CSCI 4140.03: Advanced Database Systems
- CSCI 3171.03: Network Computing
- Three full credits of CSCI classes at or above the 3000 level

### 4. Major in Environment, Sustainability and Society

The College of Sustainability offers a Major in Environment, Sustainability and Society in the BInf program. For complete details about the College, its programs and classes please see the College of Sustainability section on page 44 of the Calendar.

The Major in Environment, Sustainability and Society follows the general Bachelor of Informatics requirements and must include the following classes:

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 or SUST 2001.06
- three full credits from the approved list (at least two credits above 2000 level)

### 5. Specialization of Your Own Design

The Specialization of your own design follows the general Bachelor of Informatics requirements and must include the following:

- It is your responsibility to develop and submit to the Faculty a written proposal for these 14 classes.
- The 14 classes must be chosen from at least two disciplines other than Computer Science. Two of the disciplines must account for at least four classes each and at least 10 classes together.
- Your proposal must be developed in consultation with one undergraduate adviser from each of the other disciplines and the Director of Informatics.
- Your proposal must include career goals, a list of class, a timeline, and a coherent justification for the proposal. It must be approved by the Faculty.
- At least five full credits must be at the 2000 level or higher.
- At least three full credits must be at the 3000 level or higher.

### 6. Entry Points to Bachelor of Informatics

There are two main entry points into the Bachelor of Informatics program:

- First-Year Entry - Students are advised to apply directly to the Faculty of Computer Science. Consult the first-year entry requirements on page 12.
- Second-Year Entry - Students can enter the normal second year of the program if they meet the second-year entry requirements or equivalent, and have
  - a grade point average of at least 2.0
  - CSCI 1100.03: Computer Science I

- STAT 1060.03: Introductory Statistics for Science and Health Sciences
- CSCI 2112.03: Discrete Structures I
- One full credit writing classes and demonstrable communication skill
- One half credit of electives

Students who are missing some of these requirements may still qualify for second-year entry; consult the Faculty of Computer Science advisors for further information.

### III. Class Descriptions

#### **INFX 1606.03: Introduction to Web site creation.**

See calendar description for INFX 1601.03 in the Informatics section of this calendar.

CROSS-LISTING: CSCI 1206.03

EXCLUSION: INFX 1600.18

#### **INFX 1615.03: Concepts of Computing.**

This course introduces some key concepts in computing and places them in context with a survey of applications. The skills developed in this course include research, redaction, problem solving and abstraction. The themes covered are the following: Data and storage, operating systems, networking and the Internet, database systems, artificial intelligence and computer graphics. This course is eligible to partially cover the writing requirement for students in the Bachelor of Computer Science, the Bachelor of Informatics and Bachelor of Science, Computer Science.

#### **INFX 1616.03: Applications of Computing.**

This course covers professional aspects of the computing industry. The main themes are: project management, software engineering and computer languages. It explores how technological advances impact the workplace for non-technical people. It also includes a module on proofreading and editing. This course is eligible to partially cover the writing requirement for students in the Bachelor of Computer Science, the Bachelor of Informatics and Bachelor of Science, Computer Science.

#### **INFX 1690.03: Project Management Theory and Practice.**

This course provides the basics of Informatics and technology project management. This course treats both the theory required and allows for practical experience. Students work in project teams to solve practical informatics problems. This course is the first in a series of project courses that gives students the opportunity to develop technical and professional skills. Students are expected to take this course in their first year of study.

EXCLUSION: INFX 1600.18

#### **INFX 2601.03: Introduction to Information Security.**

See the class description for INFX 2601.03 in the Informatics section of this calendar.

CROSS-LISTING: CSCI 2201.03

#### **INFX 2640.03: Introduction to Database Systems.**

This course introduces students to the concepts of database management systems and database design. Topics include: Database (DB) components, DB design using entity-relationship (relational and object oriented), SQL, and transactional properties and techniques to support them. The concepts will be reinforced using one or more Database Management Systems.

PREREQUISITE: CSCI 1100.03

EXCLUSION: CSCI 2141.03

#### **INFX 2670.03: Introduction to Server Side Scripting.**

A server side scripting language is used to create web pages with dynamic content. The course provides the technology necessary for connecting client web pages to web servers and processing and storing information obtained using forms during web sessions.

PREREQUISITE: CSCI 1100.03 and INFX 1606.03

CROSS-LISTING: CSCI 2170.03

CO-REQUISITE: INFX 2640.03 or CSCI 2141.03

#### **INFX 2690.03: Integrated Studies 1.**

Students work in project teams to solve a practical informatics problem. Team members are drawn from all years of study. The project gives students an opportunity to develop their technical and professional skills.

PREREQUISITE: INFX 1606.03, INFX 1615.03, and INFX 1616.03

#### **INFX 2691.03: Integrated Studies 2.**

This class is a continuation of INFX 2690.03

PREREQUISITE: INFX 2690

#### **INFX 3600.03: Integrated Studies 3.**

This class is a continuation of INFX 2691.03 with the development of leadership skills.

PREREQUISITE: INFX 2640.03, INFX 2670.03, INFX 2691.03

#### **INFX 3601.03: Integrated Studies 4.**

This class is a continuation of INFX 3600.03

PREREQUISITE: INFX 3600.03

#### **INFX 3630.03: Introduction to Software Engineering.**

See the class description for CSCI 3130.03 in the Computer Science section of this calendar.

PREREQUISITE: CSCI 2110.03, CSCI 2132.03, or INFX 3600.03

CROSS-LISTING: CSCI 3130.03

#### **INFX 3690.03: Research Methods.**

Organizational needs for information may not be known a priori, and may need to be established by surveys. This class prepares students to conduct research requiring measurement, sampling, and data analysis and reporting. It also deals with ethical issues and research design.

#### **INFX 4600.03: Integrated Studies 5.**

Continuation of INFX 3601.03

PREREQUISITE: CSCI 3130.03, INFX 2690.03, and (INFX 3601.03 or CSCI 3191.03)

#### **INFX 4601.03: Integrated Studies 6.**

Continuation of INFX 4600.03

PREREQUISITE: INFX 4600.03



# Faculty of Engineering

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## I. Engineering as a Profession

Engineering is an important profession. Virtually all aspects of modern life are involved with this fascinating discipline. Engineering education at Dalhousie is demanding, because the engineering profession is demanding. Society expects its technical problem solvers to offer answers to some of the most difficult questions around, questions related to the environment, productivity, information technology, communications, transportation, and more. In general, the engineering enterprise contributes not only to human welfare, but also to the sustainable development of our resources. Engineering education provides great rewards for the engineer of the future. Specifically, there is the personal satisfaction of following a career where one's personal expertise can benefit fellow humans and contribute to the making of a better world.

The Faculty of Engineering at Dalhousie University prepares its students with the problem-solving skills needed for lifelong exploration in a field that answers some

of today's most pressing concerns. The Faculty of Engineering has an excellent tradition of providing engineering education for students in the Atlantic Provinces that started in 1907 with the founding of the Nova Scotia Technical College. Our graduates occupy many important positions throughout Canada and in many other countries.

The Faculty of Engineering offers undergraduate curricula leading to the degree of Bachelor of Engineering in the following disciplines:

- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering

The Faculty also offers a Bachelor of Applied Science in Food Science (admission suspended, pending review), and post-graduate studies at the master's and doctoral level.

For students who are eligible, the Faculty of Engineering offers a Bachelor of Engineering Co-operative Education program that integrates academic study with university approved industrial experience. Graduation from this program requires satisfactory performance in both areas. The schedule of study and work terms varies according to the discipline, details of which are outlined in Section E of the Engineering curricula in this calendar.

The co-operative education system requires students to alternate periods of study with periods of university approved, full-time, paid employment. The period of employment is called a work term and is normally four months (16 weeks) in length. Some programs combine two or more four month work terms. Work terms have academic requirements that must be completed in addition to the requirements of the employer.

The co-op degree program covers almost five calendar years, comprising eight or nine terms (depending on the area of specialization) each consisting of about four months' duration of university work on campus which are pursued alternately with four-month terms of supervised training in the practical experiences fundamental to the development of the graduate engineer. In a typical program of study, the total time spent in academic study is the same as that encountered in the usual class of four academic years.

Graduation from the University is the beginning of a lifelong learning experience. After completion of formal studies leading to the Bachelor of Engineering degree, and being admitted as an Engineer in Training (EIT) by an Association of Professional Engineers in Canada, four years of suitable experience are required as a condition of admission to the profession of Engineering.

The practice of engineering is regulated, by statute, in all Canadian provinces and territories. To become a Professional Engineer you must satisfy the requirements of the licensing bodies. These requirements include a degree from an accredited program, successful completion of a professional practice (law and ethics) examination, and suitable experience. Accreditation of the degree programs by the CEAB is the mechanism by which graduates qualify for registration as Professional Engineers without the need to undertake additional examinations in specific technical subject areas. The BEng programs described in this calendar have been specifically designed to satisfy the criteria of the Profession and are evaluated regularly by the Canadian Engineering Accreditation Board (CEAB) of Engineers Canada. The Faculty will not graduate any student who does not meet these requirements because this would jeopardize accreditation for the program. The department responsible for the appropriate program will use these requirements in determining the suitability of student elective class selections. The baccalaureate programs in all disciplines are accredited by the Canadian Engineering Accreditation Board.

## II. Degree Programs

### A. Undergraduate

#### 1. Engineering

##### 1.a Bachelor of Engineering

Students who have successfully completed the academic study program in any of the disciplines will be granted the degree of Bachelor of Engineering.

##### 1.b Bachelor of Engineering with Distinction

Students who have successfully completed the requirements for the degree of Bachelor of Engineering, and have obtained a Cumulative Grade Point average of at least 3.7, will be granted the degree of Bachelor of Engineering with Distinction.

##### 1.c Bachelor of Engineering with Sexton Distinction

Dr. F.H. Sexton was the President of the Nova Scotia Technical College since its establishment in 1909 until his retirement in 1947. To honour his contributions, the Faculty of Engineering awards the designation of Sexton Distinction to each undergraduate student who has taken a full class load and obtained a cumulative Grade Point Average of at least 3.85 or higher with no failed marks during their program beginning in Academic Term 5.

##### 1.d Co-operative Program Designation

Students who have successfully completed the requirements for the degree of Bachelor of Engineering and who, in addition, have successfully completed three four-month work terms, each of a minimum of 14 weeks, with a minimum of 35 hours per week, or equivalent as determined by the Department and the Co-op office, will receive the "Co-operative Education" designation on their degree.

##### 1.e Diploma of Engineering

Students who have successfully completed the academic study program in the first four terms in any of the disciplines will be granted the Diploma of Engineering.

##### 1.f Combined Bachelor of Science/Diploma of Engineering

Students may register in a combined Bachelor of Science/Bachelor of Engineering program. Those who successfully complete the requirements as outlined in the Concurrent Programs sections on page 137 will be awarded the Diploma in Engineering and the 15 credit Bachelor of Science Degree.

##### 1.g Combined Bachelor of Arts/Diploma of Engineering

Students may register in a combined Bachelor of Arts/Bachelor of Engineering program. Those who successfully complete the requirements as outlined in the Concurrent Programs sections on page 137 will be awarded the Diploma in Engineering and the 15 credit Bachelor of Arts Degree.

#### 2. Food Science

##### Bachelor of Applied Science

This is a standard 20 credit curriculum. Consult the Food Science section (page 364).

### B. Graduate

#### 1. Master of Applied Science

Students who have successfully completed the class requirements for the degree and who have submitted and defended orally an acceptable thesis, will be awarded the degree of Master of Applied Science.

#### 2. Master of Engineering

Students who have successfully completed the class requirements for the degree and submitted an acceptable project report, will be awarded the degree of Master of Engineering.

#### 3. Master of Engineering (Internetworking)

This is a 10 month plus internship/project interdisciplinary Master's Degree program focused on the theory and technology of the Internet. This program has been designed to prepare individuals to play an active role in the rapidly expanding field of Internetworking. Students who complete the prescribed ten classes and a project class will be awarded the MEng (Internetworking).

#### 4. Master of Science

Students who have successfully completed the class requirements for the degree in Engineering Mathematics or Food Science and who have submitted and defended orally an acceptable thesis or project report, shall be awarded the degree of Master of Science.

#### 5. Doctor of Philosophy

Students who have successfully completed the class requirements for the PhD degree, passed their comprehensive examination, and submitted and defended orally a satisfactory thesis, will be awarded the degree of Doctor of Philosophy.

# Engineering

## I. The Associated University Program

Students who have completed the degree requirements for a Diploma of Engineering or a Certificate of Applied Science from one of the Associated Universities are admissible to the Upper Division in the Faculty of Engineering. Admission to specific programs is competitive and is based on the students' academic standing. The Associated Universities are:

### Acadia University

Wolfville, Nova Scotia  
A. Mitchell, Director  
The Ivan Curry School of Engineering

### Cape Breton University

Sydney, Nova Scotia  
E. MacLellan, Director  
Diploma in Engineering Program

### St. Francis Xavier University

Antigonish, Nova Scotia  
F. Comeau, Chairman  
Department of Engineering

### Saint Mary's University

Halifax, Nova Scotia  
R. Singer, Director  
Division of Engineering

### University of Prince Edward Island

Charlottetown, Prince Edward Island  
A. Trivett, Chairman  
Engineering Department

Each of the Associated Universities establishes its own entrance requirements. Dalhousie University recognizes all of the Associated Universities and ensures proper standards of achievement by means of the Associated Universities Directors of Engineering Committee. The program at each Associated University contains classes fulfilling the minimum entrance requirements established by the Senate of Dalhousie University. Students who complete the applied science or engineering program at an Associated University may receive a Certificate or Diploma and are normally admitted to the programs in Chemical, Civil, Electrical, Environmental, Industrial, Materials, Mechanical, or Mineral Resource at Dalhousie without examination. Students should ensure that their class selection at the Associated Universities include the discipline specific classes relevant to their program of choice. Not all Associated Universities offer all discipline specific classes, and students should contact the office of the Associate Dean, Faculty of Engineering at the Sexton location, for details. Students who have completed equivalent university studies elsewhere may also be admitted subject to Dalhousie University Regulations.

Please refer to the Graduate/Professional Calendar for details of graduate programs offered by the Faculty of Engineering.

## II. Academic Regulations

Students are reminded that the academic regulations stated in the calendar are abridged for reference. In addition to the Academic Regulations section of this calendar and the regulations stated below, the current Faculty of Engineering Working Rules also apply to all students.

### Classes on Letters of Permission

The academic program for a student will normally contain a maximum of two classes on a letter of permission.

### Class Grades

A student must achieve a grade of D or greater in each class of the curriculum and satisfy the regulations set out herein in order to graduate. Where Faculty regulations permit, a student who achieves a grade of FM in a required class may write a supplementary examination to attempt to raise the grade to D or greater. If the grade is not raised to at least D by means of a supplementary examination or if a supplementary examination is not permitted, the student must repeat the class. See also Supplementals, page 36.

A student is permitted to repeat a failed mandatory class only once. In the case of a failed elective class, a student may choose either to repeat the class or to substitute another elective class in lieu of the failed class. In the case of a substituted class only one such substitution is allowed. A student will be academically dismissed if the grade achieved in the repeated mandatory class or the repeated elective class or the substituted class is less than D.

### Readmission After Academic Dismissal

A student who has been academically dismissed only once from their program may apply to be readmitted to the same program after a minimum of eight months from the time of dismissal, or, such a student may apply to be admitted to a different engineering program starting immediately. Readmission may be granted by the Faculty on the recommendation of the Department concerned. A department may readmit a student who has been academically dismissed, subject to special academic conditions set by the department, which are based on an evaluation of the student's academic record. See also Academic Dismissal, page 37.

### Scholarships

Only those students who are registered for a full load of classes as measured by the curriculum of the program concerned will be eligible for scholarships and awards in the Faculty of Engineering.

### Supplementary Examinations

Supplementary examinations may be offered to students in order (1) to raise a class grade to at least D, (2) to raise a term GPA to at least C. In the case of raising the term GPA, the supplementary examination will be offered in a class with a grade lower than C. A student who is on Academic Dismissal is not eligible to write a supplementary examination.

Only one supplementary examination will be permitted per session. It must be written on the first scheduled date for writing supplementaries for that student's particular class and cannot be postponed or carried forward to a later session.

Supplementary examinations will not necessarily be available for all classes. In addition, the minimum reported final mark required to write a supplementary examination is FM. The Faculty will determine the classes in which supplementary examinations are not available and a list of those classes will be published early in the term.

The class mark resulting from a supplementary examination will replace the original class mark for all purposes.

When a supplementary examination is offered, the mark obtained on the supplementary examination will normally replace the final examination mark in calculating the class grade.

### Repeating Students

If changes are made in the curriculum, repeating students will be required to satisfy the new curriculum.

### Auditing a Class

See definition of "audit student", page 3.

Students who are registered for a degree in the Faculty must have the approval of the Faculty to audit a class. Such approval can be obtained by submitting a written request to the Dean, who will refer the matter to the Faculty for a decision.

Students who are not registering for a degree in the Faculty must obtain the approval of the Department to audit a class.

### Medical Notes for Final Examinations

Students who miss final examinations for medical reasons must submit medical notes to the Undergraduate Studies Office for consideration by the Associate Dean of Engineering. The medical note is verified and the professor advised if they may

submit the grade of ILL before arrangements for special examinations or rewrites may be made. Meanwhile, the student will be given the grade earned in the class, minus the value of the missed examination. A detailed description of the content of the medical note is described in Article 16.8 Special Arrangements for Examinations, Tests and Assignments (see Academic Regulations section of this calendar).

## Fees

Information pertaining to fees and expenses is given in the “Fees” section of this Calendar.

## Financial Assistance

Information pertaining to Financial Assistance is given in the “Awards and Financial Aid” section of this Calendar.

# III. Undergraduate Programs

## A. Bachelor of Engineering

### 1. Introduction

The engineering program is designed for students who have completed senior matriculation (Nova Scotia Grade XII) including mathematics, physics, and chemistry, and rank well in their class. Students may be admitted with advanced placement.

At Dalhousie, students benefit from our unique approach to undergraduate engineering education. Renowned for innovation in education, the unique undergraduate engineering curricula at Dalhousie University provide a sound basis in Mathematics and pure Science and in Engineering Science and Design, that are a foundation for success in any engineering career. A substantial part of the work of the first and second years is common to all programs. The content of many of these classes will change very little over the class of an engineer's career; they will become a sound basis of life-long learning.

The Faculty of Engineering has five engineering departments and one service department, the Department of Engineering Mathematics and Internetworking. Civil and Resource Engineering administers degree programs in the disciplines of Civil and Mineral Resource Engineering. The Department of Electrical Engineering administers the program in Electrical Engineering and the Department of Process Engineering and Applied Science administers degree programs in the disciplines of Environmental, Chemical, and Materials. The remaining departments are Industrial Engineering and Mechanical Engineering.

At the end of Year 1, students apply for discipline choice indicating the order of their preferences. The Faculty of Engineering will inform students who have met the criteria of promotion from Year 1 to Year 2 of their conditional placement in one of the accredited programs. The curriculum for each of the basic programs combines required ‘core’ subjects essential to the field, and ‘elective’ subjects permitting considerable diversity in individual programs of study. An important part of the curriculum is a series of Complementary Studies classes. The curriculum for the first two years of Engineering is indicated below. **Students should refer to the appropriate departmental chapter of the calendar once a field of specialization has been determined for subsequent years.**

### 2. Admission to an Engineering Discipline

A student must apply to be admitted into one of the engineering disciplines. Application must be made by April 30 of any year, for conditional acceptance into year two of a specified engineering program.

Every engineering discipline has a defined maximum enrollment; therefore places are assigned on a competitive basis. The criterion for this competition is the average grade over all credits completed to date in the curriculum of the Diploma of Engineering.

The procedure is as follows:

1. By April 30, each student must specify ordered preferences for three or more engineering disciplines. The application is for conditional acceptance into year two of an engineering discipline.
2. Any student who has completed all of the entry requirements for an engineering discipline, with a GPA of 3.30 or better, will be guaranteed a place in that engineering discipline.

3. In a single competition, students with a GPA greater than or equal to 2.00 and less than 3.30 will be assigned conditional places (year two) in engineering disciplines, proceeding in strict order of GPA, subject to discipline capacities.
4. Any student with a GPA of less than 2.00 will not be admitted to a discipline.

## B. BSc/BEng

Students who meet the admission requirements for the Bachelor of Science program and the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Assistant Dean, Faculty of Science and the Associate Dean, Faculty of Engineering. Students accepted will complete the 15 credit BSc and the first two years of engineering studies leading to the Diploma in Engineering concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. This opportunity should appeal to students with career objectives in multi-disciplinary fields such as Biomedical Engineering, Environmental Science, or Materials Science (among others). It is thus possible to complete the requirements for the Bachelor of Science and Bachelor of Engineering degrees concurrently in a time period of five years in total (or up to six years for Co-op programs).

## C. BA/BEng

Students wishing to do so may complete the 15 credit BA degree program and the first two years of engineering studies leading to the Diploma in Engineering concurrently in a period of three calendar years. At the end of the three year period, both the degree and the diploma will be awarded to successful candidates. It is thus possible to complete the requirements for the Bachelor of Engineering and the Bachelor of Arts degrees concurrently in a time period of five years in total (or up to six years for Co-op programs).

Classes in the fourth and fifth years are those required to finish the Bachelor of Engineering degree.

## D. Diploma of Engineering

Students who have successfully completed the academic study program in the first four terms in any of the disciplines may be eligible to apply for the Diploma of Engineering. This means a student must have a minimum GPA of 2.0, and have completed, with a minimum grade of D, the required classes as specified in the discipline curriculum.

## Curricula for Terms 1 - 4

### Year 1—Term 1 Fall

- ENGI 1101 Engineering Design and Graphics I
- MATH 1280 Engineering Mathematics I
- ENGM 1081 Computer Methods
- CHEM 1021 Engineering Chemistry I
- PHYC 1190 Introduction to Physics I

### Year 1—Term 2 Winter

- ENGI 1202 Mechanics of Materials
- MATH 1290 Engineering Mathematics II
- ENGM 1041 Applied Linear Algebra
- PHYC 1290 Introduction to Physics II
- CHEM 1022 Engineering Chemistry II

### Year 2—Term 3 Fall

- BIOL 1030 Biology for Engineers
- HSTC 1800 History of Engineering I
- ENGM 2101 Applied Vector Calculus
- ENGM 2032 Probability and Statistics
- ECED 2000 Electric Circuits
- ENGI 2102 Thermo-Fluid Engineering I

### Year 2—Term 4 Winter

- ENGI 2203 Engineering Design II
- HSTC 1801 History of Engineering II
- ENGM 2022 Applied Differential Equations
- Three discipline-specific electives

## Discipline-Specific Choices

### Chemical Engineering

- PEAS 2201 Fundamentals of Process Engineering

- PEAS 2202 Fundamentals of Environmental Engineering
- CHEM 2441 Organic Chemistry

### Civil Engineering

- ENGI 2400 Mechanics II: Dynamics
- MINE 2200 Geology for Engineers
- ENGI 2103 Thermo-Fluid Engineering II

### Electrical Engineering

- ECED 2001 Circuit Analysis
- ECED 2200 Digital Circuits
- IENG 2005 Engineering Economics

### Environmental Engineering

- PEAS 2201 Fundamentals of Process Engineering
- PEAS 2202 Fundamentals of Environmental Engineering
- CHEM 2441 Organic Chemistry

### Industrial Engineering

- IENG 2005 Engineering Economics
- Any two electives from the following:
- ECED 2001 Circuit Analysis
- ECED 2200 Digital Circuits
- PEAS 2201 Fundamentals of Process Engineering
- PEAS 2202 Fundamentals of Environmental Engineering
- ENGI 2400 Mechanics II: Dynamics
- CHEM 2441 Organic Chemistry

- MINE 2200 Geology for Engineers
- ENGI 2103 Thermo-Fluid Engineering II

### Materials Engineering

- PEAS 2201 Fundamentals of Process Engineering
- PEAS 2202 Fundamentals of Environmental Engineering
- CHEM 2441 Organic Chemistry

### Mechanical Engineering

- ENGI 2400 Mechanics II: Dynamics
- IENG 2005 Engineering Economics
- ENGI 2103 Thermo-Fluid Engineering II

### Mineral Resource Engineering

- MINE 2200 Geology for Engineers
- IENG 2005 Engineering Economics
- Any one elective from the following:
- ECED 2001 Circuit Analysis
- ECED 2200 Digital Circuits
- PEAS 2201 Fundamentals of Process Engineering
- PEAS 2202 Fundamentals of Environmental Engineering
- ENGI 2400 Mechanics II: Dynamics
- CHEM 2441 Organic Chemistry
- ENGI 2103 Thermo-Fluid Engineering II

The elective choices are summarized in the table below.

	Discipline-Specific Electives	Environmental	Chemical	Civil	Electrical	Industrial	Mechanical	Materials	Mineral Resource
ECED 2001	Circuit Analysis				1	*			**
ECED 2200	Digital Circuits				1	*			**
PEAS 2201	Fundamentals of Process Engineering	1	1			*		1	**
PEAS 2202	Fundamentals of Environmental Engineering	1	1			*		1	**
ENGI 2400	Mechanics II: Dynamics			1		*	1		**
CHEM 2441	Organic Chemistry	1	1			*		1	**
MINE 2200	Geology for Engineers			1		*			1
IENG 2005	Engineering Economics				1	1	1		1
ENGI 2103	Thermo-Fluid Engineering II			1		*	1		**
* any two electives for Industrial ** any one elective for Mineral Resource									

## E. Engineering Co-op Program

The Faculty of Engineering offers a Bachelor of Engineering Co-operative Education program (BEng Co-op) that integrates academic study with university approved industrial experience. Graduation from this program requires satisfactory performance in both areas. The schedule of study and work terms varies according to the discipline, details of which are outlined below.

BEng Co-op is a selective program. Students interested in participating in the Engineering Co-op Program must register for the Engineering Co-op Orientation course by January 15th for the following programs: Chemical, Environmental, Materials and Mechanical, and by May 15th for Civil, Electrical, Industrial and Mineral Resource.

Co-operative education is based on the principle that an academic program combined with work experience in alternating terms, is desirable for effective professional preparation. Work term employment, which varies from sector to sector and location to location, allows students to acquire experience in their areas of career interest, while study terms are devoted primarily to fundamental and theoretical studies. These practical experiences and academic studies complement each other.

Students interested in participating in the Co-op Program, should be aware that work terms exist in a variety of public and private settings. Students compete for jobs four months prior to the start of the work term. Students will be assisted by the Dalhousie University Engineering Co-op Office, and efforts will be made to find suitable opportunities for eligible students. There are, however, no assurances that each student will secure a Co-op position. Students with high CGPAs, enthusiasm, and professional potential have typically had the greatest success in securing Co-op work terms. For other regulations pertaining to the co-op program, please refer to the Policies section of the Engineering Co-op website.

### The Study and Work Schedule

The co-operative system requires students to alternate periods of study with periods of university approved, full-time, paid employment. The period of employment is called a work term and is normally four months (16 weeks) in length. Some programs combine two or more four-month work terms. Work terms have academic requirements that must be completed in addition to the requirements of the employer.

Each discipline has a specific work and study term schedule which students are required to follow (see the study and work sequence chart below). Work terms do not begin until third year of the program. All programs end on an academic term rather than a work term to allow for the formal integration of workplace and classroom learning.

## Study and Work Sequences

Study and Work Sequences								
Discipline	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter
Civil	Study	Study	Work	Work	Free	Work	Study	Study
Electrical	Study	Work	Study	Work	Study	Work	Study	
Industrial	Study	Work	Study	Work	Study	Work	Study	Study
Mineral Resource	Study	Study	Work	Work	Study	Work	Study	
Chemical, Environmental, Materials, Mechanical	Work	Study	Work	Study	Work	Work	Study	Study

### Eligibility

Students who meet the admission requirements for Co-op:

1. Are registered in the Bachelor of Engineering Program;
2. Have attained a minimum cumulative grade point average (CGPA) of 2.3 (or equivalent) in the Diploma of Engineering program;
3. Have completed all requirements for a Diploma of Engineering or equivalent (ie. Have no deficiencies at the beginning of the term in which the job search starts);
4. Are eligible to work in Canada;
5. Have met all the academic pre-requisites for the particular co-op term, including passing all previous work terms;
6. Have successfully completed the Co-op Orientation course;

Students must also meet the following criteria to be eligible to compete for a work term and continue in the program:

- register for the work term class(s);
- submit Co-op work permit applications if they are international students;
- maintain a minimum CGPA of 2.3;
- have met all the academic pre-requisites for the particular co-op term;
- submit a signed Co-op Agreement Form;
- be registered as a full-time co-operative education students in their program;
- be able to complete three work terms in the schedule prescribed by their discipline;
- adhere to the job competition regulations in the Policies section of the Engineering Co-op website;
- keep the Co-op Office informed of their employment status;
- maintain professional conduct at all times with respect to employers and co-op staff;
- refrain from deliberately misrepresenting themselves in academic or employment matters pertaining to the co-op program;
- receive a passing grade for all previous work terms;
- meet performance expectations of previous co-op employers.

**Students who opt out of co-op will not be re-admitted.**

### Obtaining Employment

It is the student's responsibility to arrange suitable work term employment that is pre-approved by the Co-op Office. Students must be prepared to conduct their own job search in addition to competing for the employment opportunities that the Co-op Office solicits and advertises through the online myCareer system. The employment success rates of co-op students vary from program to program and from term to term based on prevailing labour market conditions. Employment statistics, by program, are available on the Engineering Co-op website.

The employment process is highly competitive; students are competing for jobs with their classmates and with students in other co-op programs across the country. Factors such as academic performance, skills, motivation, maturity, attitude, professional conduct, flexibility and performance potential, determine whether or not a student is offered employment. To be successful, students must review the job and interview notices daily, apply to an adequate number of opportunities, check and respond promptly to all Co-op Office correspondence, conduct their own job search, and maintain realistic expectations of job content, geographic locations and salary. Students should be aware that some co-op employers conduct criminal and/or driving record checks or other screening procedures. In some cases, it is the student's responsibility to have such procedures completed.

Work term employment agreements are between the student and the employer. Dalhousie University is not a party to these agreements and assumes no financial or legal responsibility with regard to events or actions by either party that affect the employment situation for any co-op student (eg. layoffs, intellectual property issues, confidentiality agreements, strikes, etc.). Students are responsible for knowing all the terms and conditions of employment before accepting a job.

### Work Term Conduct

Because the University relies heavily on maintaining long-term successful relationships with employers to provide work terms, students on work terms must consider themselves to be ambassadors of the program. As such, students will:

- abide by the policies and procedures of their employer as well as the policies and procedures of the University and the Co-op Office;
- fulfill the entire time commitment required for each co-operative education work term;
- attempt to resolve with the employer any difficulties which arise during the work term and notify the Co-op Office immediately if they cannot be resolved;
- contact the Co-op Office prior to making any decision affecting their employer and/or employment;
- assist the Co-op Office with scheduling a work site meeting with the supervisor;
- maintain professional conduct with all co-workers, clients and supervisors.

### Work Term Evaluation

Work terms are considered academic terms. Students must complete a set of academic requirements, as prescribed by their discipline, in addition to the work required by their employment supervisor. Students are given a Pass/Fail grade for each four-month work term. All disciplines have the following minimum requirements, some disciplines have additional requirements:

1. Complete the work term monitoring process.
2. Engineering-in-Training (EIT) Monthly experience records.
3. A work term report.
4. A performance appraisal completed by the supervisor.

Students must achieve a satisfactory grade for each item in order to achieve a passing grade for the work term. The specific guidelines for each of these items are available from a variety of sources including the Co-op Office and Engineering Departmental websites.

### Graduation

To graduate with a "Co-operative Education" designation on their degree, students must successfully complete three work terms.

### Fees

Students are charged a non-refundable co-operative education program fee. Consult the Co-op Office for complete details.

## IV. Class Descriptions

### ECED 2000.03: Electric Circuits.

This is an introductory class in electric circuit analysis. The material covered starts with a review of the fundamental circuit variables such as voltage, current, charge, power and energy. Kirchhoff's laws are introduced and developed into node and loop analysis techniques. Terminal behavior and circuit equivalence including Thevenin and Norton circuits are covered. Analysis with controlled sources and energy storage elements is developed including steady state and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as p-spice.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MATH 1290.03, PHYC 1290.03 or equivalent

### ECED 2001.03: Circuit Analysis.

This class covers advanced circuit analysis techniques, starting with sinusoidal excitation. The concepts of phasors and complex impedance are fully developed. Mutual inductance and magnetically coupled coils are used to introduce transformer behavior and performance. Real and reactive power flow is covered before the introduction of balanced three phase circuits for power distribution. Symmetrical components are introduced as a means of dealing with unbalanced networks. The concepts of grounding and harmonics are also introduced.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

**ECED 2200.03: Digital Circuits.**

This class includes an introduction to: Boolean algebra, encoders, decoders, shift registers, asynchronous and synchronous counters, together with timing considerations. Design of asynchronous circuits, synchronous sequential circuits, and finite state machines, is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer aided design and analysis software is used throughout the class.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

**ENGI 1101.045: Engineering Design I.**

The Objective of the class is to provide students with conceptual design experience, team work experience, computer drafting experience and to develop skills in engineering free-hand sketching, 3-D visualization, and reading/drafting of engineering drawings. An integral part of the class is the Design Project, focused on design as the essence of engineering, and the process of design and reporting. Also included are lectures on technical writing and presentation skills, study skills, examination skills and an introduction to the variety of disciplines of engineering and academic regulations for engineering.

FORMAT: Lecture 4 hours, seminar 1 hour, lab 3 hours

**ENGI 1202.045: Mechanics of Materials.**

This class teaches the concept of stress, strain and deformation of a solid body subjected to static forces. Topics considered include: stresses and strains under axial, bending, torsional and combined loadings, transformation relations for stresses and strains, Mohr's circle for stress and strain, strain gauges, mechanical properties of materials and failure theories. Also considered are introduction to the engineering profession, engineering ethics and professional responsibility as well technical writing and presentation skills. An individual design project is a major component of this class.

FORMAT: Lecture 4 hours, seminar 1 hour, lab 3 hours

PREREQUISITE: PHYC 1280.03, MATH 1280.03

**ENGI 2102.03: Thermo-Fluid Engineering I.**

This course introduces the engineering sciences of thermodynamics and fluid mechanics in an integrated manner. A unified approach to energy transfer in thermal and mechanical systems is presented. The course covers basic properties of fluids, fluid statics, simplified analyses of fluid motion, the basic laws of thermodynamics, and the application of control volume techniques to engineering problems. Power systems are introduced through a study of the Rankine cycle.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 1202.045; CHEM 1022.03; MATH 1290.03, PHYC 1290.03

EXCLUSION: ENGI 2800.03

**ENGI 2103.03: Thermo-Fluid Engineering II.**

This course builds on the fluid mechanics introduction presented in Thermo-fluids I to present engineering concepts of fluid mechanics and energy. The course covers dimensional analysis, completes fluid statics from Thermo-Fluids I, puts a large emphasis on the notion of control volume needed to properly solve thermal fluid problems using the conservation laws presented as integral relations, treats flow in ducts putting emphasis on head losses (friction and minor) and presents a practical theory of turbomachinery. The different concepts studied during the course are brought together at the end in a series of design examples and design problems.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 1101.045; ENGI 2102.03, CHEM 1021.03, CHEM 1022.03; MATH 1290.03

**ENGI 2203.03: Engineering Design II.**

This class provides a project-based exercise in the engineering design process. Students work in teams and as individuals on defined projects which apply knowledge and skills in all areas of engineering studied in semesters 1 to 3. The projects encompass the design method, conceptual design, design selection, detailed analysis, CAD and simulation tools, engineering drawings, safety and preparation of professional technical reports. Discipline-specific projects are assigned. All projects involve evaluation/testing of student designs, depending on the discipline section either through (i) construction and testing of a physical prototype or (ii) development and testing of an engineering simulation model.

INSTRUCTOR(S): Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGI 1101.045, ENGI 1202.045 and ENGM 1081.03

EXCLUSION: MECH 2100 and ECED 2900

**ENGI 2400.03: Mechanics II.**

This second class in Engineering Mechanics considers the kinematics and kinetics of a single particle and a single rigid body. The class builds on the concepts introduced in ENGI 1400.03 (Mechanics I). Both vector and scalar methods are used. Topics include kinematics of a particle, kinetics of a particle, kinematics of a rigid body in plane motion, and planar kinetics of a rigid body.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 1081.03; MATH 1290.03; PHYC 1280.03, 1290.03

**ENGI 8890.00: Co-op Orientation and Job Competition Preparation.**

This on-line course introduces aspects of career development including, self-assessment, resume and cover letter writing, interviewing skills and job search techniques. It also provides students with an overview of the graduate attributes, the Pre-Grad EIT work credit, and co-op program policies and procedures. This class is available every term and is a pre-requisite for all engineering co-op classes. It must be completed one term prior to the first work term. The grade will be Pass/Fail.

FORMAT: Online

**ENGM 1041.03: Applied Linear Algebra.**

This class covers geometric vectors in three dimensions, dot product, cross product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer's rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvalues and eigenvectors.

FORMAT: Lecture 3 hours, lab 2 hours

**ENGM 1081.03: Computer Programming.**

This class covers fundamental programming principles including flow control, modularity, and structured programming. The student will implement significant programs in the C language to solve engineering problems.

FORMAT: Lecture 3 hours, lab 2 hours

**ENGM 2032.03: Applied Probability and Statistics.**

The topics covered include probability laws and the interpretation of numerical data, probability distributions and probability densities, functions of random variables, joint distributions, inferences concerning mean and variance, tests of hypotheses, and introduction to linear regression. The class emphasizes engineering applications and makes extensive use of statistical computer packages.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MATH 1280.03 and MATH 1290.03

**ENGM 2101.03: Applied Vector Calculus.**

This class covers space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, line, surface, and volume integrals, change of variables in multiple integrals, scalar and vector fields, gradient, divergence and curl, Stokes Theorem, the Divergence Theorem, and applications to heat flow, electrostatics and fluid flow. Programming skills are developed using software tools to solve practical problems.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: MATH 1280.03 and MATH 1290.03

EXCLUSION: ENGM 2062.03 and ENGM 2262.03

**IENG 2005.03: Engineering Economics.**

This class is designed to provide students with the fundamentals of engineering economics. Engineers must function as managers in the real world of decision making where the criteria include not only technological excellence, but cost. Time value of money, project screening, and a variety of discounting analysis techniques are presented. Make versus buy decisions and repair versus replace decisions are discussed. The tax effects on project cash flow and viability are also presented. This class is designed to introduce students to these fundamentals, and apply them through the use of software and projects.

FORMAT: Lecture 3 hours, lab 2 hours

**PEAS 2201.03: Fundamentals of Process Engineering.**

The main objective of this course is to develop the student's ability to perform mass and energy balances on non-reactive and reactive processes. Introductory topics include systems of units and a study of process variables such as temperature, pressure and flow rate. Also covered are fundamental properties of multiphase systems, including phase equilibrium, vapour pressure, and Raoult's

and Henry's Laws. Emphasis is placed on developing problem solving skills and adopting a consistent approach to the analysis of process systems.  
 FORMAT: Lecture 3 hours, tutorial 2 hours  
 EXCLUSION: CHEE 2404.03

### PEAS 2202.03: Fundamentals of Environmental Engineering.

The class will focus on sources of environmental pollutants, the effects of pollutants on living and non-living systems, and the processes by which pollutants are generated or by which their effects can be minimized or remediated. Lectures are supplemented by tutorials which include guest speakers, case studies and field trips.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CHEM 1021.03, CHEM 1022.03

CROSS-LISTING: ENVE 3000.03

### CPST Series: Complementary Studies Classes

#### CPST 3030.03: Engineering in Society II.

The class provides an overview of the concepts and interrelationships among sustainable development, environmental stewardship and public health and safety in relation to engineering practice. These concepts will be examined through historical examples and current theory and practice of the engineering profession. Lectures and discussion will consider global ecosystem functions, human interactions with the environment, methods of reducing human impacts; methods of achieving sustainability, engineering challenges to enhance sustainable development; and factors that influence occupational health and safety from engineering and management viewpoints. Students will be exposed to management methods and tools such as environmental auditing, ISO 14000, risk analysis and WHMIS and will be expected to consider class topics in relation to their own area of engineering specialization.

FORMAT: Lecture 3 hours

## Chemical Engineering

Location: Sexton Campus  
 1360 Barrington Street  
 PO Box 15000  
 Halifax, NS B3H 4R2  
 Telephone: (902) 494-3953  
 Fax: (902) 420-7639

### Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

### Department Head, Process Engineering and Applied Science

Pegg, M. J., BSc, PhD (Leeds), PEng

### Undergraduate Program Co-ordinator

Ghanem, A., BScEng (UNB), PhD (Cornell), PEng

## I. Introduction

The Chemical Engineering program prepares students for careers in the chemical and process industries and in a variety of related fields. These encompass, among others, the traditional areas of environmental control, plastics and polymers, pulp and paper, instrumentation and process control, petrochemicals, petroleum and natural gas processing, and energy conversion and utilization, as well as the growing fields of biotechnology, food processing, composite materials, corrosion and protective coatings, and manufacture of microelectronic components.

The responsibilities assumed by Chemical Engineers include a wide range of activities such as research and development of novel products and processes, the design, development and operation of process plants, and management of technical operations and sales.

The curriculum is designed to provide the student with a broad background in the underlying sciences of Chemistry, Physics and Mathematics. This is then combined with a detailed knowledge of engineering principles and practice, along with a good appreciation of social and economic factors. Thorough understanding of the principles is accomplished through lecture, tutorial and laboratory activities, and extensive use is made of the departmental computing facilities. Laboratory involvement is considered an important component of the students' education. Emphasis in the laboratory is placed on team work and on the development of problem-identification and problem-solving skills. The Department stresses the preparation of students for independent work and the development of interpersonal skills necessary for professional engineers. Elective classes provide the student with the opportunity to obtain additional training in one of the following areas: computers and process control, biotechnology, environment, energy resources and utilization, and research and development.

In the later academic terms, students have an opportunity to work under conditions similar to those encountered in consulting and engineering organizations, particularly in the computer-aided-design and process design classes.

Research opportunities leading to the Master's and Doctorate degrees are offered in a wide range of topics within the Department as well as in conjunction with other departments and a number of research centres on the campus. Detailed information regarding the graduate program can be obtained from the Department.

Students have the option of joining either the co-op or non co-op undergraduate programs.

## II. Curriculum and class descriptions

Refer to sections IIB and IIIB, Chemical Engineering Programs in the Process Engineering and Applied Science section of this calendar, page 375.



### III. Co-operative program and schedule

Refer to section E. Engineering Co-op Program, in the Engineering section of this calendar page 346.

### IV. Admissions

Admission requirements are those specified by the Faculty of Engineering.

## Civil and Resource Engineering

Location: “D” Building, Room D215  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3960  
Fax: (902) 494-3108  
Email: [care@dal.ca](mailto:care@dal.ca)  
Website: <http://civilandresource.engineering.dal.ca>

#### Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

#### Department Head

Lake, C., BEng (TUNS), PhD (UWO), PEng

#### Professors

Ali, N. A., BSc (Baghdad), MSc, PhD (N. Carolina State), PEng (Undergraduate Program Co-ordinator, Civil Engineering)  
Corbin, S. F., BEng, MSc (TUNS), PhD (McMaster), PEng  
Gagnon, G. A., BScE (Guelph), PhD (Waterloo), PEng  
Liu, L., BSc (Nankai), MSc, (Peking), PhD (Regina) (Graduate Coordinator)  
Newhook, J. P., BEng, MSc, PhD (TUNS), PEng  
Satish, M. G., BSc, BECivEng (My.), MEng, PhD (Concordia), PEng  
Taheri, F., BEng, MSc, PhD (TUNS), PEng  
Zou, D. H., BSc (CUMT, China), PhD (UBC), PEng

#### Associate Professors

Garagash, D., BSc (Moscow), MS, PhD (Minnesota)  
Hansen, D., BScE (Guelph), MScE (UNB), PhD (Ottawa), PEng (Co-op Advisor)  
Hill, J. D., BSc, MSc (Acadia), PhD (UWO)  
Jones, D., Dip Eng (MUN), BEng (TUNS), MBA (Western), PhD (TUNS), PEng (Undergraduate Program Co-ordinator, Mineral Resource Engineering)  
Lake, C., BEng (TUNS), PhD (UWD), PEng  
Liu, Y., BScE, MScE (Xi'an), PhD (UNB), PEng  
Walsh, M.E., BEng (TUNS), MEng (McGill), PhD (Dalhousie), PEng

#### Assistant Professors

Barnes, C., Dip Eng, BSc (Dalhousie), BEng (TUNS), MSc, PhD (Dalhousie), PEng  
Thorburn, J., BSc (UNB), MSc (Alberta), PhD (Dalhousie), PEng

#### Adjunct Professors

El-Jabi, N., BASc (Sherbrooke), MSc, PhD (UMontreal, Polytechnique), PEng

#### Adjunct Associate Professors

Forrester, D. J., BSc, PhD (Nottingham), PEng  
Kasemets, J. T., BEng (RMC), MEng (Alberta), MBA (Ottawa)  
Kenny, S., BEng, MEng (MUN), PhD (Dalhousie)  
Pegg, N., BSc (Guelph), MSc (UBC), PhD (TUNS), PEng

#### Adjunct Assistant Professors

Caissie, D., BASc, MSc (Moncton), PhD (Dalhousie), PEng  
Forgeron, D., BEng (TUNS), PhD (Dalhousie), PEng  
Rand, J., CAS (Acadia), BEng, PhD (Dalhousie)

#### Professor Emeritus

Jaeger, L. G., BA, MA (Cantab), PhD, DSc (London), DEng (Carleton, MUN, TUNS)(hc), PEng

## I. Introduction

The Department of Civil and Resource Engineering consists of the Civil Engineering Program and the Mineral Resource Engineering Program. The Department currently offers two accredited professional degree programs:

BEng in Civil Engineering, co-op and non co-op programs;  
BEng in Mineral Resource Engineering, co-op and non co-op programs.

For additional information on these programs and the nature of the engineering studies involved, the reader is referred to individual program listings in the Faculty of Engineering section of this calendar.

## II. Program Guides

### A. Civil Engineering

Years 1 and 2 follow the program that is outlined in the 'Faculty of Engineering' section of this calendar. The two Options, Earth and Environment and Infrastructure, contain a strong common core in those aspects of engineering considered to be crucial for all civil engineering baccalaureates, irrespective of specialization. Terms 5 and 6 are the same for both Options. In Terms 7 and 8 students will have the opportunity to select some courses from a list of technical electives based on their specific interests in focus areas of Civil Engineering.

#### Non Co-op Program:

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 5	Study Term 6	FREE
4	Study Term 7	Study Term 8	

#### Co-op Program:

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 5	Study Term 6	Work Term 1
4	Work Term 2	FREE	Work Term 3
5	Study Term 7	Study Term 8	

### 1. Infrastructure Option:

#### Year 3 Term 5 (Fall)

- CIVL 3101.03 Soil Mechanics
- CIVL 3300.03 Hydraulics
- CIVL 3505.03 Structural Systems I-Form and Analysis
- CIVL 3705.03 Mechanics of Structural Materials & Components
- CIVL 3725.03 Construction Materials & Methods
- CIVL 3830.03 Surveying & Applied Geomatics

#### Year 3 Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality & Treatment
- CIVL 3515.03 Structural Systems II-Loads & Behaviour
- CIVL 3740.03 Computations & Systems Modelling
- IENG 2005.03 Engineering Economics

#### Year 4 Term 7 (Fall)

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4515.03 Reinforced Concrete Design
- CIVL 4525.03 Design of Steel Structures
- CIVL 4801.005 Senior Project I

\*Technical Electives (choose two from the list below)

#### Year 4 Term 8 (Winter)

- CIVL 4710.03 Construction Planning
- CIVL 4802.025 Senior Project II
- CPST 3030.03 Engineering in Society II

\*Technical Electives (choose three from the list below)

\*Infrastructure Option Technical Electives:

Total number of technical electives must equal five.

Total of five (minimum of four) electives may be chosen from the following courses (schedule permitting):

- CIVL 4200.03 Transportation Systems
- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering
- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4431.03 Water Distribution & Sewerage Systems
- CIVL 4440.03 Water & Wastewater Treatment
- CIVL 4460.03 Solid Waste and Landfill Engineering
- CIVL 4541.03 Applications of Finite Element Method
- CIVL 4560.03 Special Topics in Structural Systems
- ENGM 4675.03 Risk Assessment Management
- MINE 3620.03 Petroleum Engineering

Total of one elective may be chosen from the following courses (schedule permitting):

- ARCH 3104.03 Foundations in Architectural History and Theory
- ARCH 3105.03 Architectural History and Theory - 20th Century
- ENVE 3412.03 Energy and Environment
- ENVE 4421.03 Biogeochemistry & Bioremediation
- ENVE 4651.03 Solar Energy Utilization
- EARTH 3500.03 Geoscience Info Management
- IENG 4500.03 Operation Research
- IENG 4547.03 Company Operations and Management
- IENG 4558.03 Project Management
- MINE 3520.03 Introductory Mining Engineering
- MINE 3530.03 Mineral Processing
- MINE 4710.03 Mine Excavation Systems
- MINE 4812.03 Mine Production Engineering
- PLAN 1001.03 Intro to Community Design 1

Other courses require Department approval.

### 2. Earth and Environment Option:

#### Year 3 Term 5 (Fall)

- CIVL 3101.03 Soil Mechanics
- CIVL 3300.03 Hydraulics
- CIVL 3505.03 Structural Systems I-Form and Analysis
- CIVL 3705.03 Mechanics of Structural Materials & Components
- CIVL 3725.03 Construction Materials & Methods
- CIVL 3830.03 Surveying & Applied Geomatics

#### Year 3 Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality & Treatment
- CIVL 3515.03 Structural Systems II-Loads & Behaviour
- CIVL 3740.03 Computations & Systems Modelling
- IENG 2005.03 Engineering Economics

#### Year 4 Term 7 (Fall)

- CIVL 4440.03 Water & Wastewater Treatment
- CIVL 4801.005 Senior Project I
- ENVE 4772.03 Environmental Assessment & Management

\*Technical Electives (choose three from the list below)

#### Year 4, Term 8 (Winter)

- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4802.025 Senior Project II
- CPST 3030.03 Engineering in Society II

\* Technical Electives (choose three from the list below)

\*Earth and Environment Option Technical Electives:

Total number of technical electives must equal six.

Total of six (minimum of five) electives may be chosen from the following courses (schedule permitting):

- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Form and Process in Alluvial Channels
- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4541.03 Applications of Finite Element Method
- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering

- CIVL 4431.03 Water Distribution & Sewerage Systems
- CIVL 4440.03 Water & Wastewater Treatment
- CIVL 4460.03 Solid Waste and Landfill Engineering
- CIVL 4111.03 Geotechnical Engineering
- ENGM 4675.03 Risk Assessment Management
- MINE 3620.03 Petroleum Engineering

Total of one elective may be chosen from the following courses (schedule permitting):

- ARCH 3104.03 Foundations in Architectural History and Theory
- ARCH 3105.03 Architectural History and Theory - 20th Century
- ENVE 3412.03 Energy and Environment
- ENVE 4651.03 Solar Energy Utilization
- EARTH 3500.03 Geoscience Information Management
- IENG 4500.03 Operation Research
- IENG 4547.03 Company Operations and Management
- IENG 4558.08 Project Management
- MINE 3520.03 Introductory Mining Engineering
- MINE 3530.03 Mineral Processing
- MINE 4710.03 Mine Excavation Systems
- MINE 4812.03 Mine Production Engineering
- PLAN 1001.03 Introduction to Community Design 1

Other courses require Department approval.

#### NOTES:

1. One or more graduate classes may be included as technical electives in Term 8; however, permission of the instructor and department is required in order to register for such classes.
2. Not all of the technical elective classes will be offered each year.
3. Many classes have pre-requisites (see section IV following). If it is felt, however, that an equivalent course of study has been taken, a waiver of the pre-requisite requirement can be sought from the instructor.
4. Some classes have co-requisites. A co-requisite can also be completed before the class in question (instead of being done concurrently).

### A. Mineral Resource Engineering

Years 1 and 2 follow the common program outlined in the Engineering section of this calendar

#### Non Co-op Program:

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 5	Study Term 6	FREE
4	Study Term 7	Study Term 8	

#### Co-op Program:

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 5	Study Term 6	Work Term 1
4	Work Term 2	Study Term 7	Work Term 3
5	Study Term 8		

#### Year 3 Term 5 (Fall)

- CIVL 3101.03 Soil Mechanics
- CIVL 3830.03 Surveying & Applied Geomatics
- CPST 3030.03 Engineering in Society II
- MINE 3520.03 Introductory Mining Engineering
- MINE 3530.03 Mineral Processing
- MINE 3605.03 Mining Geology I

#### Year 3 Term 6 (Winter)

- MINE 3600.03 Equipment Selection & Materials Handling
- MINE 3611.03 Rock Mechanics
- MINE 3612.03 Rock Penetration & Fragmentation
- MINE 3620.03 Petroleum Engineering
- MINE 4706.03 Mining Geology II

\* Choose one technical elective as listed

#### Year 4 Term 7 (Winter)

- CIVL 3740.03 Computations System Modelling
- MINE 4711.03 Mine Ventilation & Environment Control
- MINE 4750.03 Senior Design Project I
- MINE 4815.03 Mining and the Environment
- MINE 4835.03 Mineral Economics and Mine Product

\* choose one technical elective as listed

#### Year 5 Term 8 (Fall)

- IENG 4500.03 Operations Research for Systems Engineering
- MINE 4850.03 Senior Design Project II

\* Choose three technical electives, two of which must be from Mineral Resource Engineering (MINE xxxx), as listed below.

#### Technical Electives:

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4710.03 Construction Planning
- CHEE 4773.3 Industrial Safety and Loss
- ENVE 3461.03 Measurement and Analysis
- ENVE 4772.03 Environmental Assessment Management
- IENG 4558.03 Project Management and Control
- IENG 4574.03 Decision and Risk Analysis
- MINE 4710.03 Mine Excavation Systems
- MINE 4801.03 Advanced Topics in Rock Mechanics
- MINE 4816.03 Mining Engineering Project
- MINE 4820.03 Surface Mine Slope Stability
- MINE 4822.03 Advanced Petroleum Engineering
- MINE 4823.03 Offshore Drilling and Projection
- MINE 4830.03 Advanced Mineral Processing
- MINE 4832.03 Flotation

Other approved class.

## III. Class Descriptions

### A. Civil Engineering Series

#### CIVL 3101.03: Soil Mechanics I.

This class is concerned with the physical and mechanical properties of soils. It includes topics of soil chemistry and soil fabric, soil classification, compaction, hydraulic conductivity, one-dimensional and two-dimensional seepage, soil compressibility, time dependant deformation of soils, and shear strength behaviour of soils. Laboratory sessions involve experimentally evaluating the engineering properties of several different soil types and the application of these results to engineering problems.

FORMAT: Lecture 3 hours, lab 1 hour, tutorial 1 hour

PREREQUISITE: MINE 2200.03, ENGI 1202.045, ENGI 2102.03

#### CIVL 3200.03: Transportation Engineering.

This class commences with an introduction to Transportation Engineering in the context of planning, design and operations of urban and rural systems. The class also provides an introduction to route location with special emphasis on Canadian standards and specifications. It also includes detailed study of road design elements, vehicle motion, vehicle/pavement interaction, and principles of roadway capacity.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3830.03

CO-REQUISITE: CIVL 3830.03

#### CIVL 3300.03: Hydraulics.

Fluid mechanics principles are applied to practical hydraulic problems involving flow in closed conduits and in open channels. Topics in pipe flow include losses in pipes, pipes in series and parallel, and network analysis. Topics in open channel flow deal with classification of flows, open channels and their properties, energy and momentum principles, uniform flow, design of erodible and non-erodible channels, and gradually varied flow. These aspects are explained in lectures and validated by laboratory measurements and demonstrations.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGI 2300.03 or (ENGI 2102.03 and ENGI 2103.03)

#### CIVL 3310.03: Engineering Hydrology.

The emphasis in this class is on quantitatively describing the physical processes in the hydrologic cycle. Such processes include precipitation, evaporation,

infiltration, groundwater movement, surface runoff, as well as lake/reservoir routing effects. A working rainfall-runoff model is developed, and by convolution is used to produce a design hydrograph. The size of a detention ponds, statistical hydrology, and snow hydrology are also discussed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 2102.03, ENGM 2022.03, ENGM 2032.03, CIVL 3300.03, MINE 2200.03

### **CIVL 3451.03: Water Quality and Treatment.**

The class expands on the student's previous experience in aqueous chemistry and fluid mechanics. The class provides an Engineering perspective on: (i) water quality analysis, specifically on the physical, chemical and biological characteristics of water; (ii) significance and interpretation of water quality properties; (iii) modeling water quality in natural and engineered systems; and (iv) water treatment systems at the introductory level.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1021.03 and CHEM 1022.03, ENGI 2103.03

### **CIVL 3505.03: Structural Systems I: Form and Analysis.**

This course begins with a review of the analysis of trusses and shear and moment in beams. Majority of the course covers the calculation of elastic deformations for statically determinate structures and various methods for analyzing statically indeterminate structures focusing on slope deflection method and moment distribution method. The application of matrix analysis in computer modeling using a typical commercially available structural analysis program will be introduced. Also the concept of influence lines for moving loads on statically determinate structures will be discussed.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: PHYC 1280.03, ENGI 1202.045

### **CIVL 3515.03: Structural Systems II: Loads and Behaviour.**

The objective of the class is to provide students with a solid background in the fundamentals of structural design used for typical civil engineering structures such as trusses, building frames and floor systems. The background and application of the National Building Code of Canada provisions for structural design will be emphasized. The student will be able to size basic tension, compression and flexural elements using steel, concrete and timber, for representative structures.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3505.03, CIVL 3705.03, CIVL 3725.03

### **CIVL 3705.03: Mechanics of Structural Materials and Components.**

The content is focused on the application of the principles of the mechanics of solids in the design and analysis of structural materials and components. Building on engineering skills gained in the first two years, the class will examine general stress analysis, failure criteria, flexure, shear, torsion, compression buckling and plasticity as these aspects apply to structural components constructed of timber, steel, concrete and fibre-reinforced polymers.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: PHYC 1280.03, ENGI 1202.045, ENGI 2400.04, ENGM 1041.03, ENGM 2101.03

### **CIVL 3725.03: Construction Materials and Methods.**

The purpose of this class is to provide students with knowledge of residential and commercial building techniques and materials. In it, the properties and applications of common construction materials, components, and systems that relate to wood, steel, and concrete-frame structures are examined.

FORMAT: Lecture 3 hours, lab 3 hours

### **CIVL 3740.03: Computations and Systems Modeling.**

This class introduces the application of various computational methods for solving a range of practical problems in civil engineering. Basic numerical methods for solving algebraic equations, non-linear and eigen-value problems, as well as numerical differentiation and integration are introduced. Curve-fitting and non-linear regression techniques are presented. Computational tools such as MatLab, MathCad, Excel, and Mathematica are introduced and used to analyze structural stability, the behaviour of space-frames, dynamics, vibrations, and other topics of interest in infrastructure systems.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2101.03, ENGM 1041.03

### **CIVL 3830.03: Surveying and Applied Geomatics**

An introduction to the principles, calculations and equipment used in surveying and geomatics is presented with focus on their applications to civil and mineral resource engineering. Topics include fundamentals of distance measurement and surveying, leveling, traverses, corrections, GPS and Total Station instruments, coordinate systems and geodetic reductions, Geographic Information Systems, and engineering applications of geomatics with particular focus on common civil engineering and mining construction activities. Laboratory exercises will cover the basics of surveying techniques, building up to an exercise in combining a measured GPS data set to a pre-existing GIS database for engineering design considerations of a facility.

FORMAT: Lecture 3 hours, lab 3 hours

EXCLUSION: CIVL 0124 and CIVL 4830

### **CIVL 4111.03: Geotechnical Engineering.**

This class is concerned with the geotechnical aspects of temporary and permanent retaining walls for infrastructure or environmental works, deep and shallow foundations, soil-pipeline interaction, and design/analysis of natural cuts, embankments, and earth dams. The application of these design/analyses to particular infrastructure and environmental structures are emphasized in the laboratory sessions.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3101.03

### **CIVL 4200.03: Transportation Systems.**

This class covers urban transportation planning, transportation demand and supply, transportation management. The environmental impact of transportation systems such as noise and air pollution will be examined. Methods to measure, predict, and evaluate impact of transportation modes will be covered.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3200.03

### **CIVL 4250.03: Highway Engineering.**

This class provides introduction to route location with special emphasis on Canadian standards and road design elements. It includes a surveying workshop. The purpose of workshop is to expose students to operation and application of surveying instrumentation. It includes topics of vertical and horizontal curves, roadway design elements and classification, alignment and cross section elements, drainage and earthwork operations, highways materials and pavement design.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 4200.03

### **CIVL 4350.03: Hydraulic Engineering.**

This class deals with the application of hydraulics in civil engineering design. The topics include design of culvert systems, storage dams (gravity dams, arch dams, buttress dams, earth dams and rock-fill dams), overflow and chute spillways with emphasis on design of stilling basins. Hydraulic machinery (pumps and turbines) will be discussed with an emphasis on the selection a machine for a given application. Design of single port and multi-port outfall structures for effluent disposal in rivers and in oceans will also be discussed. Regular lectures and tutorial sessions will be supplemented with expert speakers from the industry and field trips.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CIVL 3300.03

### **CIVL 4359.03: Form and Process in Alluvial Channels.**

This class will consider various aspects of fluvial geomorphology from a civil engineering point-of-view. This will include discussion of hydraulic resistance based on quantitative estimates of channel roughness, regime concepts for artificial and natural rivers, uses of boundary shear stress and unit stream power in bed-load estimations, the hydraulics and statistics of suspended sediment, numerical versus physical modelling, and a review of case histories of responses of rivers to human activity. The hydraulics of fish habitat assessment is also considered. The application of HEC RAS to a bridged brook is done as a group project.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3300.03 and CIVL 3310.03 (minimum), CIVL 4350.03 (preferable)

CROSS-LISTING: CIVL 6159.03

EXCLUSION: CIVL 6159.03

### **CIVL 4410.03: Engineering Hydrogeology.**

This relatively quantitative introduction to hydrogeology begins with a review of key definitions and hydraulic principles pertaining to flow through porous media. This is followed by consideration of well hydraulics in the context of the

evaluation and management of groundwater resources. The theory and application of numerical methods are discussed in relation to simple groundwater systems, and this is followed by discussion of the chemistry of both natural and contaminated systems.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3300.03, CIVL 3310.03, CIVL 3101.03, and MINE 2200.03; ENGM 2022.03

### **CIVL 4431.03: Water Distribution and Sewerage Systems.**

This design-oriented introduction to municipal engineering is concerned with the hydraulic and hydrologic basis for our water-related urban infrastructure.

Specifically, the design of potable water distribution systems, wastewater collection systems, and storm water management systems is presented. The minimization of the environmental impacts associated with the construction of a subdivision is also presented, both qualitatively and quantitatively.

FORMAT: Lecture 3 hours, tutorial 3 hours

PREREQUISITE: CIVL 3300.03, CIVL 3310.03

### **CIVL 4440.03: Water and Wastewater Treatment.**

The focus of the class is on design of water treatment and municipal pollution control plants. Lectures and laboratory periods are on physical chemical and microbiological qualities of water and municipal wastewater. Lectures include various unit operations and unit processes of water and domestic wastewater treatment. Field visits to local and water and wastewater treatment plants are included.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3451.03 or PEAS 2202.03

### **CIVL 4460.03: Solid Waste & Landfill Engineering.**

This class provides the students with an understanding of the types of solid waste generation, physical and chemical properties of solid waste, solid waste treatment and disposal alternatives, design and operation of a landfill (including landfill components and configuration, landfill siting, liner system, leachate control and treatment, and gas collection and control system).

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3101.03

CO-REQUISITE: CIVL 3451.03

### **CIVL 4515.03: Reinforced Concrete Design.**

This class will provide students with a basic understanding of the behaviour and analysis of reinforced concrete as a structural material, elementary skills and concepts necessary for designing a variety of common structural elements, and appropriate analysis techniques and code approximations. Current design code provisions related to flexure, shear and compression members will be reviewed leading to practical design examples for one-way floor systems, columns, footings, and cantilever retaining walls.

FORMAT: Lecture 3 hours, lab 2 hour

PREREQUISITE: CIVL 3515.03

### **CIVL 4525.03: Design of Steel Structures.**

This introductory design class emphasizes the behaviour and design of steel members resisting tensile, compressive, and flexural loads and simple connections of these elements. Members subject to combined loading will also be studied. Upon class completion, the student will be able to design building elements to CSA-S16.1-01. Although most design examples will be based on framed buildings, many of the concepts apply equally to other types of structures; e.g. bridges, towers, and submarine hulls.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: CIVL 3515.03

### **CIVL 4541.03: Application of Finite Element Method in Static & Dynamic Systems.**

This class presents an introduction to the theory and application of the finite element method. The basic linear elasticity, principles of minimum work and energy methods will be used in developing the methodology. Students will gain practical experience, using a commercial software package, to treat a balance set of real-life two and three-dimensional stress deformation problem under static and dynamic loading systems that are of specific interest to structural engineers.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3505.03, CIVL 3705.03, CIVL 3740.03

### **CIVL 4560.03: Special Topics in Structural Systems.**

Basic knowledge acquired from introductory design classes will be extended and synthesized in the analysis and design of aggregate systems including two-way

concrete floor systems, pre-stressed concrete girders, and composite systems incorporating concrete and steel materials. Basic engineering concepts in the design of masonry structures will be introduced and extended to the design of masonry beams, columns, walls and building systems.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CIVL 3515.03

CO-REQUISITE: CIVL 4515.03

### **CIVL 4710.03: Construction Planning.**

This class deals with construction administration, bidding procedures, cost controls, planning and execution of civil Engineering construction projects. The class also covers planning and scheduling techniques such as CPM and PERT. The class presents basic methods of estimating construction costs, with applications to buildings, bridges, foundations, highways and earthworks.

FORMAT: Lecture 3 hours, lab 2 hours

### **CIVL 4801.005: Senior Project I.**

This class develops the senior project requires for CIVL 4802. Topics include introduction to potential senior project topics elects, case studies of design projects by industry representatives, client meetings to discuss refine project scopes, project management of design projects, team building, and report writing and oral presentation requirements for various deliverables of CIVL 4801 and CIVL 4802. The deliverable for this class, a formal proposal, must be prepared to a professional standard of engineering practice. Students are also expected to formally present their proposal to the class and faculty.

### **CIVL 4802.025: Senior Project II.**

The objective of this class is to provide experience in the application of engineering principles to the solution of specific problems in Civil Engineering. Under the supervision of a faculty member, students execute a project that may include laboratory and/or field experiments, design work, numerical simulations, technical communications on state-of-the-art technologies, or analysis of case histories. Students prepare a formal report according to faculty standards for report preparation and make an oral presentation of their project.

PREREQUISITE: CIVL 4801.005

## **B. Mineral Resource Engineering Series**

### **MINE 2200.03: Geology for Engineers.**

This class deals with the fundamental principles of geology. Topics include mineralogy, rock-forming processes, weathering, erosion, groundwater, glaciating, mass wasting, running water, deserts, shorelines, geologic structures, tectonism, and Earth's interior. The links between geology, engineering and the environment are explored through case studies. Laboratory exercises covering the identification and interpretation on minerals, rocks, landforms (using topographic maps and remote sensing images) and geologic map structures are an important part of the class.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: MINE 3500.03, EARTH 1080.03 and EARTH 1090.03

### **MINE 3520.03: Introductory Mining Engineering.**

This class is an introduction to the mineral industry and mining engineering. Emphasis is placed on unit operations, equipment and surface and underground mining methods. Summaries of the national and global mineral industries, innovative technologies and practices, and the relationships between mining and mineral processing are included. Laboratory periods are used to view audio-visual presentations of mineral industry processes, prepare limited projects on mining operations and review mine plans.

FORMAT: Lecture 3 hours, lab 3 hours

### **MINE 3530.03: Mineral Processing.**

This class is concerned with the principles of unit operations employed in the physical processing of minerals: examination of mineral characteristics on which mineral separation methods are based, liberation of minerals, crushing, grinding, screening and classification. Mineral separation methods include: gravity, dense medium, magnetic and high tension separations, radiometric sorting, flotation and selective flocculation. Laboratory tests, their interpretations, and assessment of separation performance are covered.

FORMAT: Lecture 3 hours, lab 3 hours

### **MINE 3600.03: Equipment Selection and Materials Handling.**

This class deals with mining equipment, analysis of parameters influencing the performance of equipment, and equipment selection. Included are cost analysis and estimation, unit costs, compressed air and hydraulic power systems

applications in mining, pump selection, materials handling systems in underground and surface mining operations, ore and waste pass systems, and storage bins.

FORMAT: Lecture 3 hours, lab 2 hours

### **MINE 3605.03: Mining Geology I.**

This class covers the topics of mineralogy, geologic structures, petrology of igneous, sedimentary and metamorphic rocks and tectonic processes. Emphasis is placed on the relationships between these topics and mining engineering.

Laboratory exercises and assignments cover petrographic analysis, geologic maps and sections, stereographic projection and mineral stoichiometry.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MINE 2200.03

### **MINE 3611.03: Rock Mechanics.**

Concepts of mechanical behaviour and intact strength properties of rock masses are discussed. Classification systems and failure criteria for rocks are described.

The principles of engineering design for underground and surface mine structures are covered. Stereographic projections and numerical methods are used to analyze surface and underground rock stability. Rock mechanics instrumentation is discussed. Laboratory sessions cover sample preparation and rock testing.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MINE 3605.03

### **MINE 3612.03: Rock Penetration and Fragmentation.**

This class presents the principles and theories of rock drilling and blasting in both underground and surface mining applications. It covers the properties of explosives and the principles for selection of explosives for different situations.

The transportation methods, loading techniques and priming procedures for explosives are discussed. Current trends in drilling and blasting practices are considered as well as controlled blasting and blast monitoring methods. State-of-the-art techniques in rock penetration and fragmentation are presented.

FORMAT: Lecture 3 hours

### **MINE 3620.03: Petroleum Engineering.**

This class is designed to provide a comprehensive overview of the engineering aspects of the petroleum industry. Similarities between mining and petroleum engineering are stressed. Major topics cover well planning, rotary drilling techniques, drilling optimization, well cementing, well completion, and production methods. Equipment selection and design procedures follow each unit operation.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 2200.03

### **MINE 4706.03: Mining Geology II.**

The Physical characteristics and origins of the main types of mineral deposits are covered. Individual mineral deposits are described in terms of their mineralogy, rock types, structures and geologic factors affecting mining engineering.

Assignments and laboratory exercises concentrate on the three-dimensional analysis of mineral deposits using hand specimens, maps, sections, structure contours and modelling of reserves. Case studies are covered in assigned readings

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MINE 3605.03, MINE 3520.03

EXCLUSION: MINE 4705.03

### **MINE 4710.03: Mine Excavation Systems.**

This class deals with several specialized mining topics related to mine excavation including mine drainage in underground and surface operations, tunneling and shaft sinking equipment and techniques, mining related soil mechanics, pressure grouting, ground freezing and mine backfilling.

FORMAT: Lecture 3 hours, lab 2 hours

### **MINE 4711.03: Mine Ventilation and Environment Control.**

This class presents the main principles of total mine air conditioning: air quality, air quantity, and temperature-humidity control in underground mines. Health hazards such as mine dusts, gases, radiation, and heat stress are discussed. Design of airflow in single openings, circuit analysis, and ventilation network design are studied using manual and computer based techniques. Temperature-humidity control systems design is discussed. Mine illumination and noise control are studied as part of the total mine environment.

FORMAT: Lecture 3 hours, lab 2 hours

### **MINE 4750.03: Senior Design Project I.**

This is the first part of a two-part senior project. Methods of mineral /exploration are introduced. Methods of resources/reserves estimation are discussed. Surface and drillhole data are provided. Mineral deposit is outline by exploration together with information on site description, property rights, stratigraphy and structure, map and cross-sections. Students will use the provided data to create ore bodies and estimate ore reserves. Industrial software will be used to complete the project.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 3520.03 and MINE 3605.03

### **MINE 4801.03: Advanced Topics in Rock Mechanics.**

This class deals with several specific topics in rock mechanics related to ground stability control in surface and underground mines. It covers ground failure, ground movement monitoring, "in-situ" stress management, application of numerical modelling methods, and back-analysis techniques in mining engineering. Theory and state-of-the-art of relevant techniques are discussed. Case studies are introduced to discuss practical problems.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: MINE 3611.03 or permission by instructor

### **MINE 4815.03: Mining and the Environment.**

This class covers environmental practices, problems and solutions in the mineral industry. Topics include regulations, reclamation, mine closure, acid rock drainage, surface subsidence, nuclear waste disposal and coal mine explosions. Case studies are used to highlight these topics. Class participation is emphasized through oral and written presentations.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 2200.03

### **MINE 4816.03: Mining Engineering Project.**

This project allows interested students to investigate a mining topic, which may also be oriented towards geology, mineral processing, environmental issues, or petroleum engineering. The topic must be original and acceptable to the department. A detailed written report of the investigation is required, which is evaluated by two professionals, one of whom is the student advisor.

FORMAT: Lab 5 hours

### **MINE 4820.03: Surface Mine Slope Stability.**

This class deals with the fundamentals of slope stability analysis in surface mining. A brief discussion is first given to field data collection and the mechanism of slope failure. Various techniques for solving slope problems encountered in the mining industry are then introduced, including plane failure, wedge failure, toppling, and rotational failure.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: MINE 3611.03 MINE 3520.03

### **MINE 4821.03: Petroleum Reservoir Engineering.**

This class discusses the theory and calculations in petroleum reservoir engineering. Major topics include petroleum composition, formation, migration and trapping mechanisms, classification and properties of reservoir rocks and fluids, fluid flow through porous media, phase behaviour diagrams, reservoir energy and recovery mechanisms, reservoir evaluation, as well as geological and reservoir considerations in drilling, and production engineering. An introduction to petroleum exploration methods, and data interpretation techniques is also included.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 2200.03, MINE 3605.03

### **MINE 4822.03: Advanced Petroleum Engineering.**

This class is an advanced study of petroleum reservoir engineering, drilling and development. Topics include analysis and prediction of oil and gas reservoir performance under a variety of production methods, theory and practice of well testing and pressure analysis techniques, well planning, drilling optimization, enhanced recovery mechanisms, displacement theory and modelling. Students will have to complete a term project dealing with one of these topics.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MINE 3620.03, MINE 4821.03

CROSS-LISTING: MINE 6008.03

### **MINE 4823.03: Offshore Drilling and Production.**

This class is oriented toward the practical applications of offshore drilling, production and completion technology in the ocean environment. Emphasis is placed on the types, applications and limitations of offshore rigs, platforms and subsea production systems. The technical aspects of offshore islands, breakwaters, safety and fire protection, loading and transportation systems are also covered.

The decision making process based on economics and developing technology regarding offshore field development and production is presented as a case study.  
 FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: MINE 3620.03, MINE 4821.03  
 CROSS-LISTING: MINE 6009.03

### **MINE 4830.03: Advanced Mineral Processing.**

The objective of this class is to teach how unit operations of mineral processing may be integrated into overall plant operation. The topics considered are: the influence of ore characteristics on the choice of process, concentration methods applicable to various ores with reference to flow diagrams and operations in existing concentrators, basic principles of mineral processing plant design and development of a process flow sheet of a plant based on laboratory test work.  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: MINE 3530.03

### **MINE 4832.03: Flotation.**

This class provides detailed study of flotation and is designed for students who intend to work in mineral processing or related fields. The topics covered are: interfaces involved in a flotation system; interfacial energies; contact angle; electrical double-layer effects; stability of suspensions; adsorption mechanisms; collectors, others, activators and depressants; modulation of collectors; froth stability; fines entrapment in froth lamellae; flotation kinetics; flotation machines; flotation of sulphides, oxides, salines and nonmetallic minerals, and flotation circuit design.  
 FORMAT: Lecture 2 hours, lab 3 hours

### **MINE 4835.03: Mineral Economics and Mine Production.**

Major topics in Mineral Economics include the influence of mineral industry on the economy and mineral policy, marketing of minerals, price mechanisms, mine project evaluations and financing. Mine Production will cover topics on mine management, techniques to increase mine productivity, operating units analysis, mine maintenance, production scheduling and optimization.  
 FORMAT: Lecture 3 hours, tutorial 3 hours  
 PREREQUISITE: MINE 3520.03  
 EXCLUSION: MINE 4713.03 and MINE 4812.03

### **MINE 4850.03: Senior Design Project II.**

This is the second part of the two-part senior design project. Based on the work completed in part one, students, working in groups, will select proper mining methods, design mine structures of an underground and/or surface mine, select mining equipment, surface infrastructures and mineral processing facilities. This is followed by environmental considerations, mine evaluation and risk assessment. Regular progress reports, a final report and group presentations are required. Design projects in petroleum engineering with equivalent amount of work may be considered at the beginning of this course  
 FORMAT: Lecture 1 hour, lab 4 hours  
 PREREQUISITE: MINE 4750.03 and Completion of all courses prior to Term 8 in the program. Exception may only be made to those with proven knowledge and industrial experience.

## **Civil Engineering**

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### **Undergraduate Program Co-ordinator**

Ali, N. A., BSc (Baghdad), MSc, PhD (N.Carolina State), PEng

## **I. Introduction**

Civil engineering deals with the design, construction, and maintenance of the infrastructure of human civilization. Civil engineers are engaged in addressing two fundamental questions. First, how do we protect our society and its infrastructure from the impacts of the natural environment? Second, what are the impacts of society and its infrastructure on our natural environment? The infrastructure considered may be at the feasibility or the design stage, or already in existence.

First, humans need protection from the elements to thrive on this planet. With the growth of centers of population and highly organized societies, the need for very diverse kinds of 'shelter' has also dramatically increased – now routinely including hospitals, schools, skyscrapers, factories, and theatres. Cities and other centres require energy and must be connected, giving rise to the need for such ancillary infrastructure as hydro-dams, road networks, bridges, and airports. The results of the design work of the civil engineer are therefore quite visible and a source of enduring pride. However, nature sometimes deals harshly with our infrastructure, striking it with hurricanes and/or ice storms. Even if the basic designs are sound, a significant maintenance effort by engineers who are knowledgeable about the basis for the original designs is implied.

Second, Civil engineers must recognize that humans are biological entities that consume resources and generate waste. They need water, they generate wastewater. They buy consumer goods, they generate solid waste. How can we ensure that our water is pure, and that it stays pure? How can we ensure that the waste from our cities is handled in such a way that damage to the environment and risks to our own health are minimized, or perhaps even nullified? Nature metes out drought and heat, floods and freezing temperatures. How can we prepare society for such eventualities? The fact that our water and other planetary resources are also finite, can be badly or well-managed, and have been abused in the past all raise additional questions and endeavours that come under the purview of civil engineering. That the undergraduate civil engineering program at Dalhousie University has two options (the Infrastructure Option and Earth & Environment Option) is a reflection of the long-standing relevance and importance of the role of Civil engineers in addressing the above questions.

Although civil engineering is only one among many engineering disciplines available at Dalhousie, as an applied science it is characterized by exceptional technical diversity, great breadth and depth of subject matter, and a propensity for proactively addressing the practical needs of society. It is therefore natural that a BEng. in civil engineering is an excellent way to start 'life in the universe'. It is often used by our graduates as a launching pad for post-graduate studies in very diverse realms of study. Civil engineers are found in all levels of government, in private consulting companies, in public utilities, in global enterprises, and in a wide range of fields that has included technology management, business administration, and even biomedical engineering.

The Department of Civil and Resource Engineering has about 60 graduate students. They are involved in a wide-range of projects that will affect engineering practice. Our experienced and diversely-trained faculty members therefore have many research outcomes upon which they can draw when coming to the classroom or the laboratory and in doing so are eminently able to keep the undergraduate program current and modern.

### A. Infrastructure Option

In this option, the following aspects of civil engineering are emphasized: structural engineering and design, materials of construction (steel, concrete, timber, masonry, asphalt, fibre reinforced polymers), transportation engineering, construction management, and soil mechanics.

### B. Earth and Environment Option

In this option the following aspects of civil engineering receive some emphasis: environmental engineering, water and wastewater treatment, water resources and hydrogeology, geo-environmental engineering, and waste management.

## II. Curriculum and class descriptions

Refer to sections IIA and IIIA, Civil Engineering Program, in the Civil and Resource Engineering section of this calendar, page 350.

## Electrical and Computer Engineering

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### Professor Emeritus

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Ilow, J., BSc (Poland), MAsC, PhD (Toronto), PEng (Graduate Coordinator)  
Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng  
Schlegel, C., BEng (Switzerland), MSCE, PhD (Notre Dame, US)

### Associate Professors

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Little, T. A., BScEng (UNB), MEng (Memorial), PhD (UNB), PEng (Undergraduate Program Co-ordinator)  
Ma, Y., BSc, MEng (Southeast), MSc, PhD (Alberta)  
Ponomarenko, S., Dipl. Phyc. (Russia), PhD (U of Rochester)

### Assistant Professor

Gonzalez-Cueto, J., BEng, MSCE (Cuba), PhD (UNB)

### Adjunct Professors

Baird, C. R., BEng (TUNS), MAsC (UBC), PhD (UNB), PEng  
Gashus, O. K., BSc, PhD (Glas), PEng  
Marble, A. E., BEng, MAsC, PhD (TUNS), PEng

### Adjunct Associate Professors

Beslin, O., BSc (CAEN), MSc (LAUM), PhD (INSA)  
Nie, H., MEng (Tsinghua), PhD (UBC), PEng  
Vallee, R., MEng (Carleton), PhD (TUNS)

### Adjunct Assistant Professors

Grabtchak, S., PhD (Guelph)  
Isenor, G., BSc (Dal), BEng (TUNS), MAsC (TUNS), PhD (Dalhousie)  
Linney, N., BSc (Mt. A), BEng, MAsC, PhD (TUNS)  
Marabet, A., BEng (U of Annaba), MSc (Nantes), PhD (Quebec)

### Cross Appointment

Hill, I., (from Faculty of Science, Physics), BSc, PhD (Queen's)



## I. Introduction

No other branch of engineering can claim to have such an impact on modern society as Electrical & Computer Engineering. The ease, speed and precision by which electrical energy and electrical signals can be transmitted, transformed and controlled has influenced not only the daily life of people, but has also changed the class of many other disciplines. Over only a few decades, Electrical & Computer Engineering has grown to a multi-branch discipline with significant applications in the areas of power systems, communication systems, microelectronics, photonics, and computers. This rapid growth, coupled with major advances in technology and material science, has made the field very dynamic, and poses a challenge to the student, to the educator and to the practicing Electrical & Computer Engineer for the breadth of its activities.

The Electrical and Computer Engineering curriculum is based on the physical and mathematical principles which constitute the unchanging foundation of the discipline. Classes apply these foundational principles to state-of-the-art applications within specialized areas of the field.

In the final year, technical elective classes are provided to enable the student to obtain a deeper, more detailed understanding of current technology in a field of interest. Technical electives may also be chosen from listed classes offered by other Departments. Also during the final year the students, usually in teams of two, work on a project requiring the application of knowledge to a realistic engineering problem. The projects are submitted by professionals in local industrial and research facilities who then provide supervision in conjunction with an assigned Faculty Advisor.

Laboratory sessions form an integral part of most Electrical & Computer Engineering classes. These sessions are conducted in laboratories housed in C Building.

Students enrolled in the Electrical and Computer Engineering Degree Programs may take part in Co-Operative Education where they can apply for up to three four-month work placements in industry. Students participating in the Co-op Program will require two years and four months to complete their degree while students not in the Co-op Program can finish in one year and eight months.

Students participating in our program may pursue either the Electrical or the Computer options as listed below.

## II. Degree Programs

### A. Electrical Engineering Option

Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.

#### Term 5 (Fall)

- ECED 3003.03 Networks & Systems
- ECED 3201.03 Introduction to Electronics
- ECED 3204.03 Microprocessors
- ECED 3300.03 Electromagnetic Fields
- ECED 3500.03 Signal Analysis
- ENGM 3282.03 Data Structures and Numerical Methods

#### Work Term 1 (Winter)

#### Term 6 (Summer)

- ECED 3101.03 Power Systems I
- ECED 3202.03 Analog Electronics
- ECED 3301.03 Electromagnetic Waves and Propagation
- ECED 3511.03 Communication Systems
- ECED 3600.03 Modern Control Systems
- ECED 3901.03 Electrical Engineering Design II

#### Work Term 2 (Fall)

#### Term 7 (Winter)

- ECED 4502.03 Digital Signal Processing
- ECED 4513.03 Communication Networks
- ECED 4900.03 Senior Year Project I
- Humanities Elective
- Technical Elective

- Technical Elective

#### Work Term 3 (Summer)

#### Term 8 (Fall)

- CPST 3030.03 Engineering in Society II
- ECED 4102.03 Electromechanics
- ECED 4601.03 Digital Control Systems
- ECED 4901.03 Senior Year Project II
- Technical Elective

## B. Computer Engineering Option

Students follow the Electrical Engineering program for Terms 1 to 3. In Year 2, Term 4, the student starts the Computer Engineering program.

#### Term 5 (Fall)

- ECED 3003.03 Networks & Systems
- ECED 3201.03 Introduction to Electronics
- ECED 3204.03 Microprocessors
- ECED 3401.05 System Analysis
- ECED 3500.03 Signal Analysis
- ENGM 3282.03 Data Structures and Numerical Methods

#### Work Term 1 (Winter)

#### Term 6 (Summer)

- CSCI 3120.03 Operating Systems
- ECED 3202.03 Analog Electronics
- ECED 3403.03 Computer Architecture
- ECED 3511.03 Communication Systems
- ECED 3600.03 Modern Control Systems
- ECED 3901.03 Electrical Engineering Design II

#### Work Term 2 (Fall)

#### Term 7 (Winter)

- ECED 4404.03 Computer Networks & Communications
- ECED 4502.03 Digital Signal Processing
- ECED 4513.03 Communication Networks
- ECED 4900.03 Senior Year Project I
- Humanities Elective
- Technical Elective

#### Work Term 3 (Summer)

#### Term 8 (Fall)

- CPST 3030.03 Engineering in Society II
- ECED 4102.03 Electromechanics
- ECED 4901.03 Senior Year Project II
- ECED 4402.03 Real Time Systems
- Technical elective

## C. Co-op Program

The schedule for the cooperative education program includes eight study terms and three work terms, as follows:

Yr/Term	Fall	Winter	Summer
Year 1	Study Term 1	Study Term 2	FREE
Year 2	Study Term 3	Study Term 4	FREE
Year 3	Study Term 5	Work Term 1	Study Term 6
Year 4	Work Term 2	Study Term 7	Work Term 3
Year 5	Study Term 8		

## D. Non-Co-op Program

Yr/Term	Fall	Winter	Summer
Year 1	Study Term 1	Study Term 2	FREE
Year 2	Study Term 3	Study Term 4	FREE
Year 3	Study Term 5	FREE	Study Term 6
Year 4	Study Term 8	Study Term 7	

## E. Technical Electives

- ECED 4071.03 Analog Filter Design
- ECED 4082.03 MOS Switched-Capacitor Circuits
- ECED 4130.03 Electric Power Systems II
- ECED 4140.03 Power Systems III
- ECED 4260.03 IC Design and Fabrication
- ECED 4350.03 Optical Electronics
- ECED 4421.03 Technology and Applications of Fiber Optics
- ECED 4460.03 Communications Electronics
- ECED 4504.03 Digital Transmission Theory
- ECED 4760.03 Biomedical Engineering

## III. Class Descriptions

### ECED 2000.03: Electric Circuits.

This is an introductory class in electric circuit analysis. The material covered starts with a review of the fundamental circuit variables such as voltage, current, charge, power and energy. Kirchhoff's laws are introduced and developed into node and loop analysis techniques. Terminal behavior and circuit equivalence including Thevenin and Norton circuits are covered. Analysis with controlled sources and energy storage elements is developed including steady state and transient response for first order networks. Phasors and sinusoidal steady state are introduced. Students are introduced to circuit simulation tools such as p-spice.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MATH 1290.03, PHYC 1290.03 or equivalent

### ECED 2001.03: Circuit Analysis.

This class covers advanced circuit analysis techniques, starting with sinusoidal excitation. The concepts of phasors and complex impedance are fully developed. Mutual inductance and magnetically coupled coils are used to introduce transformer behavior and performance. Real and reactive power flow is covered before the introduction of balanced three phase circuits for power distribution. Symmetrical components are introduced as a means of dealing with unbalanced networks. The concepts of grounding and harmonics are also introduced.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

### ECED 2200.03: Digital Circuits.

This class includes an introduction to: Boolean algebra, encoders, decoders, shift registers, asynchronous and synchronous counters, together with timing considerations. Design of asynchronous circuits, synchronous sequential circuits, and finite state machines, is covered. Karnaugh mapping techniques and state tables and diagrams are taught. Programmable logic is introduced. Contemporary computer aided design and analysis software is used throughout the class.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

### ECED 3003.03: Networks & Systems.

This class provides the basic networks and systems analysis skills required in subsequent classes in the Electrical and Computer Engineering program. It covers topics such as signals and systems modelling concepts; applications of Laplace transform in network analysis, Bode plots, block diagram; state-variable analysis; generalized two-port parameters; properties and analysis of linear time-invariant (LTI) systems, the convolution integral and Eigenfunction and Eigenvalues of LTI systems.

FORMAT: Lecture 3 hours/tutorial 2 hours

PREREQUISITE: ECED 2001.03, ENGM 2202.03

### ECED 3101.03: Power Systems I.

This class presents the development of the models of each of the components making up a power system including: transformer behavior (power, control and instrument transformers), synchronous machine behavior (cylindrical rotor and salient pole theory) and transmission line behavior (lumped and distributed parameter). Per unit normalization is covered. The equipment models are compiled to present network models that can be used to study power system operation. Load flow is discussed as well as fault estimation and circuit protection.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ECED 2001.03

### ECED 3201.03: Introduction to Electronics.

The class gives an introduction to semiconductor physics. The theory of operation of semiconductor diodes, bipolar junction transistors (BJTs), and junction and metal oxide field effect transistors (MOSFETs), is covered in detail. The analysis and design of diode, BJT, and MOSFET circuits is covered including voltage multipliers, voltage regulators, and low frequency small signal amplifiers. Contemporary computer aided design and analysis software is applied to the aforementioned circuits.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ECED 2000.03

### ECED 3202.03: Analog Electronics.

This class covers behaviour of real op-amps, BJTs and FETs in high-frequency and multistage applications. Topics include linear and non-linear op-amp circuits; current mirrors, active loads and biasing; multistage amplifier design; feedback in amplifiers; high-frequency narrow-band amplifier tuning, coupling and matching; crystal, resonant, phase-shift and relaxation oscillators; waveform generation; class A, AB, B, C and D power amplifiers; voltage regulator design; heatsinking; design of MOSFET motor control circuits and pulse-width modulators. In addition, filtering, noise and distortion are introduced.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ECED 3003.03 and ECED 3201.03

### ECED 3204.03: Microprocessors.

This class introduces a currently available microprocessor system. Topics include microcontrollers as a type of microprocessor, microprocessor architecture, address, data and control buses, allocation of external memory modules, use of decoders, latches, flip-flops and other elements of a microprocessor system, CPU bus cycle, cycle-by-cycle execution, timing diagrams, I/O methods, I/O allocation, asynchronous serial communication, RS-232 standard, parallel port interfacing, handshaking protocols, timers, timer functions, interrupts, interrupt priority, assembly programming, software development and debugging.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2200.03

### ECED 3300.03: Electromagnetic Fields.

This class forms an introduction to basic electromagnetic principles upon which Electrical Engineering is based. The laws underlying the theory are presented in integral and differential form. A classical development of electrostatics, steady state current, and magnetostatics will lead to Maxwell's equations. The theory developed is applied to calculating circuit parameters such as resistance, capacitance, and inductance for any electronic or magnetic structure.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGM 2101.03

### ECED 3301.03: Electromagnetic Waves & Propagation.

This class presents the basic theory and applications of propagation of electromagnetic waves. Major topics include: time-varying Maxwell's equations, electromotive force, electromagnetic spectrum, transmission of plane waves, reflection and refraction, polarization, radiation, transmission line theory, standing wave ratio, Smith Chart, impedance matching, guided wave structures, modes and cut-off frequencies.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ECED 3300.03

EXCLUSION: ECED 4301.03

### ECED 3401.03: System Analysis.

Requirement analysis, specifications, concepts of transforming an ill-defined problem into a set of specifications. Functional decomposition and data dictionaries. Top down structured and object oriented analysis techniques. Laboratory and assignment work will address the analysis of relatively complicated systems using the different techniques.

FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: ECED 2200.03  
 EXCLUSION: ECED 2400.03

### **ECED 3403.03: Computer Architecture.**

This class deals with controllers, processor instruction sets, and memory systems. The student will study design methods, implementation techniques, modelling techniques, and performance analysis. Reduced instruction set architectures (RISC), pipelining, pipeline hazards, and their implementation for modern high speed applications will be studied. The student project will require a team to design and implement (or simulate) a RISC architecture.

FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: ECED 3400.03 or ECED 3204.03

### **ECED 3500.03: Signal Analysis.**

Transformation theory and frequency domain representation of continuous-time signals including Fourier series, Fourier transform and Laplace transformation. Discrete-time signals, sampling theorem, aliasing and frequency domain representation of discrete-time signals including the z-transformation. Introduction to communication systems, exponential and sinusoidal amplitude modulation.

FORMAT: Lecture 3 hours/tutorial 1 hour  
 PREREQUISITE: ENGM 1041.03 and ENGM 2022.03 and ENGM 2101.03

### **ECED 3511.03: Communication Systems.**

This course examines the principles of communication theory as applied to the transmission of information in the presence of noise. Statistical underpinnings of communication system design are presented for analog and digital modulation schemes with the emphasis on binary and M-ary signalling at the baseband and passband. Powerbandwidth efficiency tradeoffs are documented. The course combines a rigorous development of the fundamental principles in transceiver implementations with examples of modulation schemes that are used in modern communication systems.

FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: ECED 3500.03

### **ECED 3600.03: Modern Control Systems.**

This class deals with control systems analysis and design aspects. Techniques for analyzing the performance of analog systems are introduced. Emphasis is on the use of the Laplace transform and state space techniques in evaluating system performance indicators including its stability. Tools introduced include frequency response methods, and the root locus. Practical examples involving design of controllers for small systems to achieve desired response are discussed.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours  
 PREREQUISITE: ECED 3003.03  
 EXCLUSION: ECED 4600.03

### **ECED 3901.03: Electrical Engineering Design II.**

This class covers advanced aspects of design, interdisciplinary design and failure analysis. Students gain experience in the design of complex systems. The class culminates in a design contest in which groups of students design and implement a system to meet design objectives, and present and defend their design in an oral design review. The class will consist of both classroom and lab work. The classroom component will use case studies, design reviews and conventional lectures. The lab component is devoted to the design and implementation of a solution to the contest challenge.

FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: ENGI 2203.03

### **ECED 4071.03: Analog Filter Design.**

This class deals with the theory and design of active filters, for audio-frequency applications, using op amps. It consists, basically, of two phases. Phase I deals with the realization of a given transfer function using cascade of first and/or second-order RC-op amps circuits. In phase II, the transfer functions of filters are studied in combination with frequency-response approximations such as Butterworth, Chebyshev, Inverse-Chebyshev, Caver (or Elliptic) and Bessel-Thompson. The design of Monolithic MOS switched-capacitor filters is also introduced.

FORMAT: Lecture 3 hours/tutorial 2 hours  
 PREREQUISITE: ECED 3003.03 and ECED 3202.03

### **ECED 4082.03: MOS Switched-Capacitor Circuits.**

Metal-oxide-semiconductor (MOS) switched-capacitor (SC) techniques are the most common approach for realizing analog integrated circuits due to their high degree of accuracy and linearity. This class deals with the theory, analysis and design of SC circuits. It covers the following topics: fundamentals of sampled-data systems, MOS technologies, MOS devices for linear analog integrated

circuits, Parasitic-capacitances, systematic analysis techniques, basic building blocks of SC filters, synthesis and design of SC filters.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours  
 PREREQUISITE: Permission of instructor

### **ECED 4102.03: Electromechanics.**

This class covers the principles of electromechanical energy conversion and electric motors. A review of magnetic field behavior leads to magnetic circuit calculations and permanent magnet circuit behavior. Energy balance principles are used to develop force and torque relationships for many electromechanical applications including relays, meter movements and motor operation. Basic principles of motor operation such as rotating magnetic fields, efficiency and machine ratings are given as a prelude to an in depth presentation of AC and DC motor behavior. Emphasis is placed on motor control and application.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours  
 PREREQUISITE: ECED 2001.03 or ECED 3101.03  
 EXCLUSION: ECED 3100.03

### **ECED 4130.03: Electric Power Systems II.**

Analysis of Interconnected Systems, Power Flow problem, and iterative methods for its solution. Power System Protection, Power System Stability, Optimal Operation of Electric Power Systems.

FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: ECED 3101.03

### **ECED 4140.03: Power Systems III.**

The class covers topics such as load curves and forecasting, characteristics and peak demand forecasting, weather-load models, discounted multiple regression and ARMA models, introduction to power system reliability evaluation, generating capacity reserve evaluation, contingency evaluation and an introduction to long-range power system expansion planning packages and production costing.

FORMAT: Lecture 3 hours, lab 2 hours

### **ECED 4260.03: IC Design and Fabrication.**

The theory of operation of MOS transistors is reviewed. Processing technologies such as diffusion, ion implantation, and etching are presented with an emphasis on CMOS circuit fabrication. Electrical and physical characteristics of circuits and clocking and I/O structures are studied. Subsystem design of PLA's, adders, counters, ROM, and RAM will be examined. Extensive use of CAD tools will give the student hands-on experience with systems typical of those used in industry.

FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: ECED 2200.03 and ECED 3201.03

### **ECED 4350.03: Optical Electronics.**

This class deals with the fundamentals of generation and detection of light in semiconductor materials as they pertain to optoelectronic devices such as light emitting diodes, laser diodes, photo detectors, and optocouplers. Major topics include: review of semiconductor properties; photo detectors such as PIN photodiodes and avalanche photodiodes (APDS); spontaneous emission and injection luminescence in light emitting diodes (LEDs); and stimulated emission and optical gain in laser diodes (LDS). Typical materials, structures, characteristics and parameters of these devices are discussed with relation to various applications in fiber optics, sensing and consumer products.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

### **ECED 4402.03: Real Time Systems.**

This class reviews system analysis and design techniques and then addresses real time implementation methods. Real time operating system (RTOS) requirements are covered. Topics include message queuing, resource sharing, priority assignments, event flags, interrupts, memory allocation, and typical RTOS configurations. Examples in engineering and networking will be discussed. A significant design and implementation project will be undertaken.

FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: ECED 3400.03 or ECED 3204.03, and CSCI 3120.03

### **ECED 4404.03: Computer Networks & Communications.**

Network architecture and topology, ISO, physical and data link layers, LANS, ATM, routing, quality of service, and emerging technologies. The laboratory and assignments will require implementation of network software and evaluation of current technologies.

FORMAT: Lecture 3 hours, lab 2 hours  
 PREREQUISITE: ECED 3400.03 or ECED 3204.03

### **ECED 4421.03: Technology and Applications of Fiber Optics.**

This class deals with the basic principles and applications of optical fiber communications. Major topics include: ray theory and electromagnetic modes in optical fiber waveguides; step-index and graded-index multimode and single-mode fibers; transmission characteristics of optical fibers such as attenuation (absorption, scattering, bending), dispersion (multipath, waveguide, material, profile), and polarization (random, preserved); optical fiber communication systems (transmitter, receiver, digital and analog system design); advanced systems; non-communications applications.

FORMAT: Lecture 3 hours, lab 2 hours

### **ECED 4460.03: Communications Electronics.**

This class provides an introduction to the theory and design of electronic circuits for communications systems. Topics include: the realization of passive components for high frequency applications; small signal amplifier design and characterization employing s-parameter techniques; large signal circuit design realization and analysis employing volterra series and harmonic balance nonlinear analysis procedure; the realization and characterization of non-linear circuits as high efficiency power amplifiers, oscillators, frequency converters, and modulator/demodulator subsystems; the integration of appropriate subsystems into analog and digital terrestrial and space borne radio communication systems.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ECED 3202.03, ECED 4301.03

### **ECED 4502.03: Digital Signal Processing.**

This class introduces the basics of filtering and analysis of discrete time signals and systems. The synthesis and implementation of analog filters is discussed. An overview of the sampling theorem is followed by a discussion of the discrete Fourier transform and the z-transform. The analysis of discrete time signals is introduced, and synthesis of digital filters is covered. Contemporary signal processing hardware and design software is introduced.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ECED 3500.03

### **ECED 4504.03: Digital Transmission Theory.**

Topics covered will include detailed analysis of channel and source coding techniques with derivation of bit error rates for various modulation schemes and power-bandwidth efficiency trade-offs. Design of optimum receivers is examined. Coding gains of error control coding schemes are calculated. Power Spectral Density of communications waveforms is presented. Channel fading and performance degradations are discussed. Information Theory issues are examined. Teletraffic analysis is presented for both circuit and packet switched networks.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: Permission of instructor

### **ECED 4513.03: Communication Networks.**

This course focuses on the fundamentals of data communication networks. It covers the layered architecture of packet networks and their network elements (switches, routers, bridges). The protocols used to enable transmission of packets through the Internet are examined in detail. Analysis and design of protocols to enhance the efficiency of data transmission in the context of information theory is also presented. Students will gain an appreciation of implementing voice over IP, DVB and WiFi transmissions.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ECED 3511.03

### **ECED 4601.03: Digital Control Systems.**

This class deals with digital control systems analysis and design aspects. Techniques for analyzing the performance of sampled data systems are introduced. Emphasis is on the use of the Z-transform in evaluating system performance indicators including its stability. Tools introduced include frequency response methods, and the root locus. Practical examples involving design of controllers for digital control systems to achieve desired response are discussed.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ECED 4600.03 or ECED 3600.03

### **ECED 4760.03: Biomedical Engineering.**

Basic anatomy and physiology of the cardiovascular, respiratory and neurophysiological systems, and their contemporary mathematical and electrical models. Physiological transducers and data acquisition systems. Biophysical signal conditioning and processing. Biotelemetry. The computer in biomedical instrumentation. Electrical safety of medical equipment. Guest lectures in the areas of electrocardiography, echocardiography, respiratory technology, hospital engineering and neurophysiological measurements.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

### **ECED 4900.03: Senior Year Project I.**

This class develops the use of fundamental theory in the detailed design of a suitable project selected by the student in consultation with the department. The student is expected to take the project from its preliminary stage through the various design stages to the ultimate completion of the design, which include a detailed report with calculations, drawings, possibly a model and verbal presentation.

FORMAT: Lecture 1 hour, lab 5 hours

PREREQUISITE: Successful completion of all third year courses

### **ECED 4901.03: Senior Year Project II.**

This class is a continuation of Senior Year Project I leading to a final report and formal presentation. The presentation will be made to fellow students and departmental staff members.

FORMAT: Lecture 1 hour, lab 5 hours

PREREQUISITE: ECED 4900.03

# Engineering Mathematics and Internetworking

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## Department Head

Phillips, W. J., BSc (Eng), MSc (Queen's), PhD (UBC)

## Professor Emeritus

Jaeger, L. G., BA, MA (Cantab), PhD, DSc (London), DEng (Carleton, Memorial, TUNS) (hc), PEng

## Professors

Fenton, G. A., BEng, MEng (Carleton), MA, PhD (Princeton), PEng

Iakovlev, S. V., MSc, PhD (St. Petersburg), PEng

Kember, G., BSc, MSc, PhD (UWO), joint appointment with Biomedical Engineering

Phillips, W. J., BSc (Eng), MSc (Queen's), PhD (UBC)

Robertson, W., BSc (EngHons), MSc (Eng) (Aberdeen), PhD (TUNS), PEng (Director, Internetworking)

## Associate Professors

Gentleman, W., BEng (Hons) (McGill), PhD (Dartmouth College)

## Adjunct Professors

Auricchio, F., BEng (U. di Napole, Italy), MS, PhD (Berkley)

Dubay, R., BScE, MScE (UWI), PhD (TUNS), PEng

Hannah, C. G., BAsC, PhD (UBC)

Perrie, W., BSc (Toronto), PhD (MIT)

Sivakumar, S., BEng (Bangalore), MASc, PhD (TUNS), PEng

## Adjunct Assistant Professors

Aslam, N., BSc, Mech, University of Engineering and Technology, Lahore, MEng, PhD (Dalhousie)

Comeau, F., BEng, MASc (TUNS), PhD (Dalhousie), PEng

Cottreau, M., BSc, BEd (SMU), MSc (TUNS)

Mansour, S., BSc (U of Balamand, Lebanon), MSc, PhD (Dalhousie)

## I. Introduction

The Department provides the Applied Mathematics classes required to support the engineering programs offered by the other departments. It also provides a specialized graduate program in Engineering Mathematics and Internetworking with several specializations offered with the co-operation of Engineering Departments and the Faculty of Computer Science.

The technical subjects offered by the Engineering Departments depend upon a sound knowledge of mathematical principles. Classes in Engineering Mathematics are therefore offered to students in each of the Engineering Departments. Emphasis is placed on the application of mathematical techniques to the description and solution of engineering problems. The lectures are supplemented by tutorial sessions and, when appropriate, are illustrated by application of techniques that require use of the available computing facilities.

## II. Class Descriptions

### ENGM 1011.03: Engineering Mathematics I.

This class covers functions, limits, continuity, differentiation and integration of polynomials, exponential, logarithmic and trigonometric functions, product, quotient and chain rules applications of differentiation to graphing, maximum-minimum problems and related rate problems, definite and indefinite integrals, and the fundamental theorem of Calculus.

FORMAT: Lecture 3 hours, lab 2 hours

### ENGM 1012.03: Engineering Mathematics II.

This class covers applications of integration including areas, volumes, moments, pressure and work, techniques of integration, numerical integration, length of curves, surfaces of revolution, parametric equations, polar coordinates, sequences and series, and Taylor series.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1011.03

### ENGM 1041.03: Applied Linear Algebra.

This class covers geometric vectors in three dimensions, dot product, cross product, lines and planes, complex numbers, systems of linear equations, matrix algebra, matrix inverse, determinants, Cramer's rule, introduction to vector spaces, linear independence and bases, rank, linear transformations, orthogonality and applications, Gram-Schmidt algorithm, eigenvalues and eigenvectors.

FORMAT: Lecture 3 hours, lab 2 hours

### ENGM 1081.03: Computer Programming.

This class covers fundamental programming principles including flow control, modularity, and structured programming. The student will implement significant programs in the C language to solve engineering problems.

FORMAT: Lecture 3 hours, lab 2 hours

### ENGM 2022.03: Applied Differential Equations.

This class covers first order linear and non-linear differential equations, differential equations of higher order with constant coefficients, applications to Engineering problems, Laplace transforms, periodic functions, applications of Laplace transforms to linear systems, Fourier Series, the line spectrum.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MATH 1280.03 and MATH 1290.03

### ENGM 2032.03: Applied Probability and Statistics.

The topics covered include probability laws and the interpretation of numerical data, probability distributions and probability densities, functions of random variables, joint distributions, inferences concerning mean and variance, tests of hypotheses, and introduction to linear regression. The class emphasizes engineering applications and makes extensive use of statistical computer packages.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MATH 1280.03 and MATH 1290.03

### ENGM 2101.03: Applied Vector Calculus.

This class covers space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, line, surface, and volume integrals, change of variables in multiple integrals, scalar and vector fields, gradient, divergence and curl, Stokes Theorem, the Divergence Theorem, and applications to heat flow, electrostatics and fluid flow. Programming skills are developed using software tools to solve practical problems.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: MATH 1280.03 and MATH 1290.03

EXCLUSION: ENGM 2062.03 and ENGM 2262.03

### ENGM 3032.03: Applied Statistics.

This class deals with some statistical techniques and their application to engineering problems. Topics included are: review of statistical inference, linear regression and correlation, analysis of variance, the design of experiments and nonparametric statistical methods.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03

### ENGM 3052.03: Applied Numerical Methods.

This class provides an introduction to Numerical Analysis with emphasis on solution of Engineering problems. The class covers the following topics: a brief review of Computer Programming; concepts of software engineering; approximations and errors; roots of linear and non-linear equations; LU

decomposition, Singular value decomposition, condition number; curve fitting; numerical differentiation and integration; and numerical solution of ordinary differential equations.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2021.03, ENGM 2062.03, ENGM 2081.03

### **ENGM 3202.03: Data Structures and Numerical Methods.**

This class introduces the student to system analysis, and software techniques.

Topics covered include objects, stacks, queues, multiple linked lists, searching and sorting algorithms and their implementations in the C++ programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1081.03, ENGM 2101.03, ENGM 2022.03

### **ENGM 3271.03: Engineering Mathematics V.**

This class has three parts. The first is complex analysis, including the residue theorem and its applications. The second part concerns transform theory including Fourier Series, Fourier Transform, the frequency domain representation of signals, impulse response, and transfer function. The third part concerns partial differential equations including the classification of equations and boundary conditions, separation of variables, the wave equation, Laplace's equation, and applications to electrical engineering problems.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2021.03, ENGM 2041.03, ENGM 2262.03

CROSS-LISTING: ECED 3500.03

### **ENGM 3282.03: Data Structures and Numerical Methods.**

This class introduces the student to system analysis, and software techniques.

Topics covered include objects, stacks, queues, multiple linked lists, searching and sorting algorithms and their implementations in the C++ programming language. The students use linear algebra and numerical methods in engineering examples while learning to implement properly structured solutions.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1041.03, ENGM 1081.03

### **ENGM 3356.03: Numerical Methods and Partial Differential Equations.**

This class provides an introduction to Numerical Analysis and Partial Differential Equations with emphasis on solution of problems related to Mechanical Engineering. The following topics are covered: approximations and errors; roots of non-linear equations; systems of equations, curve fitting; numerical integrational and differentiation.; numerical solution of ordinary differential equations; partial differential equations, separation of variables, solution of the the equation, wave equation, and Laplace's equation with various boundary conditions; numerical solutions of partial differential equations.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1081.03, ENGM 2101.03, ENGM 2022.03

### **ENGM 3361.03: Engineering Mathematics IVc.**

This class covers space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, line, surface, and volume integrals, scalar and vector fields, gradient, divergence and curl, Stokes Theorem, the Divergence Theorem, and applications to heat flow and fluid flow, boundary value problems, partial differential equations, separation of variables, solution of the heat equation, wave equation, and Laplace's equation with various boundary conditions.

FORMAT: Lecture 4 hours, lab 1 hour

PREREQUISITE: ENGM 2021.03

### **ENGM 4675.03: Risk Assessment and Management.**

This class introduces the risk assessment and system reliability methodologies, from classical event trees to simulation. Examples of risk-based decision making analyses will be covered, ranging from oil exploration to environmental site remediation. The student will carry out a risk assessment involving design decisions on a project of their own choosing.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03

### **ENGM 4680.03: Ecosystem Modelling of Marine and Freshwater Environments.**

Students develop and apply mathematical models of marine and freshwater ecosystems to study biological production, biogeochemical cycling etc. Lectures provide theoretical background for coupling nutrient and plankton dynamics, including parameterizing biological processes and physical effects. Computer sessions provide hands-on modelling experience. Students also learn to critique modelling literature in a journal-club setting.

FORMAT: Lecture 3 hours, lab 2 hours

CROSS-LISTING: ENGM 6680.03, OCEA 5680.03

## Environmental Engineering

Location: N Building, Sexton Campus  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3953  
Fax: (902) 420-7639  
Email: [enve.engineering@Dal.ca](mailto:enve.engineering@Dal.ca)

### Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

### Department Head, Process Engineering and Applied Science

Pegg, M. J., BSc, PhD (Leeds), PEng

### Undergraduate Program Co-ordinator

Ben Abdallah, N., BSc (Texas, A&M), MAsC, PhD (UBC), PEng

## I. Introduction

Environmental Engineering is a rapidly growing discipline within the engineering profession. The program is intended to satisfy the needs of interested students and the environmental industry. The curriculum is designed to train professionals in multidisciplinary approaches to environmentally-based design, waste management, water and soil quality, energy conservation and renewables, and air quality.

Sustainable environmental approaches to production and management systems will continue to be required by industry, government and the consulting sector at the provincial, regional, national and international level. Challenging Environmental Engineering career positions are found in national and international petroleum companies and power utilities, manufacturers of environmental and energy efficient products, environmental consulting companies, provincial and national Government departments such as Natural Resources, Environment, Forestry, Agriculture and Food to name just a few.

## II. Curriculum and class descriptions

Refer to sections IIC and IIIC, Environmental Engineering Program, in the Process Engineering and Applied Science section of this calendar, page 375.

## III. Co-operative program and schedule

Refer to section E, Technical Co-op Program, in the Engineering section of this calendar, page 346.

## IV. Admissions

- Students who have successfully completed first year engineering at a recognized university will be eligible for admission in Year II of the Environmental Engineering program.
- Students who have completed a first year science program will be considered for admission into Environmental Engineering.
- Students who have completed two or more years of university studies will be considered for admission on the basis of transfer of credits.

## Food Science

Location: D Building, 4th Floor, Sexton Campus  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3953  
Fax: (902) 420-0219  
Email: [Food.Science@dal.ca](mailto:Food.Science@dal.ca)  
Website: <http://foodscience.engineering.dal.ca/>

### Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

### Department Head, Process Engineering and Applied Science

Pegg, M. J., BSc, PhD (Leeds), PEng

### Undergraduate Program Co-ordinator

Budge, S. M., BSc (Acadia), PhD (MUN)

## I. Introduction

Food Science is a discipline that combines a basic knowledge of science and engineering principles in the study of food products and preservation technologies. Food scientists have training in and employ the principles of the basic sciences such as physics, mathematics, chemistry, biology, biochemistry, and microbiology. Food Science is the application of the basic sciences and engineering to food processing, preservation and safety.

**A Minor in Food Science is available to students registered in the BSc 20 credit major and honours programs. See page 379.**

## II. Curriculum and class descriptions

Refer to sections IID and IIID, Food Science Program, in the Process Engineering and Applied Science section of this calendar, page 375.

## III. Admissions

Students from Canadian High schools are recommended to take the following subjects in high school: Pre-calculus Math and English and two or more of Physics, Chemistry, Food Science or Biology. The admission requirements are the same as for admission to the Bachelor of Science program. Many of our students have traditionally been transfer students. Please contact the program chair for advice on this matter.

# Industrial Engineering

Location: Sexton Campus, Room 208  
5269 Morris Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3281  
Fax: (902) 420-7858  
Email: industrial.engineering@dal.ca  
Website: http://www.ie.dal.ca

## Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

## Department Head

Venkatadri, U., BTech (IT-BHU), MS (Clemson), PhD (Purdue), PEng

## Professor Emeritus

Das, B., BScEng (Banaras), MSc, PhD (North Carolina State), CEng, PEng

## Professors

Barzilai, J., BSc, MSc, DSc (Technion)

Pelot, R., BSc (Ottawa), MSc (Alberta), PhD (Waterloo), PEng (Co-Op Advisor)

## Associate Professors

Blake, J. T., BSc, PhD (Toronto), PEng

Cyrus, J. P., BSc (Eng) (UWI), MSc, PhD (TUNS), PEng

Diallo, C., BEng, MSc, PhD (Laval), PEng (Undergraduate Program Coordinator), PEng

Johnston, C., BSc, MSc (Alberta), PhD (Calgary)

MacDonald, C. A., BEng (TUNS), PhD (Dalhousie), PEng

Vanberkel, P., BEng, MSc (Dalhousie), PhD (Twente)

Venkatadri, U., BTech (IT-BHU), MS (Clemson), PhD (Purdue), PEng

## Assistant Professors

Feng, Y., BEng (BTBW), MSc (UBC), PhD (Laval)

Ghasemi, A., BSc (Isfahn), MSc (Tehran), MSc, PhD (Montréal)

## Adjunct Professors

Eiselt, H. A., Dip-Kfm, Dr.rer.pol (Göttingen)

Li, H., BSc (China), PhD (NC State)

Sandblom, C.-L., Fil.Kand., Fil.Mag. (Lund), PhD (Birm)

Worrall, B. M., BSc, PhD (Hull), PEng

## Adjunct Associate Professors

Black, N., BSc (Waterloo), MSc (TUNS), PhD (UNB), PEng

## Part-time Professor

Gunn, E. A., BSc (Mt. A), MA (Dalhousie), PhD (Toronto), PEng

## I. Introduction

Industrial Engineers design systems to enable people and society to improve productivity, efficiency, effectiveness and quality. All engineers work at planning, designing, implementing and controlling the systems that enable people to use technology. The systems that industrial engineers design are broad and are characterized by a need to integrate both the physical and decision making capabilities of humans with all other aspects of the system design. Problems range from the design of a work method and work station, to the design of a factory layout and methods of controlling the flow of materials on the factory floor, to the design of an overall corporate plan involving materials procurement, production, inventory and distribution. The idea of a factory is also extended to include communications, systems, energy systems, health care systems, municipal systems, transportation systems; in fact all the systems that are essential to the functioning of modern society. To facilitate effective decision-making and achieve

high performance in areas such as scheduling, inventory and quality control, industrial engineers are often required to design and implement computer based information systems.

Human behaviour and capabilities are key elements in the systems industrial engineers work with. In designing the layout of a production line for an automobile manufacturer, the checkout counter for a supermarket, the organization of work flow for a bank or the materials handling system for a steel plant, the engineer must consider both physical requirements and cost parameters, and the physiological and behavioural performance of the human operators. The industrial engineer has a dual role, both to extend human capability to operate, manage and control the overall production system, and to ensure the safety and well being of those working in the system.

Design and development of these systems requires the unique background of the industrial engineer. The process of engineering always starts with measurement. Where other engineers might measure temperatures, pressures, or loads, the industrial engineer measures the time of a work cycle, dollar values of expenditures, rates of machine failures, and demand processes for finished goods. Usually the mathematical analysis must take into account risk and uncertainty to a larger extent than in other engineering fields. Computer simulation and optimization are often required. The concepts and techniques found in the Industrial Engineering curriculum have been selected to assist the student to develop the skills that meet the specific challenges of systems which involve managerial activities.

Students begin the Industrial Engineering program with a background in engineering fundamentals studied during their initial two years. In the latter portion of the IE program, they are introduced to the fundamental approaches of work place design and operations research, while at the same time enhancing their mathematical and computer background. Later, more advanced modelling approaches are examined together with classes more directly related to the management process. Production scheduling, inventory control, quality management and plant layout are studied, as are the factors which influence human performance. Students are provided with the opportunity to study such areas as manufacturing, service systems, or maintenance through the Department's elective class offerings.

In their final year, all students undertake a major design project. Projects are drawn from companies or institutions outside the University and are treated as a consulting assignment. Students are evaluated on their ability to achieve an innovative solution by drawing upon the analytical skills developed throughout their program of studies. They must also, of course, satisfy the practical requirements of the client.

Job opportunities for industrial engineers are both plentiful and widely based. Former graduates are currently practising industrial engineering in all types of work activity ranging from semi-conductor manufacturing and airlines, to utilities and hospitals. Invariably, the work assigned is original in its nature, demanding that the industrial engineer be creative in applying his or her many abilities to achieve the best solution. Managers require such results if they are to keep their costs under control in this increasingly competitive world. This requirement will sustain the high demand for industrial engineers well into the future.

## II. Program Guide

Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.

### Co-op Program

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 5	Work Term 1	Study Term 6
4	Work Term 2	Study Term 7	Work Term 3
5	Study Term 8	Study Term 9	



## Non Co-op Program (Accelerated Program)

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	Study Term 6
3	Study Term 5	Study Term 7	FREE
4	Study Term 8	Study Term 9	

Students not wishing to participate in the co-op program are able to structure their academic program over a two-year time period. To do so requires the student to begin the program at the beginning of the summer study term, which commences the first week of May (Study Term 6). The student then completes Study Term 5 in the fall, and then Study Term 7 in the winter. After a summer “off”, the student would complete the final two study terms in the same order as students in the co-op program thus completing the five study or academic terms within two calendar years.

### Year 3, Term 5 (Fall)

- IENG 3301.03 Fundamentals of Industrial Engineering
- IENG 3303.03 Ergonomics and Work Design
- IENG 3305.03 Computational Methods and Algorithms for IE
- IENG 3344.03 Operations Research: Linear Models
- IENG 4548.03 Systems Engineering

### Year 3, Work Term 1 (Winter)

### Year 3, Term 6 (Summer)

- IENG 3316.03 Design of Information Management Systems
- IENG 3320.03 Analysis of Design of Production Systems
- IENG 3321.03 Manufacturing Processes and Materials
- IENG 3334.03 Industrial Statistics
- IENG 3345.03 Operations Research: Stochastic and Non-Linear Models

### Year 4, Work Term 2 (Fall)

### Year 4, Term 7 (Winter)

- IENG 4432.03 Simulation of Industrial Systems
- IENG 4443.03 Quality Control and Reliability
- IENG 4445.03 Facilities Design
- IENG 4454.03 Design of Inventory Systems
- IENG 4558.03 Project Management and Control

### Year 4, Work Term 3 (Summer)

### Year 5, Term 8 (Fall)

- IENG 4529.03 Industrial and Organizational Psychology
- IENG 4581X/Y.06 Industrial Engineering Design Project
- IE Elective
- IE Elective

### Year 5, Term 9 (Winter)

- IENG 4547.03 Company Operations and Management
- IENG 4581X/Y.06 Industrial Engineering Design Project
- IE Elective
- IE Elective

### Industrial Engineering Electives

- IENG 4544.03 Routing and Scheduling
- IENG 4562.03 Maintenance Engineering and Management
- IENG 4564.03 Design and Optimization of Service Systems
- IENG 4571.03 Computer Integrated Manufacturing Systems
- IENG 4573.03 Industrial Biomechanics
- IENG 4574.03 Decision and Risk Analysis
- IENG 4575.03 Stochastic Processes and Queueing
- IENG 4578.03 Organizational Aspects of Quality Management
- IENG 4579.03 Supply Chain Management
- IENG 4580.03 Modelling and Performance Analysis of Computer Networks
- IENG 4599.03 Special Topics in Industrial Engineering

## III. Class Descriptions

### IENG 2005.03: Engineering Economics.

This class is designed to provide students with the fundamentals of engineering economics. Engineers must function as managers in the real world of decision making where the criteria include not only technological excellence, but cost. Time value of money, project screening, and a variety of discounting analysis techniques are presented. Make versus buy decisions and repair versus replace decisions are discussed. The tax effects on project cash flow and viability are also presented. This class is designed to introduce students to these fundamentals, and apply them through the use of software and projects.

FORMAT: Lecture 3 hours, lab 2 hours

### IENG 3301.03: Fundamentals of Industrial Engineering.

This course introduces students to fundamentals of industrial engineering. The history, development and theoretical basis of industrial engineering will be discussed, as well as the social and environmental impact of engineering decisions. Students will be introduced to the concept of systems and systems thinking. Fundamental industrial engineering techniques will be covered, including motion study, work measurement of standards, and operations evaluation and analysis.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03

EXCLUSION: IENG 3311.03

### IENG 3303.03: Ergonomics and Work Design.

Ergonomics is the science of applying knowledge of the capabilities and limitations of humans into the design of products, work spaces and systems we use every day. Topics in this course will include the musculoskeletal system, anthropometry, manual material handling, work physiology, the effect of work environment on performance, human/machine interaction, cognition and information processing. Design principles based on this knowledge will be presented. This course will include labs and final design project.

FORMAT: Lecture 3 hours, lab 3 hours

CROSS-LISTING: KINE 3476.03

EXCLUSION: IENG 3313.03, IENG 3347.03

### IENG 3305.03: Computational Methods and Algorithms for IE.

An overview of advanced programming methods is presented with an introduction to algorithms used in industrial engineering applications. Topics covered include sorting, searching, data structures, shortest paths, random number generation, simulated annealing, matrix operations, curve fitting and geometric algorithms. Algorithms for solving several classes of equations are considered. Techniques for writing and debugging large programs, and controlling numerical errors are taught. The C programming language will be used for implementation.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1081.03

### IENG 3316.03: Design of Information Management Systems.

Techniques used in the design of information management systems to support decision making are taught. This includes the principles of systems analysis, software engineering and requirements analysis. The design of relational database systems, user interfaces and documentation are covered. Current technologies for computer hardware, software, networking and communications are reviewed. Students are taught how to program database applications in a fourth generation environment. Software development projects will be assigned.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1081.03

### IENG 3320.03: Analysis and Design of Production Systems.

This course provides the student with an introduction to issues in planning and control of production systems and scheduling techniques used in production environments. Topics include aggregate planning models, performance measurement, materials requirements planning, production lot-sizing, just-in-time (JIT) models and other pull control systems, and job scheduling and sequencing. Programs currently practiced in industry, such as Lean Manufacturing and Six-Sigma, will also be introduced.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGM 1081.03, ENGM 2022.03, ENGM 2032.03, IENG 2005.03, IENG 3345.03 (may be taken concurrently)

### IENG 3321.03: Manufacturing Processes and Materials.

The class deals with properties of manufacturing materials, casting and forming, traditional and non-traditional machining processes, welding and computer-integrated manufacturing (CIM). Theoretical background is provided that includes equilibrium diagrams, heat treatment, tool life and wear, and dimensioning and tolerance analysis. There will be lab experiments, video presentations and manufacturing plant visits.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 1101.045, ENGI 2203.03

### IENG 3334.03: Industrial Statistics.

This class covers hypothesis testing, chi-square tests and nonparametric techniques, analysis of variance and experimental design, as well as simple and multiple linear regression. Numerical examples are solved by straightforward calculation as well as by computer software, and various applications are presented. Time series and forecasting techniques are taught. A project concerns the building and testing of a multiple linear regression model.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03

### IENG 3344.03: Operations Research: Linear Models.

This class is an introduction to linear programming and its applications to industrial engineering design. The simplex method and duality theory are covered in detail. Formulation, solution algorithms, and applications of several problem classes are presented including network models and integer programs. Through a class project, students are introduced to the process of developing an optimization model, including the ideas of database, matrix generators, and report writers.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGM 2101.03, ENGM 1041.03, ENGM 1081.03

### IENG 3345.03: Operations Research: Stochastic and Non-Linear Models.

This class consists of an analysis of important probabilistic and nonlinear models in operational research. These include dynamic programming, queuing models and reliability models. Aspects of Markov processes and nonlinear programming are introduced. Application of these methods is reinforced through a term project.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03, ENGM 1081.03

### IENG 4432.03: Simulation of Industrial Systems.

This class covers discrete event systems simulation. Model development includes validation and verification methods, the generation of pseudo-random numbers from continuous and discrete distributions, selection of probability distributions and variance reduction techniques. Statistical output analysis and inference are studied for effective interpretation of results. Applications in areas such as manufacturing, service operations, project management and system design are reviewed. Simulation software is used throughout the course.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3305.03, IENG 3334.03, IENG 3345.03

EXCLUSION: IENG 3432.03

### IENG 4443.03: Quality Control and Reliability.

This class evaluates aspects of production to ensure that products meet specifications. Statistical quality control, which is used to determine process capability and to detect process changes, involves the design and use of different types of control charts. Sampling inspection, which is used to separate good lots from poor lots, covers the design of sampling plans. Reliability is concerned with the design of products and reliability testing.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03, IENG 3334.03

EXCLUSION: IENG 3443.03

### IENG 4445.03: Facilities Design.

This class deals with the principles, concepts and methods of plant layout and materials handling for the optimum design of a facility. The topics include information requirements for facility design, conventional and newer quantitative techniques for analyzing material flow, facilities location, space determination, computerized plant layout techniques, the unit load concept, materials handling equipment selection and automatic storage and retrieval systems. A project involves facilities design for the manufacture and assembly of a mechanical device.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: IENG 3445.03

### IENG 4454.03: Design of Inventory Systems.

This course introduces a number of quantitative methods for the analysis and of inventory systems. These include deterministic and probabilistic economic order quantity (EOQ) models and variants, single and multiple period inventory models, exchange curves, and other advanced inventory models. Forecasting algorithms applicable to inventory systems are also covered.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: IENG 2005.03, IENG 3320.03, IENG 3334.03, IENG 3345.03

### IENG 4500.03: Operations Research Methods for Systems Engineering.

This course will introduce non-industrial engineering students to operations research models and methodologies to optimize the design, development and operation of engineered systems. The objectives of this course will be to provide students with the skills to solve a variety of linear and non-linear models and the ability to recognize how such models can be applied in a wide variety of engineering disciplines. Topics to be covered include linear programming, integer programming, network models, decision analysis, dynamic programming, queuing models, and non-linear optimization. Applications will focus on diverse areas of engineering including mining, transportation, and environmental management.

PREREQUISITE: ENGM 2032.03

### IENG 4529.03: Industrial and Organizational Psychology.

Individual behaviour and group processes are reviewed, particularly as they relate to activities in organizations. Perception, learning, motivation and attitudes are covered. The implications of different personality types at work are taught. Organizational issues such as group dynamics, communication, power and conflict are studied. Applications include job analysis, team effectiveness, personnel selection and training, job enrichment, leadership and career management.

FORMAT: Lecture 3 hours, lab 2 hours

### IENG 4544.03: Routing and Scheduling.

Optimization techniques for solving vehicle routing and scheduling problems are covered. Elementary concepts and notation for graphs, networks, maps and geographic information systems (GIS) are presented. Specific issues include NP-complete problems, shortest paths and travelling salesperson problems. Vehicle routing and scheduling with capacity constraints, time windows, pick-up and delivery constraints are also discussed. Applications in manufacturing and transportation are reviewed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3305.03, IENG 3344.03

### IENG 4547.03: Company Operations and Management.

The purpose of this class is to introduce the student to the management and operation of large and small businesses. Topics include the business environment in Canada, entrepreneurship, small business startup and financing, organizational theory, management cycle, managing projects, human resources, industrial relations, management finance, marketing and sales. A term project is an integral part of this class.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 2005.03

### IENG 4548.03: Systems Engineering.

This class places the industrial engineering viewpoint in the context of systems theory. The class begins with an introduction to the general concepts of systems, and then examines classical linear systems theory as applied traditionally in engineering. It is shown how industrial engineering design can be viewed as a control system problem. The concepts of systems engineering are in turn applied to industrial engineering design. Systems dynamics simulation is used to explore these ideas. Issues of capacity planning, hierarchical production planning and control, short term scheduling and data envelopment analysis are presented.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2022.03, ENGM 2032.03

### IENG 4558.03: Project Management and Control.

This class identifies the common aspects and peculiarities of projects and then illustrates the application of analytical approaches to meet the challenges of achieving effective project management. The following topics are covered: feasibility studies, project planning, cost estimation, bidding, use of professional engineering and other types of consultants, organization and control, resource

allocation and project life cycle concepts. The role of the professional engineer in society and the impact that engineering in all its forms makes on the environmental, social, economic and cultural aspirations of society are discussed.  
 FORMAT: Lecture 3 hours, lab 2 hours

### **IENG 4562.03: Maintenance Engineering and Management.**

The class deals with basic maintenance systems of equipment and buildings, maintenance job planning and scheduling, maintenance work measurement/universal maintenance standard (UMS), breakdown versus preventive maintenance, total productive maintenance (TPM), budgets and cost control, computerized maintenance management information system, reliability measurement based on the Weibull distribution, maintainability measures and managing maintenance.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03, IENG 2005.03

### **IENG 4564.03: Design and Optimization of Service Systems.**

This class will focus on the design of systems in Canada's largest industry: healthcare. Throughout the class, examples drawn from healthcare will be used to illustrate how industrial engineering techniques can be applied in a wide variety of settings. Topics to be discussed include capacity planning, service distribution, quality, decision analysis, scheduling, and waiting line models.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3301.03, IENG 3345.03

### **IENG 4571.03: Computer Integrated Manufacturing Systems.**

Techniques are introduced for the analysis and design of computer integrated manufacturing systems. The architecture of CIM systems is discussed, including machining stations, material handling, robotics, computer control and information systems. Specific topics include manufacturing simulation, automated material handling, warehouse management, robotics, manufacturing planning and control, just-in-time systems, group technology, cellular manufacturing, flexible manufacturing systems, concurrent engineering, computer aided process planning and information system design.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3320.03, IENG 3321.03, IENG 4432.03

### **IENG 4573.03: Industrial Biomechanics.**

The class primarily deals with the functioning of the structural elements of the human body and the effects of external and internal forces on the body. Due emphasis is given to the biomechanical approach to job design. This takes into account human motor capabilities and limitations, work physiology, task demands, equipment and workplace characteristics in an integrated manner. Use of bioinstrumentation and applications of biomechanics in work, industry and rehabilitation are discussed.

FORMAT: Lecture 3 hours, lab 2 hours

### **IENG 4574.03: Decision and Risk Analysis.**

This class teaches the principles and applications of decision analysis. The cognitive processes involved with information acquisition, judgement, value assessment, and decision-making are presented. Methods for scoping a decision-making problem, decomposing it into elements, establishing criteria, and evaluating the options are discussed. Probability assessment under uncertainty, decision trees, value of information, utility theory, and multiple-agent contexts are explored to address increasingly complex scenarios.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2032.03

### **IENG 4575.03: Stochastic Processes and Queueing.**

This class covers the analysis of stochastic models. After a review of the relevant aspects of probability theory, the class examines discrete-time Markov chains, Poisson processes, continuous-time Markov chains, and renewal theory. The class also touches on applications of the theory to queueing, inventory, and reliability.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3344.03, IENG 3345.03

### **IENG 4578.03: Organizational Aspects of Quality Management.**

In this class, quality is investigated as a strategic initiative for organizations. The concept of quality is described in relation to the philosophies of Shewart, Deming, and Juran. The organizational structures needed to support Total Quality

Management (TQM) programs are described. Tools for process analysis and improvement are discussed, as is the concept of change management. The class concludes with an evaluation of current quality certification protocols, particularly the ISO 9000 series of standards.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3301.03 or IENG 4500.03, IENG 4443.03

### **IENG 4579.03: Supply Chain Management.**

This class will consider the design, analysis and operational control of manufacturing supply chain systems. Models of the supply chain at the strategic, tactical and operational levels are examined as well as the incorporation of these models in a variety of decision support systems. The role of information technology, including enterprise resource planning software, is studied in the supply chain context.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3320.03, IENG 3344.03, IENG 4454.03

### **IENG 4580.03: Modeling and Performance Analysis of Computer Networks.**

The fundamentals of computer network operation and design are covered. Topics include protocols, wide area networks, local area networks, internetworks, performance measurement, and data network simulation. A network design project will be assigned.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 4432.03

### **IENG 4581X/Y.06: Industrial Engineering Design Project.**

In this class, the students work in pairs on an actual industrial engineering design problem from an organization outside the university. The problem may be in a manufacturing plant, a consulting firm, or a service industry. The ability to solve problems and communicate with the client organizations and with professional Industrial Engineers is stressed. Students are required to maintain a professional log, to prepare an interim report, and to demonstrate their presentation skills.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab 6 hours

PREREQUISITE: Completion of all classes except those in the last two academic terms of the Industrial Engineering program.

### **IENG 4599.03: Special Topics in Industrial Engineering.**

This senior year elective course will include special topics in Industrial Engineering that are not included in the regular offerings of the department. The course will be a lecture course, not directed studies. Topics may vary each year, and therefore students should consult with the department for more information before registering.

FORMAT: Lecture 3 hours/lab 2 hours

composites, automotive alloys, aerospace materials, electronic materials, corrosion, wear, and near-net-shape materials processing technologies.

# Materials Engineering

Location: Sexton Campus, G and P Buildings  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3953  
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Email: materials.engineering@dal.ca

## Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

## Department Head, Process Engineering and Applied Science

Pegg, M. J., BSc, PhD (Leeds), PEng

## Undergraduate Program Co-ordinator

Farhat, Z., BAsC, MASc, PhD (Windsor), PEng

## I. Introduction

Metals and materials are found in every aspect of society today. Materials have always been central to the advancement of civilization so it is not surprising that entire eras are named after them (bronze age, iron age). The importance of developing new, advanced materials is truly a global issue with societal demands for things such as more fuel efficient vehicles and faster computer processors reaching all time highs. Materials Engineers are the driving force behind such developments, having an unsurpassed understanding of the respective structure, properties and processing of materials. Consequently, graduates are employed in practically all industries. Principals amongst these are primary metal production, automotive, aerospace, government research establishments and consulting firms. Literally all graduates find immediate employment - historically, over 70% have secured full time positions before the start of their final academic term. These niche individuals are highly respected within the companies that they work for and many advance into upper managerial and executive positions.

The program has been designed to give students extensive coverage of this highly unique field which in itself is very broad. The principal branches of Materials Engineering in which students receive instruction include (i) Extractive Processing of Materials, (ii) Structure of Materials, and (iii) Mechanical Properties and Testing of Materials; usually the graduating engineer chooses to specialize in one of these three. Students learn about all of the major classes of materials including metals, ceramics, polymers, and composites - graduates are true "Materials Experts." In doing so, the respective curricula are designed to provide in-depth knowledge of engineering and more importantly, extensive coverage of discipline-specific areas. Students' understanding of the field is further accentuated by the fact that average class sizes are on the order of 20 to 25 students ensuring each an exceptional level of attention from faculty members and one on one interaction.

In 1979, Materials Engineering was the first discipline in the faculty to offer the now highly popular Co-op Program. Students are able to obtain a Bachelor of Materials Engineering with Co-Op distinction in two years following the completion of a Diploma in Engineering. There are two Co-op programs offered in Metallurgical Engineering. One is a Bachelor of Engineering, the other a combined BEng/MASc Degree. The undergraduate curriculum is the same for both programs.

The BEng/MASc was developed in light of the program's strong commitment to research and to permit the identification of students interested in graduate studies before they completed their undergraduate classes. In this regard, all faculty members are actively involved in international research and development initiatives. Consequently, students may also choose to pursue Master's and Doctoral degrees in Materials engineering at Dalhousie in many technically challenging fields of global importance. Included are ceramic and metal matrix

## II. Curriculum and class descriptions

Refer to sections IIE and IIIE, Materials Engineering Program, in the Process Engineering and Applied Science section of this calendar, page 375.

## III. Co-operative program and schedule

Refer to section E. Technical Co-op Program, in the Engineering section of this calendar page 346.

# Mechanical Engineering

Location: Sexton Campus  
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PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3917  
Fax: (902) 423-6711

## Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

## Department Head

Pegg, M. J., BSc, PhD (Leeds), PEng

## Professors Emeriti

Cochkanoff, O., BAsC (UBC), MASc (Toronto), PhD (Iowa State), PEng, CD  
Russell, L. T., BEng (TUNS), MSc (Queen's), PhD (Car), PEng

## Professors

Allen, P. L., BSc (Mt. A), BEng (TUNS), MESc (UWO), PhD (TUNS), PEng  
Basu, P., BE (Cal), PhD (Burd), PhD (Aston), PEng (Co-op Advisor)  
Bauer, R. J., BSc (Waterloo), PhD (Toronto), PEng  
Chuang, J. M., BSc (Nat Taiwan Ocean), MEng (Memorial), PhD (TUNS), PEng  
Hubbard, T., BSc (Dalhousie), BEng (TUNS), PhD (Caltech), PEng  
Kalamkarov, A. L., BSc, MASc, PhD (Moscow State), DSc (Acad Sci, USSR),  
PEng, FASME, FCSME (Graduate Student Advisor)  
Kujath, M. R., MSc (Warsaw Tech Univ), PhD (Polish Academy of Sciences),  
PEng  
Militzer, J., BSc (EEM Brazil), MSc (USP Brazil), PhD (Wat), PEng  
Ugursal, V. I., BSc (Bogazici), MEng, PhD (TUNS), PEng, FCSME  
Warkentin, A., BEng Mgt, MEng (McMaster), PhD (Waterloo), PEng  
Watts, K. C., BSA, MSc (Guelph), PhD (Wat), PEng, PAg

## Associate Professors

Groulx, D., BSc, PhD (Sherbrooke), Ing, PEng (Co-op Co-ordinator)  
Johnston, C. R., BSc, MSc (Alberta), PhD (Calgary), PEng  
Pan, Y., BEng (Yanshan, China), MEng (Zhejiang, China), PhD (NUS,  
Singapore), PEng

## Assistant Professors

Doman, D. A., BAsC, MASc (Waterloo), PhD (Dalhousie) (Undergraduate  
Program Co-ordinator)  
Swan, L., BSc (CalPoly), MASc, PhD (Dalhousie), PEng (Recruitment Co-  
ordinator, Graduate Seminar Co-ordinator)

## Adjunct Professor

Quinn, W., BSc (U AsC Hamburg), MSc (TU Berlin), MSc, PhD (Queen's)

## Adjunct Associate Professors

Beausoleil-Morrison, I., BAsC, MASc (Waterloo), PhD (U of Strathclyde)  
Fung, A., BSc (Dalhousie), BEng, MASc (TUNS), PhD (Dalhousie), PEng  
Seto, M., BSc, MSc, PhD (UBC), PEng

## Adjunct Assistant Professor

Molloy, S., BEng (Concordia), MEng, PhD (MUN)

## Senior Instructor

Warner, R. A., BEng (TUNS), PEng

## I. Introduction

Mechanical Engineering covers a very broad field of professional activity in such areas as land, sea, air, and space transportation; primary and secondary manufacturing industries; energy supply, conversion and utilization; environmental control; and industrial management. In these areas, the Mechanical

Engineer may become involved with design, construction, operation, development, research, planning, sales and management.

The curriculum is designed to develop an understanding of the fundamental principles of Mechanical Engineering through lecture, tutorial, and laboratory activities. Well-instrumented laboratories in thermofluids, energy conversion, stress analysis, vibrations, and control systems provide experience in measurements and applications, to ensure a thorough understanding and appreciation of the subject matter. Classes in mathematics, and various non-technical subjects are offered to broaden the student's outlook and understanding of the profession.

Laboratory involvement is considered an important component of mechanical engineering students' education. Emphasis in the laboratory is placed on project work in which design, development and testing are combined in term projects. The laboratory facilities include extensive equipment which is available for use by both undergraduate and graduate students. Measurement techniques and interpretation of test data are emphasized in the laboratories which include several testing machines, photoelastic equipment and strain gage facilities. The control systems laboratories include hydraulic, pneumatic and electronic control systems and components. Several test cells are available for engine testing and a well instrumented, low turbulence wind tunnel is available.

Most undergraduate laboratories use high-speed PC-based digital data acquisition and control systems with graphical interfaces for lab experiments and computations, and the Department has several advanced computer graphics systems.

A design project is an integral part of the senior year curriculum. This involves the student in the original design of a machine or system. Generally, the material learned in several classes must be applied in an imaginative way to achieve the required objective. Non-credit machine-shop practice classes are available to aid the design and construction of projects. Many design projects are sponsored by industry. Most projects involve hardware and typically result in construction and testing of prototypes.

Postgraduate studies in the Department are concentrated in the areas of renewable energy, conversion and storage, stress analysis, heat transfer, multi-phase flow, fluid and thermal power, dynamics of rotating machines, robotics, MEMS and computer aided design and manufacturing. Research and project master's degrees as well as the doctoral degree are offered.

## II. Program Guide

Mechanical Engineering offers two versions of the BEng Program:

1. Co-op Program
2. Non Co-op Program

### A. Co-op Program

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Work Term 1	Study Term 5	Work Term 2
4	Study Term 6	Work Term 3	Work Term 4
5	Study Term 7	Study Term 8	

Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.

### Year 3, Work Term 1 (Fall)

### Year 3, Study Term 5 (Winter)

- MECH 3010.03 Machine Design: Loading of Components
- MECH 3500.03 Dynamics of Machines
- MECH 3805.03 Mechanical Engineering Thermodynamics
- CPST 3030.03 Engineering in Society II
- ENGM 3356.03 Numerical Methods and Partial Differential Equations
- MATL 3500.03 Materials Engineering

## Year 3, Work Term 2 (Summer)

### Year 4, Study Term 6 (Fall)

- MECH 3020.03 Machine Design: Power Components
- MECH 3305.03 Fluid Mechanics
- MECH 3660.03 Finite Element Method in Mechanical Design
- MECH 3705.03 Heat Transfer
- MECH 3900.03 Systems I
- \*Humanities Class

### Year 4, Work Term 3 (Winter)

### Year 4, Work Term 4 (Summer)

### Year 5, Study Term 7 (Fall)

- MECH 4015.05 Design Project I
- MECH 4300.03 Stress Analysis
- MECH 4600.03 Engineering Measurements
- MECH 4805.03 Thermo-Fluid Engineering III
- Technical Elective I

### Year 5, Study Term 8 (Winter)

- MECH 4025.05 Design Project II
- MECH 4500.03 Vibrations
- MECH 4900.03 Systems II
- Technical Elective II
- Technical Elective III
- \* Humanities Class

Classes in the following departments meet the requirement for the humanities credit: Canadian Studies, Classics, Gender and Women's Studies, History, History of Science and Technology, Music, Philosophy, Political Science, Psychology, Religious Studies, Sociology, Theatre.

## B. Non Co-op Program

Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	FREE
2	Study Term 3	Study Term 4	FREE
3	Study Term 6	Study Term 5	FREE
4	Study Term 7	Study Term 8	

Non co-op students take the same academic program as the co-op students; however, Study Term 6 may be taken before Study Term 5 if desired. In this way, the program can be done in a total of four years.

## C. Technical Elective Choices

- MECH 4000.03 Manufacturing
- MECH 4340.03 Energy Management I
- MECH 4430.03 Turbomachines
- MECH 4440.03 Principles of Marine Craft Design
- MECH 4444.03 Mechatronics
- MECH 4450.03 Marine Craft Design and Construction
- MECH 4521.03 Applied Dynamics
- MECH 4530.03 Mechanics of Composite Materials
- MECH 4540.03 Aerodynamics
- MECH 4560.03 Space Systems
- MECH 4631.03 CAD/CAM
- MECH 4638.03 Computer Aided Toler. & Dimensioning
- MECH 4640.03 Robotics
- MECH 4650.03 Biomechanical Engineering
- MECH 4652.03 Kinematics of Human Motion
- MECH 4660.03 Finite Element Method in Mechanical Design
- MECH 4810.03 Energy Conversion Systems
- MECH 4820.03 Energy from Renewable Resources
- MECH 4830.03 Reciprocating Internal-Combustion Engines
- MECH 4840.03 Steam Plant Engineering
- MECH 4851.03 Heating, Ventilating & Air Conditioning
- MECH 4880.03 Introduction to Nuclear Engineering
- MECH 4910.03 Fluid Power
- MECH 4950.03 Advanced Control Engineering
- MECH 4960.03 Computational Methods in Engineering

## NOTES:

1. Not all of these classes will be offered every year.
2. Seniors may take a postgraduate class as a Technical Elective with the approval of the Department Head and the professor offering the class.
3. Technical Electives may be taken from another engineering department with the permission of the Head of the Mechanical Engineering Department, and the professor offering the class.

## III. Class Descriptions

### MECH 3010.03: Machine Design: Loading of Components.

The application of basic methods and concepts of strength of materials to machine design including design concepts, stress, and theories of failure is developed. Topics include: load analysis, materials, static stresses, strain and deflection, failure, impact, fatigue, surface damage. Applications include: screw fastenings, springs.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 2100.03 or ENGI 2203.03, ENGI 2400.03

### MECH 3020.03: Machine Design: Power Components.

The use of engineering principles in the design of machine power components is developed. Topics include: Lubrication and sliding bearings, roller bearings, spur gears, helical, bevel and worm gears, shafts, clutches and brakes, power transmissions such as belts and chains.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 2100.03 or ENGI 2203.03, ENGI 2400.03

### MECH 3300.03: Fluid Dynamics.

This class presents an introduction to turbines, pumps, fans and compressors. The concept of ideal fluid flow is introduced. Velocity potential and stream function solutions are obtained for inviscid flows. Boundary layer theory is presented. Numerical methods for solving fluid flow problems are given.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 2300.03 or ENGI 2103.03, ENGI 2800.03 or ENGI 2102.03, ENGM 3361.03 or ENGM 2101.03

### MECH 3305.03: Fluid Mechanics.

This class presents the dynamic governing equations of fluid flow in differential forms: continuity, Navier-Stokes and energy. Concepts of stream function, vorticity and velocity potential are also introduced. The physics and modeling of Turbulence in fluid systems is shown. The boundary layer theory is shown and flow past immersed bodies are studied: concepts of drag and lift forces are presented. Compressible flow is introduced: speed of sound, nozzle and diffuser, shock waves, Rayleigh and Fanno flow are all studied.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 2102.03, ENGI 2103.03

### MECH 3500.03: Dynamics of Machines.

The class focuses on design of mechanism, their motion, static and dynamic loads, and power transmission. It includes planar and spatial 4-bar and 6-bar linkages, cam mechanisms, gear trains, rotor systems, and manipulators. Linkage inversion, transformation, and synthesis are used for design of new mechanisms. Graphic, analytical, computer, and physical modeling techniques are used. Many real life mechanisms are analyzed.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 2400.03, MECH 2100.03, or ENGI 2203.03, ENGM 1041.03, ENGI 1400.03 or PHYC 1280.03

### MECH 3660.03: Finite Element Method in Mechanical Design.

Class deals with the application of the finite element method to stress analysis problems encountered in mechanical design. Introduction to the finite element method is followed by extensive applications to the design of machine and structural components. Mechanical and thermal stresses in trusses, beams, axisymmetric, shell, and 3D solid elements are considered. Professional finite element modeling best practices are discussed. A finite element pre-processor, code, post-processor are introduced and used in the class assignments.

FORMAT: Lecture 3 hours/ lab, tutorial 2 hours

PREREQUISITE: ENGI 2400.03

### MECH 3700.03: Heat Transfer I.

This class is an introduction to the three modes of heat transfer: conduction, convection, and radiation. Topics covered in conduction include steady-state

conduction, in one and two dimensions. In convection heat transfer forced internal and external flows are examined. Some basic concepts of natural convection are introduced. The fundamentals of radiant heat transfer are covered, including solar radiation and radiative heat transfer between simple geometric objects.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 2800.03 and ENGI 2300.03

### **MECH 3705.03: Heat Transfer.**

This class is an introduction to the three modes of heat transfer: conduction, convection and radiation. Topics covered in conduction include steady-state and transient conduction, in one and two-dimensional system, and the study of extended surfaces. Force and free convection for internal and external flows are examined. The fundamentals of radiation heat transfer are covered, including blackbody radiation, gray surfaces, Kirchhoff's law and radiation exchange between surfaces.

FORMAT: Lecture 3 hours/lab/tutorial

PREREQUISITE: ENGI 2102.03, ENGI 2103.03

### **MECH 3805.03: Mechanical Engineering Thermodynamics.**

This class builds on the thermodynamics concepts presented in Thermo-Fluid Engineering I. Introductory concepts of cycles, processes, heat and work are reviewed. The first and second law of thermodynamics are applied to open and closed systems, both steady-state and transient processes. Availability and exergy analysis are presented. Vapour and gas power and refrigeration cycles are studied; absorption refrigeration cycles and refrigerants are also discussed.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 2102.03, ENGI 2103.03

### **MECH 3900.03: Systems I.**

The class deals with the analysis of dynamic physical systems. Ordinary-differential-equation models are developed for mechanical, thermal, fluid and electrical systems. System equations are solved using classical methods and Laplace-transform techniques. S-plane characteristics are introduced, as are block-diagram & state-space representations. Systems are simulated by digital computer in the laboratory portion.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGM 2021.03 or ENGM 2022.03, ENGM 1081.03 or ENGM 2081.03

### **MECH 4000.03: Manufacturing.**

The class starts with a manufacturing process overview and a detailed process study in the following areas: manual assembly, machining, injection molding, thermoforming and casting. A relationship between process and design is examined and design for manufacturing methodologies is introduced. Quality control and quality assurance issues are overviewed. The principles of cell design for assembly and machining are introduced and part redesign for process and system is studied.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3020.03

### **MECH 4010.03: Design Project I.**

This class develops the use of fundamental theory in the detailed design of a suitable project selected by the student in consultation with the department. The student is expected to take the project from its preliminary stage through the various design stages to the ultimate completion of the design, which include a detailed report with calculations, drawings, possibly a model and a verbal presentation.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3010.03 or MECH 3020.03

### **MECH 4015.03: Design Project I.**

This class provides a project-based exercise in the engineering design process in a real world engineering context. Students work in teams and are expected to take the project from its preliminary stage through the design stages to the ultimate completion of the design including: technical reports with calculations, engineering drawings, peer evaluation, oral presentations and possibly a physical prototype or model.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3010.03 or MECH 3020.03

### **MECH 4020.03: Design Project II.**

This class is a continuation of Design Project I leading to a final report and formal presentation. The presentation will be made to fellow students and departmental staff members prior to the last day of lectures.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 4010.03

### **MECH 4025.05: Design Project II.**

This class is a direct continuation of Design Project I leading to the implementation of the student team design. All projects involve evaluation/testing of student designs, this is usually done via a constructed physical prototype or a model. Students produce a final technical report, conduct peer evaluations and give a formal presentation.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MECH 4015.05

### **MECH 4300.03: Stress Analysis.**

Class topics include: general state of stress, equilibrium equations, stress-strain-temperature relations, plane stress, axisymmetrical stress problems, thick cylindrical pressure vessels, rotating disks, bending of rectangular and circular plates, torsion of non-circular members, membrane analogy, thin-walled hollow sections, non-symmetrical bending, properties of cross-sections, shear center, composite beams, plastic hinge. Energy Methods, Castigliano's and theorems, statically indeterminate problems.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 2200.03

### **MECH 4340.03: Energy Management I.**

The purpose of this course is to introduce the concepts and techniques of energy management and conservation. The subjects that will be discussed are energy supply and demand, energy pricing, scope of the energy problem and approaches to provide solutions; energy auditing; improving energy utilization in space conditioning, and steam, hot water and compressed air systems; insulation; and electrical energy conservation. An interdisciplinary approach will be employed in this course to provide a wider understanding of the subject.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: MECH 3300.03 or MECH 3305.03, MECH 3700.03 or MECH 3705.03, MECH 3800.03 or MECH 3805.03

CROSS-LISTING: MECH 6340.03

### **MECH 4430.03: Turbomachines.**

Various types of turbomachines, from wind turbines to high-ratio compressors are studied. Although hydraulic pumps and turbines are treated, the majority of the class time is devoted to compressible flow turbomachines and their characteristics. Emphasis is placed on practical design and performance parameters.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

### **MECH 4440.03: Principles of Marine Craft Design.**

This class covers the fundamentals of hydrostatics and hydrodynamics of marine craft. Topics include: hydrostatics and stability calculations for marine craft; dimensional analysis and modelling of marine systems; resistance estimation of low-speed and high-speed craft; sail power, marine propellers and jet propulsion; directional stability and control and wave theory and motion in waves.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3300.03 or MECH 3305.03

### **MECH 4444.03: Mechatronics.**

This course deals with the integration of mechanical, electrical, computer and control engineering which is increasingly becoming an important part of engineering design. Topics include Mechanical and Electrical Actuation Systems, Sensors, and Signal Conditioning, Microprocessors and Programming and Control. A major part of the course is project-based enabling students to apply the concepts studied in the course.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3900.03, MECH 3020.03

EXCLUSION: BIOE 4312.03

### **MECH 4450.03: Marine Craft Design and Construction.**

This class deals with design and construction methods for marine craft. Each student completes a preliminary design of a small marine vessel. Topics include: engineering and economic principles governing selection of dimensions and coefficients for marine craft, computer-aided design, design and generation of hull forms, performance and operability in the ocean environment, construction methods for glass-fibre, wood, aluminum and steel marine craft, and structural analysis and design.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 4440.03 or instructor's consent

**MECH 4500.03: Vibrations.**

Single and multiple degree of freedom lumped parameter systems subjected to harmonic and transient excitation are examined. Analytical as well as numerical solutions are covered. Vibrations of continuous systems such as beams and shafts are introduced. Laboratory experiments deal with vibration of lumped parameter physical models as well as vibrations of rotating machinery. Vibration control in industrial applications is emphasized and the effects of whole body vibration on humans is treated as a safety issue.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3500.03, MECH 3900.03

**MECH 4510.03: Mechanics of Composite Materials.**

The class introduces classification of composite materials, fabrication processes and applications of composites; the basic relations of elasticity of anisotropic materials, and the macro- and micromechanical modeling of composites. The elastic behaviour of laminated and fibre-reinforced composites is studied; the effective moduli theory and the strength of composite materials are considered. Smart composite structures and their constituents are introduced.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3010.03 and MECH 4300.03

CROSS-LISTING: MECH 6530.03

**MECH 4521.03: Applied Dynamics.**

This class begins with a review of planar kinematics and kinetics of rigid bodies. These concepts are extended to kinematics and kinetics of rigid bodies undergoing general three dimensional motion. Euler's Equations are applied to a wide range of engineering problems including vehicular and gyroscopic dynamics. Energy methods for bodies undergoing three dimensional motion are applied to multi-degree-of-freedom systems. Single-degree-of-freedom systems subjected to random and shock inputs are analyzed.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

CROSS-LISTING: MECH 6521.03

**MECH 4540.03: Aerodynamics.**

The class deals with the fundamentals of aerodynamics and the theory of flight. Material covered includes: the standard atmosphere; airfoil coefficients and section properties; finite wings and induced drag; airplane performance - power required, rate of climb, range and endurance; basics of stability and control.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3300.03 or MECH 3305.03

**MECH 4560.03: Space Systems.**

This class deals with the engineering design and analysis of space systems and their interrelationships. Topics include orbital mechanics, satellite perturbations, satellite actuator and sensor systems, satellite access and coverage.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: MECH 3900.03

CROSS-LISTING: MECH 6560.03

**MECH 4600.03: Engineering Measurements.**

The static and dynamic characteristics of first and second order transducers and measurement systems are examined. The experimental versus theoretical approach to engineering problems is studied. Topics include data acquisition, analysis, and presentation, including the probabilistic nature of engineering measurements. The class is laboratory intensive covering measurements of force, strain, temperature, pressure, velocity, and fluid flow. Computers are used extensively in the laboratory experiments.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: ENGM 2032.03

**MECH 4631.03: CAD/CAM - Computer Aided Design/Computer Aided Manufacturing.**

The student is introduced to the concept of automation with application to design, production, and manufacturing systems. The use of digital computers is considered in design, including peripheral equipment and types of languages. Other topics include numerical control manufacturing systems such as Direct Numerical Control (DNC), Computer Numerical Control (CNC), Adaptive Control and Industrial Robots. Due to the diverse nature of the class content, various personnel from both the academic and industrial community aid in the class presentation.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3020.03

**MECH 4638.03: Computer Aided Tolerancing and Dimensioning.**

This class deals with dimensioning and mechanical tolerances to international standards - key factors in quality production. Topics covered include: review of basic manufacturing processes and tools, fundamental dimensioning and tolerances techniques, working and assembly drawings, CAD/CAM drawings for computer numerical control, geometric and positional tolerancing, quantity production, parts assembly, quality control and application of statistical and probabilistic methods. Biweekly assignments requires use of Auto-CAD, interactive computer programs for geometrical dimensioning/tolerancing, and a Coordinate Measuring Machine (CCM).

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3010.03, MECH 3020.03

**MECH 4640.03: Robotics.**

The prime objective of the class is to provide a survey of the state-of-the-art in robotics. A large portion of the class is focused on the robot hardware. However, robotics in an inherently interdisciplinary field and the class will also involve robotics control and application. Topics covered include kinematics and dynamics of the robot arm and gripper, drives, robot position measuring systems, external sensors and feeding, storage, changing position and clamping devices, all of which, together with the robot itself, constitute a "robotized" workplace.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3500.03, MECH 3900.03

CROSS-LISTING: BIOE 4011.03

**MECH 4650.03: Biomechanical Engineering.**

Engineering analysis of biological systems provides novel insight into evolutionary design of animals and plants and into the intelligent design of medical devices. This class examines the structure and function of the cardiovascular, pulmonary, and musculoskeletal systems using tools from solid and fluid mechanics. Topics include the heart as a pump, blood flow, arterial pulse propagation, the mechanics of breathing lung elasticity, muscle contraction, tissue mechanics, basic skeletal design, locomotion, and engineering of surgical implants.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

**MECH 4652.03: Kinematics of Human Motion.**

The science of biomechanics is based on mechanical models and biological experiments. Students will explore the application of classical mechanics to the analysis of human motion related to athletics, orthopaedics, and rehabilitation. Emphasis is also placed on numerous experimental facts collected from the biomechanical research literature. Topics include kinematic geometry of a single body, the description of joint configuration, and differential kinematics of biokinematic chains. Three-dimensional kinematics of individual joints (i.e., the knee, hip and elbow) is emphasized from the perspective of total joint replacement design.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

**MECH 4660.03: Finite Element Method in Mechanical Design.**

Class deals with the application of the finite element method to stress analysis problems encountered in mechanical design. Introduction to the finite element method is followed by the necessary relationships from linear elasticity, beam and plate theory. Various categories of structural elements are discussed in order of increasing complexity. Stresses in one- and two-dimensional trusses, beams, axisymmetric solids, and plates are considered. Finite element program is introduced and used in the class assignments.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 2200.03 or ENGI 1202.03, ENGM 3352.03 or ENGM 3356.03

CROSS-LISTING: MECH 6660.03

**MECH 4805.03: Thermo-Fluid Engineering III.**

This class builds on the thermodynamics concepts presented in Thermo-Fluid Engineering I. Introductory concepts of cycles, processes, heat and work are reviewed. The first and second law of thermodynamics are applied to open and closed systems, both steady-state and transient processes. Availability and exergy analysis are presented. Vapour and gas power and refrigeration cycles are studied; absorption refrigeration cycles and refrigerants are also discussed.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3705.03, MECH 3305.03, MECH 3805.03



**MECH 4810.03: Energy Conversion Systems.**

Application of basic principles of thermodynamics, fluid mechanics and heat transfer to the analysis and synthesis of energy conversion systems are studied. Primary energy sources and global energy demand are examined. Principles of conventional methods, thermal systems, fuel types, combustors, and gas turbines, initial planning of a hydroelectric power plant, selection of turbines and other components, nuclear fission and fusion, clean energy production, and environmental aspects of energy production are covered.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3300.03 or MECH 3305.03, MECH 3700.03 or MECH 3705.03, MECH 3800.03 or MECH 3805.03, ENGI 2103.03 or ENGI 2300.03

**MECH 4820.03: Energy from Renewable Resources.**

This class concentrates on the theoretical and practical aspects of solar, wind, tidal and wave sources of energy with particular emphasis on their availability and use in the Atlantic Provinces. Design feasibility studies are undertaken on particular aspects of energy conversion from these sources. The impact of the environment on consumption of conventional energy forms is investigated. The nature and magnitude of energy consumption world-wide and locally is considered.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3700.03 or MECH 3705.03

**MECH 4830.03: Reciprocating Internal-Combustion Engines.**

The major topics of this class are basic engine types, test methods and pressure measurements, combustion, ideal cycles and model processes, equilibrium charts, fuel specifications and tests, engine knock, exhaust analysis, fuel systems, ignition systems, engine performance and supercharger matching. Hands-on laboratory work is an integral part of this class.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3800.03 or MECH 3805.03

**MECH 4840.03: Steam Plant Engineering.**

This class aims to provide basic fundamental and practical information to engineering students to design and operate thermal power plants. The following topics are covered: classification of steam generators; comparison of water tube and fire tube boilers; energy sources: nuclear and fossil fuel; fuels and combustion; thermal analysis of furnaces, superheaters, economizers, and air pre-heaters; boiler efficiency calculations; description of different types of heat exchangers; evaporators and condensers; steam generation systems: Pulverized, Cyclone, Fluidized beds; auxiliary equipment (fans, stacks); control system; cooling system design; environmental considerations.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 2102.03 or ENGI 2800.03

**MECH 4851.03: Heating, Ventilating and Air Conditioning.**

This is an introduction to the design of thermal systems for indoor climate control. The major topics include: human comfort requirements, outdoor climate variables, heating and dehumidification loads, cooling and dehumidification loads, ventilation requirements and criteria, central system types and selection, energy sources and costs, piping, pumps, ducts, fans, and control systems. Computer programs will be introduced for design calculations involving heating and cooling load, piping, ducting and energy consumption.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3305.03 or MECH 3800.03

**MECH 4880.03: Introduction to Nuclear Engineering.**

The purpose of this course is to introduce the concepts of nuclear engineering and the resulting applications. The subjects that will be discussed are the fundamentals of particle physics: proton, neutron, electron, photon and neutrino, and the atomic model; radioactivity and radiation detection, protection and shielding; principle of nuclear energetic: fission and fusion; nuclear reactor kinetics and control; nuclear reactor design and cooling; nuclear propulsion, nuclear waste disposal.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: MECH 3700.03 or MECH 3705.03, MECH 3800.03 or MECH 3805.03

**MECH 4900.03: Systems II.**

Response characteristics of open loop and feedback control systems are studied. Various controller types and their uses are analyzed. Techniques such as root-locus diagrams and Bode & Nichols plots are used for stability and performance evaluation. Digital simulations and experiments on computer-based control systems are done in the laboratory portion.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3900.03

**MECH 4910.03: Fluid Power.**

This is an introductory course to fluid power systems covering the principles of power hydraulics, hydraulic fluids, hydraulic actuators and power generation transducers. The concept of pressure controls, volume controls and directional controls is also covered, including an introduction to electro-hydraulic servos and the design of basic open and closed-center circuits. The time domain analysis of feedback systems is introduced. The student is introduced to the design and compensation of systems using both s-plane and time domain methods. Other topics include simulation and analysis of control systems using graphics terminal computer facilities.

FORMAT: Lecture 3 hours, lab 3 hours

**MECH 4950.03: Advanced Control Engineering.**

The class develops the students' capabilities in system simulation and feed forward/feedback control-system design and implementation. Topics include: system-parameter identification, control-system hardware, computer-based control systems, design techniques for multiple-input multiple-output systems, and adaptive control. The class is supported by computer-based simulation activities and design procedures, and by hands-on laboratory experience.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: MECH 3900.03

CROSS-LISTING: MECH 6950.03

**MECH 4960.03: Computational Methods in Engineering.**

The class presents basic computer methods of application of mathematical tools to solve engineering problems. Numerical methods such as finite differences, series expansions, and numerical integration are introduced. Numerical solutions of ordinary and partial differential equations with applications to equilibrium, eigenvalue and propagation problems in engineering are considered. Application of mathematical libraries, X-window system and the software tools associated with the Unix system are included.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGM 3356.03 or ENGM 3361.03

CROSS-LISTING: MECH 6960.03

# Mineral Resource Engineering

Location: G Building, Sexton Campus  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3960  
Fax: (902) 494-3108  
Email: care@dal.ca

## Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

## Department Head, Civil and Resource Engineering

Lake, C., BEng (TUNS), PhD (UWO), PEng

## Undergraduate Program Co-ordinator

Jones, D. S., Dip. Eng (MUN), BEng (TUNS), MBA (Western), PhD (TUNS)

## I. Introduction

The Mineral Resource Engineering Program concentrates on the technical, environmental and economic aspects of the extraction and processing of the Earth's mineral resources. Students can pursue options in mineral resource engineering, petroleum engineering and mineral processing.

The main employers for Mineral Resource Engineering graduates are the mineral resource industries, oil and gas industries, financial and government institutions, consulting companies, mining equipment manufacturers and dealerships, marketing mine service companies, mineral investment and financial institutions, and research and teaching institutions. The development of an analytical attitude, team work and communication skills are important aims of the Mineral Resource Engineering Program. Participation in field trips to mining and petroleum operations in the Maritime region is a degree requirement and each student is required to share costs.

Opportunity also exists to continue in the MSc, MEng, and PhD programs for those who would like to specialize in areas of Mineral Extraction, Mineral Processing and Petroleum Engineering at Dalhousie.

## II. Curriculum and class descriptions

Refer to sections IIB and IIIB, Mineral Resource Engineering Programs, in the Civil and Resource Engineering section of this calendar, page 350.

# Process Engineering and Applied Science

Location: F Building, Sexton Campus  
1360 Barrington Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3953  
Fax: (902) 420-7639

## Dean

Leon, L. J., BSc, MSc, PhD (Dalhousie), PEng

## Department Head

Pegg, M. J., BSc, PhD (Leeds), PEng

## Professors Emeriti

Ackman, R. G., BA (Toronto), MSc (Dalhousie), DIC (Imperial Coll.), PhD (London), LLD (Hon) (Dalhousie)  
Caley, W. F., BSc (Eng), MSc (Eng) (Queen's), PhD (Toronto), PEng  
Chen, B. H., BSc (Nat. Taiwan), MEng, PhD (McGill), PEng  
Hancock, H. A., BASc, MASc, PhD (Toronto), PEng  
McMillan, A. F., BSc, MSc (Queen's), PhD (MIT), PEng

## Professors

Amyotte, P. R., BEng (RMC), MSc (Eng) (Queen's), PhD (TUNS), PEng (Co-op Advisor, Chemical Engineering)  
Ben Abdallah, N., BSc (Texas, A&M), MASc, PhD (UBC), PEng (Undergraduate Program Co-ordinator, Environmental Engineering)  
Bishop, D. P., MASc, PhD (TUNS), PEng (Coop Advisor, Materials Engineering)  
Corbin, S. C., MASc (TUNS), PhD (McMaster), PEng  
Ghaly, A. E., BScEng, MScEng (Alex), PhD (McGill), PEng  
Gill, T. A., BSc, MSc (Guelph), PhD (UBC)  
Kipourous, G. J., DipEng (Athens), MASc, PhD (Toronto), PEng (Co-ordinator, Graduate Programs)  
Paulson, A. T., BSc (Agr), MSc, PhD (UBC)  
Pegg, M. J., BSc, PhD (Leeds), PEng  
Plucknett, K. P., BSc, PhD (Warwick)  
Speers, R. A., BSc (Agr), MSc, PhD (UBC)  
Truelstrup Hansen, L., Cand. brom., PhD (Royal Vet Agr Univ Denmark) (Undergraduate Program Co-ordinator, Food Science)  
Watts, K. C., BSA, MSc (Guelph), PhD (Wat), PEng (Co-op Advisor, Biological and Environmental Engineering)  
Yemenidjian, N. B., BEng, PhD (Concordia), PEng

## Associate Professors

Budge, S. M., BSc (Acadia), PhD (MUN) (Undergraduate Program Co-ordinator, Food Science)  
Brooks, S. L., BTech (Massey), PhD (Cambridge)  
Farhat, Z., BASc, MASc, PhD (Windsor), PEng (Undergraduate Program Co-ordinator, Materials Engineering)  
Ghanem, A., BSc, Eng (UNB), PhD (Cornell), PEng  
Jamieson, R., BEng (TUNS), MASc (Dalhousie), PhD (Guelph), PEng  
Kuzak, S. G., BEng, MEng (McGill), PhD (TUNS), PEng  
Mazzanti, G., BSc (U de America), MSc, PhD (Guelph)

## Assistant Professors

Donaldson, A., BASc, MASc, PhD (Ottawa)  
Gibson, M., BA (Sheffield Hallam), MSc, PhD (Strathclyde)  
Gordon, R., BSc, MSc (McGill), PhD (Guelph, PEng, PAg)  
Haelssig, J., BASc, PhD (Ottawa)  
Jarjoura, G., BEng (TUNS), MASc, PhD (Dalhousie)

## Adjunct Professors

Al Taweel, A. M., BSc (Alexandria), MSc, PhD (Colorado), PEng  
 Gordon, R., BSc, MSc (McGill), PhD (Guelph), PEng, PAg  
 Khan, F., BSc Engg (Aligarh Muslim U), ME (U of Rorokes), PhD (Pondicerry U)  
 Madani, A., BSc (Pahlavi U, Iran), MSC (UBC), PhD (Washington State U)  
 Miadonye, A., BSc (U of Southbank UK), PhD (Loughborough Univ UK)  
 Pink, D. A. H., BSc (Hons) (St. FX), PhD (UBC)  
 Yildiz, I., BSc, MSc, MSME, PhD (OSU)

## Adjunct Associate Professors

Kalmokoff, M., BSc (Guelph), MSc (Saskatchewan), PhD (Queen's)  
 Rupasinghe, V., BSc (Peradeniya, Sri Lanka), MSc (Iowa State), PhD (Guelph)

## Adjunct Assistant Professors

Bezanson, G., BSc (Mt. A), MSc (Dalhousie), PhD (Carlton)  
 Blouin, S., BAsC (Laval), MASc (Ecole Polytechnique), PhD (Queen's)  
 Gillis, M., BSc, MSc (UNB), PhD (U of Saskatoon)  
 Lake, J., BSc, PhD (Dalhousie)  
 Patterson, R. N., BSc (RMC), BAsC (Toronto), MASc (TUNS), PhD (Dalhousie)  
 Price, G., BSc (UBC), MSc, PhD (Guelph)  
 Ripley, R., BAsC, MASc, PhD (Waterloo)

## I. Introduction

The Department of Process Engineering and Applied Science prepares students for professional careers in a wide range of fields related to the process industries. Process science and engineering is concerned with the development of new materials and processes to meet the specific needs to develop a given product. A process engineer could be working in research and development on the creation of added-value products or in an industrial setting on modification and optimization of existing processes, systems and process equipment to improve their safety, quality, cost effectiveness with special attention to environmental protection and sustainability.

Process Engineering graduates are actively being employed in the bioprocess industry (food, fiber, pharmaceutical, ...), materials process industry (metals, ceramics, composites, ...), petrochemical process industry (oil, gas, plastics, ...), energy engineering (energy efficiency, renewable sources ...), and several others.

The Department of Process Engineering and Applied Science currently offers three undergraduate professional degree programs to meet the needs of the increasing types and numbers of process industries. These degree programs are:

1. BEng in Chemical Engineering, co-op and non co-op programs
2. BEng in Environmental Engineering, co-op and non co-op programs
3. BEng in Materials Engineering, co-op and non co-op programs.

For a description of each of the above programs, admission requirements and more information on the opportunities for employment, refer to individual program listings in the Faculty of Engineering section of this calendar.

Opportunities exist within the Department for graduate studies and research leading to the master and doctorate degrees. Consult the Graduate Calendar, Dalhousie University for more details on these graduate programs.

## II. Program Guides

### A. Chemical Engineering

Chemical Engineering offers two versions of the BEng Program:

1. Co-op Program
2. Non Co-op Program

## Co-op Program

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Work Term 1	Study Term 5	Work Term 2
4	Study Term 6	Work Term 3	Work Term 4
5	Study Term 7	Study Term 8	

Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.

### Year 3, Work Term 1 (Fall)

#### Year 3, Term 5 (Winter)

- IENG 2005.03 Engineering Economics
- CHEE 3522.03 Mechanical Unit Operations
- CHEE 3525.03 Separation Processes
- CHEE 3544.03 Computer-Aided Process Design
- PEAS 3500.03 Process Thermodynamics

### Year 3, Work Term 2 (Summer)

#### Year 4, Term 6 (Fall)

- CHEE 3601.03 Thermal Unit Operations
- CHEE 3634.03 Chemical Reaction Engineering
- ENGM 3052.03 Applied Numerical Methods
- MATL 3500.03 Materials Engineering
- PEAS 3600.03 Transport Phenomena
- PEAS 3700.03 Law & Ethics in Engineering

### Year 4, Work Term 3 (Winter)

#### Year 4, Work Term 4 (Summer)

#### Year 5, Term 7 (Fall)

- CHEE 4704.03 Separation Processes II
- CHEE 4702.03 Unit Operations Lab I
- CHEE 4741.03 Process and Plant Design I
- CHEE 4773.03 Industrial Safety & Loss Management
- CHEE 4803.03 Process Dynamics & Control
- Technical elective I

#### Year 5, Term 8 (Winter)

- CHEE 4802.03 Unit Operations II
- CHEE 4803.03 Oil and Gas Processing
- CHEE 4842.03 Process and Plant Design II
- MATL 4840.03 Corrosion and Degradation of Materials
- Technical Elective II
- Technical Election III

#### Technical Electives

This list is not exhaustive, nor does it imply that each class will be offered every year. Students should check with the Undergraduate Program Co-ordinator.

- BIOE 4312.03 Microcomputer Interfacing
- BIOE 4391.03 Polymeric Biomaterials
- CHEE 4760.03 Fundamentals of Combustion
- CHEE 4854.03 Computer Process Control
- CIVL 4440.03 Water and Wastewater Treatment
- ENVE 4411.03 Indoor Environment Control and Air Quality
- ENVE 4612.03 Waste Disposal and Utilization
- ENVE 4651.03 Solar Energy Utilization
- ENVE 4772.03 Environmental Assessment and Management
- FOSC 4081.03 Brewing Science
- IENG 4529.03 Industrial and Organizational Psychology
- IENG 4547.03 Company Operations and Management
- IENG 4558.03 Project Management and Control

- IENG 4574.03 Decision and Risk Analysis
- MATL 4703.03 Non-Metallic Materials
- MECH 4820.03 Energy from Renewable Resources
- MECH 4840.03 Steam Plant Engineering

There are also a number of graduate classes that students have taken, mainly in Chemical Engineering, Biomedical Engineering, and Petroleum Engineering.

Notes:

1. Seniors may take a postgraduate class as a Technical elective with the approval of the Undergraduate Program Coordinator and the professor offering the class.
2. Not all technical electives are available each year and other elective classes may be available. Please check with the department prior to registration.

### Non Co-op Program

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Study Term 6	Study Term 5	Free
4	Study Term 7	Study Term 8	
Non co-op students take the same academic program as the co-op students; however, Term 6 may be taken before Term 5 if desired. In this way, the program can be done in a total of four years.			

## B. Environmental Engineering

Environmental Engineering offers two versions of the BEng Program:

1. Co-op Program
2. Non Co-op Program

### Co-op Program

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Work Term 1	Study Term 5	Work Term 2
4	Study Term 6	Work Term 3	Work Term 4
5	Study Term 7	Study Term 8	
Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.			

During their senior year, Environmental Engineering students can specialize in one or more of the following areas: Air Quality and Pollution Control, Energy and the Environment, Soil and Water Quality and Management, and Waste Utilization and Management.

Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.

### Year 3, Work Term 1 (Fall)

#### Year 3 - Term 5 (Winter)

- CHEE 3522.03 Mechanical Unit Operations
- ENVE 3500.03 Air Quality
- ENVE 3251.03 Environmental & Industrial Microbiology
- IENG 2005.03 Engineering Economics
- MINE 2200.03 Geology for Engineers
- PEAS 3500.03 Process Thermodynamics

### Year 3, Work Term 2 (Summer)

#### Year 4, Term 6 (Fall)

- CIVL 3101.03 Soil Mechanics
- CIVL 3830.03 Applied Geomatics
- ENGM 3052.03 Applied Numerical Methods
- ENVE 3412.03 Energy and Environment
- ENVE 3452.03 Soil and Water Engineering
- PEAS 3600.03 Transport Phenomena

### Year 4, Work Term 3 (Winter)

#### Year 4, Work Term 4 (Summer)

#### Year 5, Term 7 (Fall)

- CHEE 4773.03 Industrial Safety & Loss Management
- CIVL 4440.03 Water & Wastewater Treatment
- ENVE 4401.03 Design Project for Environmental Engineering I
- ENVE 4772.03 Environmental Assessment & Management
- PEAS 3700.03 Law & Ethics in Process Engineering
- Technical Elective

#### Year 5, Term 8 (Winter)

- CHEE 4872.03 Air Pollution Control
- CIVL 4410.03 Engineering Hydrogeology
- ENVE 3432.03 Waste Management
- ENVE 4402.03 Design Project for Environmental Engineering II
- Technical Elective

### Environmental Engineering—Recommended Technical Electives

- BIOE 4342.03 Industrial Biotechnology
- CIVL 4460.03 Solid Waste Management and Landfill Design
- ENVE 4000.03 Small Watershed Hydrology
- ENVE 4411.03 Indoor Environmental Control and Air Quality
- ENVE 4421.03 Biogeochemistry and Bioremediation
- ENVE 4612.03 Waste Disposal and Utilization
- ENVE 4641.03 Contaminant Fate & Transport
- ENVE 4651.03 Solar Energy Utilization
- ENGM 4675.03 Risk Assessment & Management **OR**
- IENG 4574.03 Decision and Risk Analysis
- ERTS 3402.03 Practical Hydrogeology
- IENG 4547.03 Company Operations & Management
- IENG 4558.03 Project Management and Control
- MINE 4815.03 Mining and the Environment
- MINE 4818.03 Mine Waste Management

Notes:

1. Technical classes from other departments may be selected subject to availability and the approval by the departments concerned.
2. Technical electives in any one year will depend on demand and staff availability.

### Non Co-op Program.

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Study Term 6	Study Term 5	Free
4	Study Term 7	Study Term 8	
Non co-op students take the same academic program as the co-op students; however, Term 6 may be taken before Term 5 if desired. In this way, the program can be done in a total of four years.			

## C. Materials Engineering

Materials Engineering offers two versions of the BEng Program:

1. Co-op Program
2. Non Co-op Program

## Co-op Program

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Work Term 1	Study Term 5	Work Term 2
4	Study Term 6	Work Term 3	Work Term 4
5	Study Term 7	Study Term 8	
Years 1 and 2 follow the core program outlined in the Engineering section of this calendar.			

### Year 3, Work Term 1 (Fall)

### Year 3, Term 5 (Winter)

- IENG 2005.03 Engineering Economics
- MATL 3500.03 Materials Engineering
- MATL 3510.03 Extraction of Materials
- MATL 3520.03 Structure of Materials
- PEAS 3500.03 Process Thermodynamics

### Year 3, Work Term 2 (Summer)

### Year 4, Term 6 (Fall)

- ENGM 3052.03 Applied Numerical Methods
- MATL 3600.03 Mechanical & Physical Behavior of Materials
- MINE 3530.03 Mineral Processing
- PEAS 3600.03 Transport Phenomena
- PEAS 3700.03 Law and Ethics in Process Engineering
- Technical Elective I

### Year 4, Work Term 3 (Winter)

### Year 4, Work Term 4 (Summer)

### Year 5, Term 7 (Fall)

- CHEE 3634.03 Chemical Reaction Engineering
- CHEE 4773.03 Industrial Safety & Loss Management
- MATL 4700.03 Materials Design Project I
- MATL 4710.03 Ferrous Alloys & Joining of Materials
- MATL 4720.03 Industrial Processing of Materials
- Technical elective II
- Graduate Class I (for combined BEng/MASc Students Only)

### Year 5, Term 8 (Winter)

- MATL 4800.03 Materials Design Project II
- MATL 4810.03 Materials Process Design
- MATL 4820.03 Non-Metallic Materials
- MATL 4830.03 Non-Ferrous Alloys
- MATL 4840.03 Corrosion and Degradation of Materials
- Technical Election III
- Graduate Class II (for combined BEng/MASc Students Only)

### Year 5, Term 9 (Summer) (for combined BEng/MASc; Optional for BEng)

- Technical Elective I
- Technical Elective II
- Technical Elective III
- Graduate Class III (for combined BEng/MASc Students Only)

## Non Co-op Program

Sequencing			
Year	Fall	Winter	Summer
1	Study Term 1	Study Term 2	Free
2	Study Term 3	Study Term 4	Free
3	Study Term 6	Study Term 5	Free
4	Study Term 7	Study Term 8	
Non co-op students take the same academic program as the co-op students; however, Term 6 may be taken before Term 5 if desired. In this way, the program can be done in a total of four years.			

## Combined BEng - MASc Program Guide

### 1. Program Entrance Requirements

To be eligible to enter the Combined BEng/MASc Program, a student must be able to demonstrate an overall average of 70% based on the subjects in the first three academic terms of the Materials Engineering Program.

Since the first two academic terms of the BEng and combined BEng/MASc Programs are common, students enrolled in the BEng Program may apply for entrance into the combined degree program at any time before the beginning of the seventh academic term.

### 2. Financial Support

All students accepted into the BEng/MASc Program will be eligible for financial assistance beginning at the start of the seventh academic term. The assistance will be spread over the remainder of the academic terms and may have a total value of approximately \$15,000.

Part of the financial assistance is derived from money obtained to further specific research objectives on which the student is expected to work for his or her Master's Thesis. The remainder of the financial support is normally derived from assigned duties as Part-Time Teaching Assistants. A class work Master's Program (MEng) can be followed but the amount of financial assistance will be considerably reduced.

### 3. Maintenance of Standing

In order to retain standing in the Combined BEng/MASc Program, students must continue to maintain an academic average of B-. Failing this, a student may obtain a BEng Degree only by completing the required classes, but will not be eligible for further financial assistance from the Department. However, on graduation should the student attain an average of B, he/she may be eligible to pursue graduate studies in the department.

### 4. Scholarships

Students in the Combined BEng/MASc Program are encouraged to apply for the usual scholarships and bursaries in order to partially augment the financial support received. Contact the Department for details.

### 5. Combined BEng/MASc Scheduling

The combined BEng/MASc Degree follows the program as indicated for the BEng with the addition of two academic terms as follows:

### Year 6, Term 10 (Fall)

- Graduate Class IV
- Thesis

### Year 6, Term 11 (Winter)

- Thesis

### 6. Technical Electives

Choose 3:

- MECH 4330.03 Mechanical Design
- MATL 4805.03 Electrochemical Processing of Materials
- MATL 4806.03 Particulates in Materials Engineering

- MATL 4813.03 Iron and Steel Production
- MATL 4825.03 Solidification and Casting
- MATL 4826.03 Physical Metallurgy and Ceramics
- MINE 4830.03 Advanced Mineral Processing

Technical electives from other departments may be selected subject to availability and the approval by the departments concerned.

Not all technical electives will be offered every year.

#### D. Minor in Food Science for BSc Major or Honours

The Minor in Food Science is available to students registered in the BSc 20 credit major and honours programs. The requirements are as for the appropriate program with the completion of the following classes to fulfill the Food Science Minor:

- FOSC 1000 Concepts in Food Science
- Eight classes from the following list:
  - BIOE 3051.03 Principles of Food Engineering
  - BIOE 3241.03 Industrial Biotechnology
  - BIOL 3226.03 Plants and Civilization
  - CPST 2000.03 Technical Communication
  - CPST 3030.03 Engineering in Society II
  - ENVE 3000.03 Fundamentals of Environmental Engineering
  - FOSC 2010.03 Food Commodities
  - FOSC 3010.03 Food Chemistry
  - FOSC 3020.03 Food Analysis
  - FOSC 3030.03 Food Quality Assurance
  - FOSC 3070.03 Food Processing
  - FOSC 3080.03 Food Microbiology
  - FOSC 4020.03 Chemistry - Fats, Oils, Lipids
  - FOSC 4030.03 Food Product Development
  - FOSC 4081.03 Brewing Science
  - FOSC 4091.03 Food Safety and Biotechnology
  - FOSC 4500.03 Seminar in Food Science
  - FOSC 4250.03 Food Product Development Project
  - HPRO 2250.03 Human Nutrition

### III. Class Descriptions

#### A. Biological Engineering Series

##### BIOE 3051.03: Principles of Food Engineering.

This class presents principles of engineering and applications to food processing unit operations. This class is intended for primarily food science majors, and other non-engineering students. Topics covered are units and dimensions, unit operations in food processing, material balance, thermodynamics and energy balance, fluid flow, heat transfer, and mass transfer.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: MATH 1280.03 and 1290.03, or ENGM 1011.03 and 1012.03, PHYC 1300X/Y.06

##### BIOE 4341.03: Food Science for Engineers.

This class introduces the fundamental chemical, nutritional and microbiological aspects of food processing. Emphasis is placed on food quality, deterioration and principles of its preservation. Topics covered include: constituents of food (properties, significance, and nutritive aspects); factors related to quality and deterioration; fats and oils; food additives; and the requirements for food preservation, packaging and storage.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: BIOE 3251.03

##### BIOE 4342.03: Industrial Biotechnology.

This class introduces students to industrial applications of biotechnology. Basic biochemistry and molecular biology are covered in addition to stoichiometry and kinetics for bioprocesses. Modern tools and approaches of biotechnology are presented, followed by application of biotechnology to diverse areas (e.g. the environment, medicine, agriculture, pharmaceutical and food processing industries). This class is suitable for engineering/science students who may wish to pursue employment in the biotechnology sector with little/no prior knowledge of biotechnology or genetic engineering.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2441.03

EXCLUSION: BIOE 3241.03, BIOE 3342.03

##### BIOE 4351.03: Bioprocess Engineering.

This class focuses on the process design of unit operations involved in bioprocessing. Topics include fluid flow and mixing, transport phenomena in bioprocess systems, design and analysis of biological reactors, and bioseparation processes. Examples encompass various areas of bioprocessing. Simulation of a bioprocess is demonstrated using a software package.

FORMAT: Lecture 3 hours, lab 2 hours

##### BIOE 4352.03: Food Engineering.

This class focuses on the process design of unit operations in food processing, preservation, packaging and storage. Topics include mass and energy balances, reaction kinetics modelling, size reduction, emulsification, food dehydration, packaging and storage, extrusion processes, freezing and thawing, evaporation and freeze concentration, crystallization, thermal process calculations and microwave heating. As a term project, a food process is simulated using a software package.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: BIOE 3252.03 or equivalent

##### BIOE 4391.03: Polymeric Biomaterials.

his class provides an introduction to the characterization, fabrication and use of synthetic and naturally-derived polymeric materials to replace or regenerate tissues and organs in the human body. Classes will include a discussion of natural and synthetic macromolecular structure, properties (chemical, physical, mechanical), synthesis, and interactions with the human body. The design and application of polymeric materials in tissues engineering, drug delivery, and prosthetics will also be discussed using specific examples including: blood vessel replacement, artificial pancreas, skin substitutes, and nerve regeneration.

FORMAT: 3 lecture hours

PREREQUISITE: PHYC 1280.03/1290.03 and CHEM 1021.03 and CHEM 1022.03, or the equivalents

#### B. Chemical Engineering Series

##### CHEE 3522.03: Mechanical Unit Operations.

This class introduces the student to the principles and practices involved in contacting, conveying, separating and storing single and multiphase systems. It includes the flow of incompressible and compressible fluids in conduits and past immersed bodies, as well as the transportation, metering, and mixing of fluids.

Unit operations involved in the contacting and separation of phases, such as fluidization, sedimentation and centrifugation, are also studied.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGI 2102.03, PEAS 2201.03

##### CHEE 3525.03: Separation Processes.

This class provides an introduction to cascade theory and develops fundamentals for design and analysis of staged operations such as leaching, liquid-liquid extraction and distillation. Topics include single-stage operations, multi-stage, counter-current cascade with and without reflux, and binary and multi-component distillation.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 2102.03, PEAS 2201.03, ENGM 2101.03

##### CHEE 3530.03: Chemical Engineering Thermodynamics.

The class deals with theory and practice of chemical thermodynamics. A brief review is given of concepts in physical chemistry: partial molal quantities and vapour-liquid equilibria in ideal and non-ideal systems including miscible and partially miscible components. The class also deals with thermophysical properties of pure liquids, properties of solutions, and a comprehensive study of vapour-liquid equilibrium and equilibrium constants in chemical reactions.

FORMAT: Lecture 3 hours, lab 2 hours

##### CHEE 3544.03: Computer-Aided Process Design.

The class aims to develop the student's ability to solve process design problems using packaged software. Major emphasis is placed on how to translate a flow sheet into a suitable form for simulation and design. Other topics include relational data bases, and design of specific unit operations using both available software and student-developed programs.

FORMAT: Lecture 2 hours, lab 4 hours

PREREQUISITE: PEAS 2201.03, ENGM 1081.03

##### CHEE 3550.03: Process Dynamics and Control.

This class provides an introduction to control of chemical processes. The dynamics of behaviour of simple processes is analyzed through transfer functions

and means of determining the dynamic performance of feedback control systems are presented. An introduction to stability of control systems is made. Procedures for selecting and designing proportional, proportional-integral and proportional-integral-derivative controllers are discussed

FORMAT: Lecture 2 hours, lab 2 hours, tutorial 1 hour

### **CHEE 3601.03: Thermal Unit Operations**

In this class students will learn how to apply the fundamental concepts of momentum and energy transfer to the design of thermal processing unit operations. Examples include double pipe heat exchanger, shell and tube heat exchanger, plate heat exchangers, air cooled heat exchangers, cooling towers, condensers, and boilers.

FORMAT: Lecture 3 hours/tutorial 2 hours

CO-REQUISITE: PEAS 3600.03

### **CHEE 3624.03: Heat Transfer.**

This class deals mainly with theories of heat transfer and their applications. The class includes heat transfer by steady and unsteady conduction in solids, convection heat transfer and an introduction to radiation heat transfer. Evaporation and design of heat exchangers are also discussed.

FORMAT: Lecture 3 hours, lab 2 hours

### **CHEE 3634.03: Chemical Reaction Engineering.**

This class introduces the subject of chemical reaction engineering. Classical reaction kinetics concerning rates, mechanisms, temperature effects and multiple reactions are studied. The concepts of batch, continuous stirred-tank and plug flow reactors are introduced for the ideal case. Non-isothermal reactors and non-ideal flow are considered in the design of chemical reactor systems. Heterogeneous reactors and catalysis are also discussed. Emphasis is placed on computational techniques for reactor problem solutions.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: PEAS 2201.03, CHEM 2441.03, ENGM 2022.03, ENGM2032.03

### **CHEE 4702.03: Unit Operations Lab 1.**

In this class, students will apply the principles of Unit Operations in the Laboratory using pilot scale equipment. An emphasis is placed on experimental, analysis and reporting.

FORMAT: Lecture 1 hour/lab 4 hours

PREREQUISITE: CHEE 3522.03, CHEE 3601.03, CHEE 3525.03, CHEE 3634.03, PEAS 3500.03

### **CHEE 4703.03: Process Dynamics and Control.**

This class deals with the control and mathematical modeling of chemical processes. The dynamics of behaviour of processes is analyzed through transfer functions and means of determining the dynamic performance of feedback control systems are presented. Stability and Root Locus Analysis and design considerations, and multivariable systems are covered.

PREREQUISITE: ENGM 2022.03, CHEE 3544.03

### **CHEE 4704.03: Separation Processes II.**

In this class, students will learn how to apply the fundamental concepts of momentum, energy and mass transport to the design of unit operations designed for separations of chemical streams. This is intended as a continuation of CHEE 3525: Separation Processes. Unit operations including but not limited to absorption/desorption, adsorption, solvent extraction, drying, humidification/dehumidification, solvent extraction, leaching and ion exchange will be covered.

PREREQUISITE: PEAS 3600.03, CHEE 3525.03, PEAS 3500.03

### **CHEE 4720.03: Unit Operations Laboratory.**

In this class, students apply the principles of Unit Operations in the laboratory using pilot scale equipment. An emphasis is placed on experimental planning, analysis and reporting.

FORMAT: Lecture 1 hour, lab 4 hours

PREREQUISITE: CHEE 3522.03, CHEE 3525.03, CHEE 3530.03, CHEE 3624.03, CHEE 3634.03, CHEE 4726.03

### **CHEE 4726.03: Mass Transfer.**

Unit operations based on the theory of diffusional mass transfer are discussed. Emphasis is on engineering applications and the understanding of basic design theory. Topics include molecular and turbulent diffusion, interfacial mass transfer, simultaneous heat and mass transfer, and design of mass transfer equipment.

FORMAT: Lecture 3 hours, lab 2 hours

### **CHEE 4741.03: Process and Plant Design I.**

This class aims to develop the student's abilities in the synthesis of processing elements into an integrated plant that is capable of achieving a prescribed goal. Various design projects are undertaken to emphasize: process selection and economic evaluation, and detailed design of process equipment as well as optimization of processing subsystems such as distillation systems.

FORMAT: Lecture 2 hours, lab 4 hours

PREREQUISITE: ENGI 2203.03, CHEE 3522.03, CHEE 3525.03, CHEE 3544.03, MATL 3500.03, CHEE 3634.03, IENG 2005.03, CHEE 3601.03 or CHEE 3624.03,

### **CHEE 4752.03: Process Modelling, Simulation & Control.**

This class deals with formulation of mathematical models describing the dynamic behaviour of chemical processes. Numerical methods for analyzing the dynamic response of lumped parameter and distributed parameter systems on digital computers are presented. Frequency response techniques are used to analyze and design control systems. Design methods for control of processes with dead time, inverse response and those requiring control of more than one variable are discussed.

FORMAT: Lecture 2 hours, lab 2 hours, tutorial 1 hour

PREREQUISITE: CHEE 3550.03

### **CHEE 4760.03: Fundamentals of Combustion.**

This class is an introduction to the principles of combustion processes. The properties of premixed gas flames are examined. Diffusion flames and the burning of liquid and solid fuels are studied. Ignition phenomena and spontaneous combustion, with particular reference to safety in the chemical process industries, are examined.

FORMAT: Lecture 2 hours, lab 3 hours

### **CHEE 4772.03: Environmental Assessment and Management.**

This class examines the ecological impacts of human activities with regard to water, air and soil pollution. Ecological theory and practice are reviewed and methods of environmental regulation and management considered in the light of the concepts of sustainability and maintenance of biodiversity. Lectures will include presentations by government and corporate regulators and managers. Tutorials will be devoted to the preparation and presentation of hypothetical environmental impact statements and assessments.

FORMAT: Lecture 3 hours, tutorial 2 hours

CROSS-LISTING: ENVE 4772.03

### **CHEE 4773.03: Industrial Safety and Loss Management.**

Topics covered in this class include: history of health and safety; causes and effects of loss; policy development; loss control and health basics; emergency preparedness and standards; hazard identification; safe process design; inspection and investigation processes; measurement, evaluation and audits of OH&S program elements; legislation.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: CHEE 2420.03 or PEAS 2201.03; PEAS 3700.03

EXCLUSION: CHEE 6701.03

### **CHEE 4791.03: Research Project I.**

The class objective is to provide experience in the application of engineering principles to the solution of a specific problem in Chemical Engineering. A research project is chosen in collaboration with a particular faculty member. The student then prepares a work plan, carries out a literature search pertinent to the problem, designs and experimental setup, if needed, and arranges for the acquisition of necessary equipment. Interim and final progress reports are required in both written and oral formats.

FORMAT: Lecture 2 hours, lab 3 hours

### **CHEE 4802.03: Unit Operations Lab II.**

This class is a continuation of CHEE 4702.03 where additional Unit Operations experiments will be conducted, analyzed and reported.

FORMAT: Lecture 1 hour/lab 4 hours

PREREQUISITE: CHEE 4702.03

### **CHEE 4803.03: Oil and Gas Processing.**

This class provides an overview of the oil and gas industry as a whole, introducing the typical technologies, processes and unit operations. Topics covered include: natural gas recovery and purification; and the properties of bitumen, its recovery,

and subsequent refinement. Specific emphasis is placed on detailed design of unit operations for petroleum upgrading and the interrelation between processing steps for optimized petrochemical fuels production.

PREREQUISITE: CHEE 3601.03, CHEE 4701.03, CHEE 3634.03 or instructor approval

### **CHEE 4842.03: Process and Plant Design II.**

This class is a continuation of Process and Plant Design I, but emphasizes the synthesis of whole systems. Design projects cover process identification and selection, material and energy balance, system sensitivity to various parameters and preliminary process optimization, design and specification of processing units, plant layout, costing and economic evaluation.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEE 4741.03

CO-REQUISITE: MATL 4840.03

### **CHEE 4854.03: Computer Process Control.**

This class deals with digital computer control of chemical processes. Methods for analyzing and designing control systems using z-transforms are covered.

Experience is provided in the use of currently popular control methods, such as model predictive control. An introduction is given for other advanced techniques, such as adaptive control, optimal control and stochastic control.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEE 4752.03 or instructor's permission

### **CHEE 4856.03: Process Optimization.**

The class deals with the study and application of optimization techniques to engineering problems, with particular emphasis on chemical processes. Topics include analytical and numerical techniques for optimization of single and multi-dimensional problems, linear programming, nonlinear programming and dynamic programming. The class employs available computer software and student-developed programs to solve the problems.

FORMAT: Lecture 2 hours, lab 3 hours

### **CHEE 4862.03: Fundamentals of Combustion Engineering.**

In this class, the principles of combustion processes (studied in Fundamentals of Combustion) are applied to industrial applications. The properties of solid, liquid and gaseous fuels are discussed. Various burner systems and the importance of combustion aerodynamics in boilers, furnaces and kilns are studied. The method of determining boiler and furnace efficiency and an introduction to pollution control are presented.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEE 4760.03

### **CHEE 4872.03: Air Pollution Control.**

This class deals with air pollution from the standpoint of its generation and control, measurement of pollutant concentrations, and dispersion calculations. Both gaseous and particulate matter emitted from combustion and industrial sources are considered. Other aspects of air pollution such as urban smog, acid rain and the greenhouse effect and possible remedial measures are also discussed.

FORMAT: Lecture 2 hours, tutorial 3 hours

### **CHEE 4892.03: Research Project II.**

This class is a continuation of Research Project I. The student conducts the planned research work, analyses the data obtained and critically evaluates the findings. Written and oral progress reports are required at mid-term. A written report and an oral presentation are required at the end of the term.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEE 4791.03

## **C. Environmental Engineering Series**

### **ENVE 3251.03: Environmental and Industrial Microbiology.**

The principles of microbial communities are applied to biological systems. Emphasis is placed on microbial populations in air, soil and water. Further investigation includes microorganisms found in food, aquaculture and mining industries. Applications of microbial ecology to agriculture, industry, biotechnology and environment are examined.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 1030.03

### **ENVE 3412.03: Energy and Environment.**

This class deals with energy sources and consumption in various systems. Energy conservation and utilization of renewable energy sources are emphasized.

Environmental impacts of energy development and consumption are examined. To acquire self study skills and develop oral and written communication skills, each student will undertake a term project in which the environmental impact of energy utilization and/or conservation in a particular system is examined. Students are expected to carry out a literature search on the subject. A written and an oral presentation are required.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: ENGI 2102.03

### **ENVE 3432.03: Waste Management.**

This class deals with sources of pollution and their effects on air, water, and soil qualities. The physical, chemical and biological treatment processes of various types of waste are discussed in relation to pollution control. Physical, chemical and microbiological analyses of various types of wastes are done in the laboratory periods. This class includes a term project, field trips, and seminars.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENVE 3251.03

### **ENVE 3452.03: Soil and Water Conservation Engineering.**

The prediction, nature, effects and control of natural surface and sub-surface waters and non-point source pollutants in catchments are considered. Design flood hydrograph, flood routing, porous media flow and soil erosion prediction techniques are presented. Energy dissipating structures used to control flood flows which are discussed include terraces, chutes, drop inlets, grassed waterways, culverts and small earth dams. An earth dam design project extends over the class duration.

FORMAT: Lecture 4 hours, lab 2 hours

PREREQUISITE: ENGI 2102.03

### **ENVE 3500.03: Air Quality.**

This class covers sources, the impact on health and the environment, atmospheric chemistry, fate and transport and the measurement and modeling of atmospheric pollutants. The application of regulatory computer models to air quality case studies will be demonstrated in laboratory classes. In addition, field and laboratory classes will provide hands on experience of measuring and characterizing air pollutants. Problem solving sessions are used to illustrate the application of meteorology, measurements and models to determine the sources and impact of air pollutants at various receptors found both outdoors and indoors.

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: PEAS 2202.03

EXCLUSION: ENVE 4621.03

### **ENVE 4000.03: Small Watershed Hydrology.**

Following an overview of the nature of hydrologic data and models, emphasis is placed on deterministic mathematical modelling of component processes and the synthesis of complete hydrographs. Components examined include precipitation, infiltration, evapotranspiration, surface and subsurface flow. The structure and application of selected current models are presented.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: A first class in engineering hydrology and microcomputer experience

### **ENVE 4401.03: Design Project for Environmental Engineers I.**

The objective of the class is to provide students with first hand experience in applying engineering design principles, biogeochemical analyses and environmental assessment techniques to the solution of specific environmental problems related to air, soil and water pollution control. Students are expected to display a high level of initiative and ingenuity in carrying out the project.

FORMAT: Lecture 1 hour, lab 5 hours

PREREQUISITE: Senior students only

### **ENVE 4402.03: Design Project for Environmental Engineers II.**

This is a continuation of ENVE 4401 leading to a final presentation in both oral and written format.

FORMAT: Lecture 1 hour, lab 5 hours

PREREQUISITE: BIOE 4401.03



### ENVE 4411.03: Indoor Environment Control and Air Quality.

The class deals with the design of heating, ventilating and air conditioning systems for controlled environment facilities such as: animal housing, residential and commercial buildings. Indoor air quality for humans and animals is discussed in relation to current methods of environmental control and energy conservation in buildings. Completion of an assigned term project is a part of this class.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: PEAS 3600.03 or equivalent

### ENVE 4421.03: Biogeochemistry and Bioremediation.

Following an overview of fresh water and ocean geochemistry, the primary production and nutrient cycles in rivers, lakes and the ocean are studied. Oil spills, their impact on the ecosystem and remedial measures are investigated. Design and maintenance of wetlands as treatment systems are presented. The sources of environmental pollutants and the health, environmental, and socio-economic implication of pollutants are studied. The application of various bioremediation technologies to restore contaminated sites is discussed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: BIOE 3251.03 and BIOE 3432.03

### ENVE 4612.03: Waste Disposal and Utilization.

The physical, chemical and biological properties of liquid and solid wastes are discussed and related to current handling and disposal methods. Solution to problems of pumping liquid waste, lagoon design and holding facilities are presented. Methods of land application of wastes are compared based on pollution problems and fertilizer issues. Technological advances of utilization of wastes for the production of compost, single cell protein, alcohol, fertilizer, biogas, and chemicals are discussed. The class includes a term project, field trips, and seminars.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOE 3252.03 or equivalent

### ENVE 4621.03: Atmospheric Air Quality.

This course will cover fundamentals of air quality. Sources and characteristics of atmospheric pollutants will be introduced as well as methods for sampling/measuring air pollutants and atmospheric processes. The thermodynamics and fluid mechanics of the planetary boundary layer, and the behaviour of plumes, will be primary focus. Contaminant transformations in the atmosphere, as well as wet and dry deposition of pollutants, will be covered. Other topics will include computer models, standards/legislation and climate change.

FORMAT: Lectures 3 hours, lab 2 hours, tutorial 1 hour

PREREQUISITE: CHEM 2441.03 and ENGI 2103.03

### ENVE 4641.03: Contaminant Fate and Transport.

This course focuses on the quantitative analysis of mechanisms that control the fate and transport of contaminants in the environment. The occurrence, movement, and transformation of contaminants in a variety of environmental media, including surface waters, terrestrial environments, and the atmosphere are covered. A 3-d field lab will be held at the beginning of the semester, in which students will gain experience in: (i)sampling environmental media, and (ii)characterizing transport processes in terrestrial and aquatic environments.

FORMAT: Lecture

PREREQUISITE: ENVE 3452.03/CIVL 3310.03, PEAS 2202.03/CIVL 3450.03, ENGM 3052.03/CIVL 4720.03

### ENVE 4651.03: Solar Energy Utilization.

The objective of the class is to provide students with the principles for the design and performance analysis of active and passive solar heating systems. Topics covered include: estimation of solar radiation availability, analysis of solar collectors and sun spaces, sensible and latent heat thermal storages. Procedures for the design and optimization of solar thermal systems are presented. A design project on the application of solar energy in residential, industrial or agricultural sector is required.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: PEAS 3600.03 or equivalent

### ENVE 4772.03: Environmental Assessment and Management.

This class examines the ecological impacts of human activities with regard to water, air and soil pollution. Ecological theory and practice are reviewed and methods of environmental regulation and management considered in the light of the concepts of sustainability and maintenance of biodiversity. Lectures will include presentations by government and corporate regulators and managers.

Tutorials will be devoted to the preparation and presentation of hypothetical environmental impact statements and assessments.

FORMAT: Lecture 3 hours, tutorial 1 hour

CROSS-LISTING: CHEE 4772.03

## D. Food Science Series

### FOSC 1000.03: Concepts in Food Science.

This class will present an overview of the discipline of Food Science and Food Processing. The overview will include discussions of topics such as food processing, food preservation and safety, seafood processing, quality assurance, and food packaging. Selected food processing operations will also be discussed in further detail. Food safety issues such as food infection and intoxication and HACCP will be introduced.

FORMAT: Lecture 3 hours, lab 3 hours

CO-REQUISITE: BIOL 1010.03, BIOL 1011.03

### FOSC 2010.03: Food Commodities.

This class will study the basic scientific principles underlying the processing of varying food commodities. General preservation methods such as freezing, dehydration, thermal processing, irradiation and microwave heating and their applicability to various foods will be examined during lectures and tours to industrial food processing plants. The practices of food manufacturing, preservation, distribution, and marketing of food materials will be related to basic food science principles.

FORMAT: Lecture 3 hours, lab 3 hours

### FOSC 3010.03: Food Chemistry.

This class will examine the molecular behaviour of basic constituents common to food products and relate this behaviour to the structure and properties of food constituents. Topics covered will include water, carbohydrates, proteins and lipids and micro nutrients such as vitamins and minerals, pigments and flavours. Chemical processes such as browning, enzyme reactions and emulsification will also be examined. The function of ingredients, additives and nutraceuticals will be examined.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2441.03

### FOSC 3020.03: Food Analysis.

This class will cover the theory and practice used in modern food analysis. The analysis of proteins, lipids and carbohydrates will be presented. As well, the principles of spectroscopy, titration, electrophoresis and chromatography will be discussed and demonstrated using various foods. Other analytical techniques specific to foods such as reflective colorimetry, texture profile analysis and water activity measurement will be presented.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2441.03

### FOSC 3030.03: Food Quality Assurance.

This class will examine techniques employed to ensure the processing and delivery of quality foodstuffs. Topics covered will include quality management systems, statistical quality control, government regulation and food legislation. Details of Hazard Analysis Critical Control Point (HACCP) planning will be covered in detail. Quality assurance systems employed in government and the food industry will be examined.

FORMAT: Lecture 3 hours, tutorial 3 hours

PREREQUISITE: STAT 1060.03, FOSC 2010.03

### FOSC 3070.03: Food Processing.

This class will examine various unit operations in food processing. Topics examined will include thermal processing via general and formula methods, blanching, pasteurization, beverage processing and food packaging. Other food processing techniques including drying and freezing will be examined. The unit operations of various food and seafood commodities will be examined in detail.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: FOSC 2010.03, BIOE 3051.03

### FOSC 3080.03: Food Microbiology.

This class is designed to introduce students to current aspects of food microbiology with special emphasis on spoilage organisms and foodborne pathogens. Subjects covered will include food infection and intoxication, factors affecting microbial growth and death, sanitation and predictive microbiology. Special emphasis will be given to the microbial ecologies associated with foods from agricultural and marine sources. The characteristics of emerging food

pathogens and their influence on the safety of the food supply will be examined. Rapid methods of detection of foodborne microorganisms will be studied.  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: BIOL 2004.03 or MICI 2100.03

### **FOSC 4020.03: Chemistry - Fats, Oils, Lipids.**

The difference in physical and chemical properties of natural fatty acids are correlated with the physical nature of fats, oils and lipids, and the chemical combinations of fatty acids with glycerol, fatty alcohols, sterols and other chemical materials. Methods of separation such as chromatography, solubility and crystallization are explained in terms of the molecular properties. Important industrial processes and products are included.  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: FOSC 3020.03 or CHEM 2201.03  
 CROSS-LISTING: FOSC 6329.03

### **FOSC 4030.03: Food Product Development.**

This class examines the process of food product development and techniques used to measure food sensory aspects, shelf life and food stability. Topics covered will include food structure, colorimetry, shelf life modelling and sensory analysis. This class has been designated as a "capstone" class and it will incorporate concepts from other food science classes to develop problem solving and critical thinking abilities.  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: FOSC 3030.03

### **FOSC 4081.03: Brewing Science.**

This course will examine unit operations employed during the production of malt and beer. Brewing, fermentation and packaging aspects of beer production as well as brewing quality assurance, colloidal, flavour and haze stability will be discussed.  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: FOSC 3080.03

### **FOSC 4091.03: Food Safety and Biotechnology.**

This course will teach students biological aspects of safety in our food and water supply. The course is divided into three modules: (1) Introduction to molecular biology and biotechnology methods used to detect disease causing microorganisms, create genetically modified organisms and manipulate food related organisms, (2) Food hygiene and sanitation, and (3) Current issues in public health and safety of our food and drinking water supply.  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: FOSC 3080.03  
 EXCLUSION: FOSC 4090.03

### **FOSC 4250.03: Food Product Development Project.**

The objective of this class is to provide the student with experience in the application of food product development techniques. The student will be expected to develop a novel food product from initial stages through to pilot plant trials and shelf life evaluation. A final report and presentation will be required.  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: FOSC 4030.03  
 EXCLUSION: FOSC 4750.03

### **FOSC 4500X/Y.03: Seminar in Food Science.**

The objective of this class is to allow the student to gain experience in verbal and written presentation of selected food science topics. Students will be encouraged to select topics which reflect their academic and food industry experience. Oral presentations and written reports will be required.  
 NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
 FORMAT: Lecture 1 hour  
 CO-REQUISITE: FOSC 4750X/Y.06 or FOSC 4250.03

### **FOSC 4750X/Y.06: Food Science Research Project.**

The objective of this class is to provide experience in the application of Food Science principles to an academic or industrial research question or problem. The project will be chosen in conjunction with a supervising faculty member. The student will then devise and follow a work plan and write a project report. A critical statistical evaluation of the findings are an inherent part of this class.  
 NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: FOSC 3010.03, FOSC 3020.03, FOSC 3030.03, FOSC 3070.03, FOSC 3080.03

EXCLUSION: FOSC 4250.03

## **E. Materials Engineering Series**

### **MATL 3500.03: Materials Engineering.**

This class correlates properties of engineering materials with their structure. Laboratory objectives include preparation of reports in publication format and illustration of lecture material. Basic concepts of crystallography, chemical bonding and binary phase diagrams are introduced. These are used to describe properties of metallic and nonmetallic materials and how these may be controlled by engineers. Materials discussed include ferrous and nonferrous metals and alloys, ceramics, composites and semiconductors.  
 FORMAT: Lecture 3 hours, lab 3 hours

### **MATL 3510.03: Extraction of Materials.**

The lecture portion of this class covers the fundamental principles involved in the high temperature extraction of materials from their ores. Included are descriptions of the equipment used in unit operations such as roasting, smelting and refining and the application of these operations to the production of iron and steel and the more common nonferrous metals. The laboratory portion of this class consists of practice in stoichiometric mass balance and thermochemical calculations of common pyrometallurgical processes for extracting materials.  
 FORMAT: Lecture 3 hours, lab 3 hours

### **MATL 3520.03: Structure of Materials.**

This class presents the following topics: the electronic structure of materials, fundamentals of crystallography, electron motion in the space lattice, introduction to composites, X-ray diffraction and X-ray diffraction techniques, and the crystal structure of crystalline materials. Typical binary phase diagrams are discussed from the structural point of view. Laboratory experiments include preparation and evaluation of X-ray films and diffractometer charts, structural investigation of binary alloys, and crystallite size structure.  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: MATL 3500.03  
 EXCLUSION: MATL 3601.03

### **MATL 3600.03: Mechanical and Physical Behaviour of Materials.**

This course is designed to give students a fundamental understanding of how materials deform and the mechanisms that can be engineered within the atomic structure so as to alter this behaviour. Core topics include basic crystallography, dislocation theory, strengthening mechanisms (dislocations, dispersoids, precipitation hardening, and ceramic reinforcements), and mechanical testing. For the latter, specific emphasis is placed on the techniques of tensile, creep, and fatigue testing.  
 FORMAT: Lecture 3 hours/Lab 3 hours  
 EXCLUSION: Students that have passed MATL 3620.03 and MATL 3621.03 can not register for this course.

### **MATL 3611.03: Corrosion and Degradation of Materials.**

This class covers the basic theories of corrosion and their application to its prevention. It includes a description of corrosion testing methods, failure of materials arising from corrosion processes and design factors affecting corrosion. Laboratory experiments are used to illustrate the processes involved in degradation of materials.  
 FORMAT: Lecture 2 hours, lab 2 hours

### **MATL 3612.03: Thermodynamics of Materials.**

The class covers the application of thermodynamic concepts such as entropy, enthalpy, free energy, and activities and phase diagram relations, to the understanding of high temperature reactions in chemical processing of materials. The application of computer programs to the analysis of chemical thermodynamics is demonstrated. Problem solving sessions are used to illustrate the applications of these concepts materials processing.  
 FORMAT: Lecture 3 hours, lab 3 hours

### **MATL 3620.03: Introduction to Physical Metallurgy.**

Crystallography, solid solutions and mechanical properties of metals are reviewed. Stereographic projection is introduced. Deformation twinning, martensite formation and the shape memory effect are studied as practical examples. Binary phase diagrams are reviewed. Vacancies, diffusion, and nucleation and growth phenomena are discussed. Solidification and growth phenomena are introduced.

Dislocation interactions are examined to describe work hardening and precipitation hardening. Laboratory exercises illustrate lecture material and provide experience in metallography.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MATL 3500.03

### **MATL 3621.03: Mechanical Behaviour of Materials.**

This class includes a review of the Mohr's stress and strain circles. Three-dimensional stress and strain concepts are considered, including plane stress and plane strain. Flow theories, fracture, fatigue and creep of materials are studied. Emphasis is on metallic materials, although polymers, composites and ceramics are also studied.

FORMAT: Lecture 3 hours, lab 3 hours

### **MATL 4700.03/4800.03: Materials Design Project.**

The class objective is to provide experience in the application of engineering principles to the solution of a specific problem in Materials Engineering. A research project is chosen in collaboration with a particular faculty member. The student then prepares a work plan, carries out a literature search, designs experimental setup as needed, and arranges for the acquisition of necessary equipment. The student conducts the planned research work, analyses the data obtained and critically evaluates the findings. Oral progress reports are required. A written report and an oral presentation are required at the end of the term.

FORMAT: Lab 6 hours

EXCLUSION: MATL 4704.03/4804.03

### **MATL 4700.03/4800.03: Materials Design Project.**

The class objective is to provide experience in the application of engineering principles to the solution of a specific problem in Materials Engineering. A research project is chosen in collaboration with a particular faculty member. The student then prepares a work plan, carries out a literature search, designs experimental setup as needed, and arranges for the acquisition of necessary equipment. The student conducts the planned research work, analyses the data obtained and critically evaluates the findings. Oral progress reports are required. A written report and an oral presentation are required at the end of the term.

FORMAT: Lab 6 hours

EXCLUSION: MATL 4704.03/4804.03

### **MATL 4710.03: Ferrous Alloys and Joining of Materials.**

The class reviews the iron-carbon system, including the transformation products of austenite, alloying elements and combined thermo-mechanical treatments. Specific classes of steels, ranging from the simple plain carbon steels to the duplex stainless steels, are considered. The class also discusses the fusion welding of a representative selection of steels. Fusion welding process variables are studied together with the metallurgy of the weld metal and the heat-affected zone.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: MATL 4722.03

### **MATL 4710.03: Ferrous Alloys and Joining of Materials.**

The class reviews the iron-carbon system, including the transformation products of austenite, alloying elements and combined thermo-mechanical treatments. Specific classes of steels, ranging from the simple plain carbon steels to the duplex stainless steels, are considered. The class also discusses the fusion welding of a representative selection of steels. Fusion welding process variables are studied together with the metallurgy of the weld metal and the heat-affected zone.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: MATL 4722.03

### **MATL 4720.03: Industrial Processing of Materials.**

The fundamentals of metal working in relation to rolling, forging, extrusion, and drawing are studied. In each scenario the physical and mechanical metallurgy principals involved are considered as in the role of tribology. Case studies for a variety of alloys are considered. Hands-on laboratory experiments are included to reinforce key topics.

PREREQUISITE: MATL 3500

EXCLUSION: MATL 4824.03

### **MATL 4800.03: Materials Design Project II.**

The objective of this class is to provide experience in the design of materials to the solution of a specific problem. A research design project is chosen in collaboration with a particular faculty member. The student then prepares a work plan, carries out a literature search, and designs an experimental setup. The student conducts the planned research, analyses the data and critically evaluates the results.

Students communicate their findings through written reports and an oral talk at the end of the term.

FORMAT: Lab 6 hours

PREREQUISITE: MATL 3500.03 and (MATL 4700.03 or MATL 4704.03)

### **MATL 4802.03: Metallurgical Process Design.**

This class focuses on the design of new metallurgical plants, processes and products based on knowledge acquired in previous core classes. Material and heat balances, metal economics, design and optimization aspects are covered. Groups of students undertake design projects aiming at modernization of existing plants or establishing new plants operating on new technology. Emphasis is placed on process selection and economic evaluation, detailed design of process equipment, sizing, costing and optimizing the processing units.

FORMAT: Lecture 2 hours, lab 3 hours

### **MATL 4805.03: Electrochemical Processing of Materials.**

The class discusses principles of electrochemistry and electrochemical engineering as they apply to the design of processes for the production of materials. The theory and application of various electrochemical techniques such as electroplating, electroforming, electromachining, electrefining, and fused-salt electrolysis are included. A brief overview on the development of electrochemical sensors and devices using solid state electrolytes is presented. Surface modification by electrochemical means is also discussed.

FORMAT: Lecture 2 hours, lab 3 hours

CROSS-LISTING: MATL 6805.03

### **MATL 4806.03: Particulates in Materials Engineering.**

The class covers the preparation, characterization, physical and chemical properties and processing of powders in materials processing including agglomeration, gas-solid reactions, sintering and hot pressing.

FORMAT: Lecture 2 hours, lab 3 hours

CROSS-LISTING: MATL 6806.03

### **MATL 4810.03: Materials Process Design.**

This class focuses on the design of new metallurgical plants, processes and products based on knowledge acquired in previous core classes. Material and heat balances, metal economics, design and optimization aspects are covered. Groups of students undertake design projects aiming at modernization of existing plants or establishing new plants operating on new technology. Emphasis is placed on process selection and economic evaluation, detailed design of process equipment, sizing, costing and optimizing the processing units.

FORMAT: Lecture 2 hours/Lab 3 hours

PREREQUISITE: MATL 3500.03

EXCLUSION: MATL 4802.03

### **MATL 4813.03: Iron and Steel Production.**

This class discusses factors affecting the global iron and steel industry with particular reference to Canadian participation. These factors include the supply of raw materials, new technology, environmental concerns and economics. The future of any metallurgical industry is influenced by many concerns, not all of which are technical.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: MATL 3510.03

### **MATL 4817.03: Metallurgical Processing.**

This class covers the principal practices related to metallurgical processing and the marketing of metals, including modification of concentrates (sintering, pelletizing, briquetting). Descriptive outlines of metallurgical processes such as iron and steel, lead, aluminum and zinc production are presented, along with utilization of fuels for metallurgical purposes (coal, coke, oil).

FORMAT: Lecture 3 hours

### **MATL 4820.03: Non-Metallic Materials.**

This class includes a description of the chemical and structural characteristics of various common non-metallic materials as well as manufacturing methods. A number of applications for such materials are considered including glass, composites, refractors, solid electrolytes and electronic materials. The chemistry of multi-component systems are also discussed. The laboratory experiments are designed to illustrate the lecture material.

FORMAT: Lecture 2 hours, lab 2 hours

EXCLUSION: MATL 4703.03

**MATL 4820.03: Non-Metallic Materials.**

This class includes a description of the chemical and structural characteristics of various common non-metallic materials as well as manufacturing methods. A number of applications for such materials are considered including glass, composites, refractors, solid electrolytes and electronic materials. The chemistry of multi-component systems are also discussed. The laboratory experiments are designed to illustrate the lecture material.

FORMAT: Lecture 2 hours, lab 2 hours

EXCLUSION: MATL 4703.03

**MATL 4825.03: Solidification and Casting.**

The fundamental principles of solidification and practical applications in the casting industry are dealt within this class. The topics covered are nucleation processes, the growth of single crystals, plane front, cellular and dendritic solidification in single and polyphase alloys, solidification of castings, ingot moulding and core making processes, moulding sands, design of risers and gates, and the melting of metals. The laboratory experiments cover the growth of single crystals of pure metals, alloys, and semiconductors; pattern, mould and core making; and, the casting of commercial alloys.

FORMAT: Lecture 2 hours, lab 3 hours

**MATL 4826.03: Physical Metallurgy and Ceramics.**

The first portion of this class covers the physical metallurgy, properties and uses of the principle industrial alloys. The remainder of the class deals with the structure of important ceramic materials such as glass, porcelain and refractors, their properties, and the processing and applications of ceramics. The laboratory experiments will illustrate the principles discussed in the lectures. />

FORMAT: Lecture 2 hours, lab 3 hours

**MATL 4830.03: Non-Ferrous Alloys.**

The objective of this class is to introduce students to the structure, properties, and processing of different types of non-ferrous alloys. Alloys of principal interest include those that are premixed on aluminum, copper, nickel, and titanium. Select applications for these industrially-important material are also reviewed.

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: MATL 3500.03

EXCLUSION: MATL 4823.03

**MATL 4840.03: Corrosion and Degradation of Materials.**

This class introduces the students to the basic theory of corrosion as well as the basic principles of hydrometallurgy. Students will also be introduced to the different types of corrosion and the practices of corrosion prevention and remediation.

FORMAT: Lecture 3 hours/lab 3 hours/tut 3 hours

PREREQUISITE: MATL 3500.03 and (MATL 3612.03 or PEAS 3500.03)

EXCLUSION: Students that have passed MATL 3611.03 can not register for this course.

**F. Process Engineering Series****PEAS 2201.03: Fundamentals of Process Engineering.**

The main objective of this course is to develop the student's ability to perform mass and energy balances on non-reactive and reactive processes. Introductory topics include systems of units and a study of process variables such as temperature, pressure and flow rate. Also covered are fundamental properties of multiphase systems, including phase equilibrium, vapour pressure, and Raoult's and Henry's Laws. Emphasis is placed on developing problem solving skills and adopting a consistent approach to the analysis of process systems.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: ENGI 2102.03

EXCLUSION: CHEE 2404.03

**PEAS 2202.03: Fundamentals of Environmental Engineering.**

The class will focus on sources of environmental pollutants, the effects of pollutants on living and non-living systems, and the processes by which pollutants are generated or by which their effects can be minimized or remediated. Lectures are supplemented by tutorials which include guest speakers, case studies and field trips.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: CHEM 1021.03 and CHEM 1022.03 or CHEM 1011.03 and CHEM 1012.03

**PEAS 3500.03: Process Thermodynamics.**

The class covers the application of thermodynamic concepts such as entropy, enthalpy, free energy, activities and phase diagram relations, for pure substances and solutions (aqueous and molten) in biological, chemical and materials processing systems. The application of computer programs to the analysis of thermodynamics in chemical reactive systems is demonstrated. Problem solving sessions are used to illustrate the applications of these concepts in processing.

FORMAT: Lecture 3 hours/tutorial 3 hours

PREREQUISITE: ENGI 2102.03, PEAS 2201.03, ENGM 2101.03

**PEAS 3600.03: Transport Phenomena.**

This class covers the physical, chemical and thermal factors affecting the mechanisms of heat and mass transfer in biological, chemical and materials processing systems. The principles of physical and mathematical modeling are demonstrated in real applications in the fields of biological, chemical and materials engineering. Problem solving sessions to illustrate the application of the above concepts to processing are given.

FORMAT: Lectures 3 hours/tut 3 hours

PREREQUISITE: PEAS 2201.03, ENGM 2021.03 or ENGM2022.03

**PEAS 3700.03: Law and Ethics in Process Engineering.**

This course will provide students with the legal and ethical framework for the practice of engineering. The section on ethics will introduce ethical theories and demonstrate how these theories are embodied in various engineering codes of ethics. It will also show how these theories, as well as the codes of ethics, can be used to address real ethical dilemmas that can arise in the practice of engineering. Cases studies will be used extensively to guide the students through this. The course will also introduce the subject of law in its relation to the practice of engineering. It will cover the basics of what the students should know about contract law, professional liability and tort law, and intellectual property law. Because the students will be required to submit a good number of written assignments, the first third of the course will focus on improving their writing skills.

# Faculty of Health Professions

## Dean

Webster, W. G., PhD

## Associate Dean (Research and Academic)

Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dalhousie)

## Academic Integrity Officer

Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dalhousie)

## Interprofessional Experience Coordinator

Godden-Webster, A., MSc (Appl.)

## Financial Manager

Moors, K., CMA, MPA

## Human Resources Consultant

Smith-Gillis, C. E.

## Office Manager

Weir, B. L.

## Manager, Research Support and Special Projects

Officer, S., BEd, MA

## I. Introduction

The Faculty of Health Professions consists of the School of Health and Human Performance, School of Health Administration, School of Human Communication Disorders, School of Social Work, School of Nursing, School of Occupational Therapy, School of Physiotherapy, College of Pharmacy, and the School of Health Sciences. The various undergraduate programs are described in the College, School, and other program sections of this Calendar. Details of the graduate programs in the Clinical Vision Science program and offered in the Schools are described in the Calendar of the Faculty of Graduate Studies.

In addition to the policies listed, please refer to the following other student related policies at <http://healthprofessions.dal.ca/>:

- Allegation of Professional Unsuitability Policy
- FHP Immunization Policy
- Occupational Health and Infectious Diseases: Pre-clinical Placement Requirements for Health Care Worker Students
- Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability
- Guidelines for Personal Safety in Fieldwork Placements

## Policy Statement on Affirmative Action

The Faculty of Health Professions recognizes that Affirmative Action is required to increase the admission of and number of graduates from underrepresented groups; Aboriginal peoples, African Canadians and Persons with (dis)Abilities. The constituent Units of the Faculty will develop and implement Affirmative Action policies that are consistent with the Human Rights Commission.

As a matter of priority, the Faculty will develop strategies to identify and create recruitment and support systems that will encourage and support members of these underrepresented groups to apply to and graduate from the Faculty of Health Professions

## Policy Statement on Interprofessional Health Education.

Students in the Faculties of Dentistry, Health Professions and Medicine are required to participate in interprofessional health education activities. These activities, together with specific program requirements, are currently evolving and in transition and are integrated into the curricula of individual programs. Participation is mandatory. The objective of interprofessional education in the Faculty of Health Professions include developing:

- knowledge and understanding of, and respect for, the expertise, roles and values of other health and human service professionals.
- understanding the concept and practice of patient/client/family-centred care.
- effective communication, teamwork and leadership skills applied in interprofessional contexts.
- positive attitudes related to the value of collaboration and teamwork in health and human service contexts.
- an understanding, from a multi-disciplinary perspective, of the Canadian health and social systems, the legal and regulatory foundation of professional practice, how health and human service institutions are organized and operate, and how different health and human service professions contribute to the systems and institutions.

Students in the entry-to-practice programs in the Faculty of Health Professions, are required to maintain enrolment in IPHE 4900 (see calendar section on Health Professions Interprofessional Health Education) for the duration of their studies. Successful completion of this class is a requirement for graduation in these programs, and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration; to be presented by the Faculty of Health Professions. For more information, students should contact their specific school/college.

## Statement Regarding Criminal Records Check

The Faculty of Health Professions of Dalhousie University does not require a Criminal Records Check or other screening procedure (e.g., Vulnerable Sector Screen) as a condition of admission into its programs. However, **students should be aware that such record checks or other screening procedures may be required by facilities outside the University used for clinical, fieldwork or co-op placements or experiences related to an academic class assignment, which, in some instances, may be a requirement for graduation.** It is the student's responsibility to have such procedures completed.

Such facilities may refuse to accept students on the basis of information contained in the record check or other screening procedures. If the student is unable to complete a clinical requirement due to a failure to meet the record check or screening requirements of the facility, or if the student is refused access to the facility on the basis of the information provided, such a student may fail the class, and as a result, in some instances, may not be eligible for progression or graduation.

Students should check with their School/College for details concerning any record checks or screening requirements relevant to clinical, fieldwork, or placements in their particular program. Note that facility requirements may change from time to time and are beyond the control of the University.

Students should also be aware that some professional regulatory bodies may require a satisfactory record check as a condition of professional licensure.

## Practicum/Fieldwork Placements Outside Halifax

Students enrolled in programs of study in the Faculty of Health Professions (Health Sciences, Nursing, Health and Human Performance, Social Work and Pharmacy) are advised that they may have to do some or all of their required clinical education/fieldwork at sites outside Halifax, and hence may have to incur additional personal expenses for travel and temporary accommodation.

In some situations, sites may require a payment to the site for support of clinical education/fieldwork supervision, and some sites may require separate disability insurance in lieu of eligibility for Worker Compensation coverage. Such costs are the responsibility of the student.

## Student Disclosure of Health Information

### Faculty of Health Professions

Students registered in this Faculty are encouraged to inform both the School/ College and the field work learning sites if they have a health concern that has the potential to compromise client, student and/or agency personnel safety and/or has the potential for limiting their ability to learn and perform their role as learner.

For the purposes of this policy, the term health concern refers to any cognitive, affective, and/or physical health problem, injury, or condition that may place the student and/or others at risk and/or inhibit the student's learning ability and performance.

### A. Guidelines for Disclosure

The student has the right to decide if disclosure of health information is appropriate. The method, timing, and extent of the disclosure is at the student's discretion (for consultation options, see below). Early disclosure of the following information regarding the health concern may be helpful to students in the academic and/or field work sites.

To disclose this information:

1. Clearly describe the nature of the health concern and the potential limitations with regard to the learning tasks expected in either the academic or field work site. Appropriate verification of the information may be required.
2. List any adaptations, modifications, and/or safety procedures that may be required in planning the student's learning experiences in either setting.
3. Provide clear and appropriate advice regarding the management of this health concern.

If the disclosure of health information in field work and/or academic sites produces difficulties, students are encouraged to report these difficulties immediately to the appropriate person(s) within both the field work site and/or within their educational program (see below). Discrimination in any form will not be tolerated.

Students are advised to make the initial contact with the person with whom they are most comfortable from the lists below. These individuals would be available for consultation/advocacy:

- Academic /faculty advisor
- Field work coordinator(s)
- Director of the School or College where student is enrolled
- Dean of the Faculty of Health Professions
- Advisor to Students with Disabilities, Dalhousie University
- Dalhousie/King's Association of Students with Disabilities
- Human Rights Commission

### College of Pharmacy

- Preceptor
- Site coordinator
- Externship administrator

### School of Nursing

- Clinical instructor
- Class professor
- Associate Director, Undergraduate Student Affairs
- Nurse Practitioner/Arctic Nursing Program Coordinator

### School of Occupational Therapy

- Preceptor
- Field site director
- Provincial or Atlantic Region fieldwork education coordinators

### School of Physiotherapy

- Clinical supervisor
- Facility clinical coordinator
- Provincial coordinator

### School of Social Work

- Agency field instructor
- Program coordinator
- Faculty field instructor

### School of Health Administration

- Preceptor

### School of Human Communication Disorders

- Clinical Educator

### School of Health and Human Performance

- Student Services Administrator

### QEII - Dalhousie School of Health Sciences

- Clinical Education Coordinator

# Disability Management

Location: 6226 University Avenue, Room 100  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2950 or (902) 494-1426  
Fax: (902) 494-3025  
Email: [disability.management@dal.ca](mailto:disability.management@dal.ca)  
Website: <http://www.dal.ca/dmcert>

## Dean

Webster, W. G., PhD

## Program Coordinator

Murphy, J., BComm

## Certificate in Disability Management

### I. Introduction

The Faculty of Health Professions offers a Certificate Program in Disability Management to students currently enrolled in an academic program at Dalhousie or another Canadian university.

The Certificate Program is built around the philosophy of disability management and early assistance as the most effective means by which to assist injured and ill workers to attain their maximum level of functioning and ability to return to work. Disability Management is designed to benefit injured workers through its participatory and proactive problem-solving process incorporating strategies that ensure workers timely and safe return to work. All classes in the Certificate Program are offered via distance learning technology.

### A. Purpose of Program

The Certificate in Disability Management addresses specific goals and objectives for the education of prospective disability case managers and vocational rehabilitation consultants by providing an understanding of injury, its impact and recovery processes. In addition, the Program responds to changes in workplace health & safety programs, in legislation, regulations, and practices, in changes in the health care system in general. While the main paradigm of the program is grounded in the health, rather than the medical model, its conceptual basis has roots in health and medical sciences, the social sciences, and the physical sciences as related to ergonomics and human kinetics.

The goal of the Certificate in Disability Management program is to prepare Disability Management team members who: provide effective, efficient and safe coordination of services, facilitate a team-oriented approach, convey understanding of the health impact of injury, convey an understanding of the impact of injury on work, develop decision-making skills and develop management skills.

### B. What is Disability Management

Returning to work for injured workers can be influenced by many medical, physical and psychological factors that may impede recovery. There is the belief that the needs of workers and their employers are central to the disability management process, and workers must play an active role. A requirement in the worker-centered process is the need to ensure that all the facts about injuries/illnesses, treatments, and entitlements are known to these injured workers can that clear decision-making is exercised by all parties to ensure both continuity in the return to work process and establishment of trusting relationships among injured workers, their employers, and the disability management team.

### C. Career Opportunities

Graduates of a Disability Management program will typically work as Disability Managers, Return to Work Facilitators, and Vocational Consultants.

### D. Learning Principles for Program Development and Delivery

Learning activities in classes will reflect the disability management philosophy and be integrated throughout the program with a case-oriented approach to problem-solving. Assessment of learning will include non-traditional examination approaches and activities will stimulate critical discourse which combines practical situation analyzed against learned theories, concepts and frameworks. Learning activities will foster personal growth through critical reflection of student's attitudes and decision making patterns.

## II. Regulations

Students registered in the classes of the Disability Management Certificate Program (CDM) are bound by the University and Faculty regulations in the same manner as all Dalhousie students. The University and Faculty of Health Professions (FHP) regulations are found in the University Regulations section of the Dalhousie University Calendar. Academic regulations are found in the Academic Regulations section of the Calendar. It is the responsibility of each CDM student to become familiar with both the University and FHP regulations.

Please make note of the "Acceptable Use Policy" found in the University Regulations section of the Dalhousie Calendar. Because of the distance learning component of this Program, students should pay particular attention to regulations designed to respect the rights of other computer users.

### A. Class Grades

The minimum passing grade for all of the CDM classes is 50%. A class may be repeated only once, with a maximum of two repeated classes permitted. A student who fails the same class twice will not be awarded the Certificate.

### B. Appeals

On occasion, conflict or disagreement on final grades or evaluative procedures may arise. All students are expected to familiarize themselves with the processes available to them for academic appeals. Timeliness is of the essence for presentation and consideration of all appeals and, in all instances, the first level of appeal will be at the informal level.

Formal appeals of a final grade or a procedural problem must follow the regulations as stated in the University Calendar and such appeals will only be considered after failure to resolve the issue at the informal level has occurred. Students who do not follow these procedures will automatically forfeit their right to further consideration of their appeal and the original decision will remain in effect.

### Informal Process

For each instance, the student and instructor, with guidance for the CDM Academic Director, are expected to attempt to resolve the matter informally within 15 days of the matter giving rise to the appeal.

### Formal Process

If the matter cannot be resolved informally, the student may initiate a formal appeal by following the procedures set down in the University Calendar (see Regulation 16.7 of the Academic Regulations section for appeals of grades, and Regulation 25.6 of the Academic Regulations section for the Faculty of Health Professions appeals process).

Note that both the Dalhousie University Calendar and the Faculty of Health Professions policies appear on the Dalhousie University website at [www.dal.ca/academiccalendar](http://www.dal.ca/academiccalendar).

## III. Certificate Requirements

Students must complete all four disability management classes, DISM3010, DISM4010, DISM4040 and DISM4050, as described below.

Please note that the Disability Management Certificate classes are taken as electives throughout a student's academic studies. Once the four classes have been successfully completed, the Disability Management office will issue the Certificate. This Certificate is not honoured at Convocation. Students must submit the Request for Certificate Form to the Disability Management office in order to be considered and to receive the Certificate. This form is available on the CDM website: <http://www.dal.ca/dmcert>

## IV. Class Descriptions

### DISM 3010.03: Introduction to Occupation and Disability Management.

This course asks the following questions in seeking to understand the meaning and importance of occupation to individuals. What is occupation? What is the meaning of occupation? What is the meaning of work injury and loss of occupation? It also explores: What is disability management? What are some of the professional and ethical issues, as well as the philosophy, roles, conceptual framework for program? What are levels of disability management in organizational systems, injury prevention, and on-site management?

FORMAT: Distance Education

CROSS-LISTING: KINE 3010.03

### DISM 4010.03: Return to Work Planning and Communication.

This course will consider processes including factors that create resistance among workers. Introduction to return to work planning and communication processes in understanding resistance and compliance/motivation in workers.

FORMAT: Distance Education

### DISM 4040.03: Strategies for Alternative Work and Prevention.

In situations where return to a worker's former occupation is impossible, learners will identify strategies to assist the client. Such strategies include dealing with issues of job loss, vocational rehabilitation and employment for persons with disabilities. Students will look at prevention strategies in dealing with job loss, vocational rehabilitation, employment for persons with disabilities, meaningful occupation, case closure, and prevention strategies within systems, structures and organizations.

FORMAT: Distance education

### DISM 4050.03: Psycho-social Issues in Disability Management.

Many complex psycho-social issues involve the injured worker's family, community and employer dynamics. Topics studied in this course include: family, community and unemployed persons, psycho-social dynamics, employer dynamics employer/employee relationships, societal trends, dependence and disability categorization, and medical authorization.

FORMAT: Distance education

## Diploma in Disability Management

**Note: A proposal has been submitted to approve the suspension and ultimate termination of this program.**

### I. Introduction

The Faculty of Health Professions offers a range of diploma and degree-earning programs for health professionals, including programs for rehabilitation practitioners. Dalhousie's expertise within the health professions, and its understanding of occupation and rehabilitation offers academic guidance and training of professionals in injury prevention and disability management.

The diploma program is built around the philosophy of disability management and early assistance as the most effective means by which to assist injured and ill individuals to attain their maximum level of functioning and ability to return to work. Disability management is designed to benefit injured workers through its participatory and proactive problem-solving process incorporating strategies that ensure workers timely and safe return to work. **All classes in the diploma program are offered via distance learning technology.**

#### A. Purpose of Program

The Diploma Program in Disability Management addresses specific goals and objectives for education of disability managers who desire a more extensive background in understanding injury, its impact and recovery processes. In addition, the program responds to changes in workplace health & safety programs, in legislation, regulations, and practices, and in changes in the health system in general. While the main paradigm of the program is grounded in the health, rather than the medical model, its conceptual basis has roots in health and medical sciences, the social sciences, and the physical sciences as related to ergonomics and human kinetics.

The goal of the Diploma Program in Disability Management is preparation of Disability Management team members who: provide effective, efficient and safe co-ordination of services, facilitate a team oriented approach, convey understanding of the health impacts of injury, convey an understanding of the impact of injury on work, develop decision-making skills, and develop management skills. Prospective students in the Disability Management Diploma program must be presently working for a Canadian Workers Compensation Board, or performing similar work with a public or private agency dealing with the return to work process for injured workers. Students who do not meet this criteria may be eligible for the Diploma in Disability Management Mentorship Program. For more information regarding the DDM Mentorship Program, please consult the DDM Website: <http://www.dal.ca/ddm>.

### B. What is Disability Management

Returning to work for injured workers can be influenced by many medical, physical and psychological factors that may impede recovery. There is the belief that the needs of workers and their employers are central to the disability management process, and workers must play an active role. A requirement in the worker-centered process is the need to ensure that all the facts about injuries/illnesses, treatments, and entitlements are known to these injured workers and that clear decision-making is exercised by all parties to ensure both continuity in the return to work process and establishment of trusting relationships among injured workers, their employers, and the disability management team.

### C. Career Opportunities

An exemplary program in Disability Management will assist Disability Managers to reduce the human, social and economic costs of disability to workers and employers on a national scale. Students and graduates of the DDM Program typically work as Disability Managers, Return to Work Facilitators, and Vocational Rehabilitation Consultants.

### D. Learning Principles for Program Development and Delivery.

In order for program graduates to achieve the intended learning outcomes, learning will be applied around the following Adult Education Principles. Learning activities in classes will reflect the disability management philosophy and be integrated throughout the program with a case-oriented approach to problem-solving. Assessment of learning will include non-traditional examination approaches and activities will stimulate critical discourse which combines practical situation analyzed against learned theories, concepts, and frameworks. Learning activities will foster personal growth through critical reflection of student's attitudes and decision making patterns.

## II. Regulations

Students registered in the Diploma Program in Disability Management (DDM) are bound by the University and Faculty regulations in the same manner as all Dalhousie students. The University and Faculty of Health Professions (FHP) regulations are found in the University Regulations section of the Dalhousie University Calendar. Academic regulations are found in the Academic Regulations section of the Calendar. It is the responsibility of each DDM student to become familiar with both the University and FHP regulations.

Please make note of the "Acceptable Use Policy" found in the University Regulations section of the Dalhousie Calendar. Because of the distance learning component of the Disability Management Diploma Program, students should pay particular attention to regulations designed to respect the rights of other computer users.

### A. Class Grades

The minimum passing grade for all DDM classes is 50%. A class may be repeated once only, with a maximum of two repeated classes allowed in the entire DDM program. A student who fails the same class twice will be required to withdraw from the DDM program.

### B. Appeals

On occasion, conflict or disagreement on final grades or evaluative procedures may arise. All students are expected to familiarize themselves with the processes available to them for academic appeals. Timeliness is of the essence for presentation and consideration of all appeals and, in all instances, the first level of appeal will be at the informal level.



Formal appeals of a final grade or a procedural problem must follow the regulations as stated in the University Calendar and such appeals will only be considered after failure to resolve the issue at the informal level has occurred. Students who do not follow these procedures will automatically forfeit their right to further consideration of their appeal and the original decision will remain in effect.

### Informal Process

In each instance, the student and instructor, with guidance from the DDM Academic Director, are expected to attempt to resolve the matter informally within 15 days of the matter giving rise to the appeal.

### Formal Process

If the matter cannot be resolved informally, the student may initiate a formal appeal by following the procedures set down in the University Calendar (see Regulation 16.7 of the Academic Regulations section for appeals of grades, and Regulation 25.6 of the Academic Regulations section for the Faculty of Health Professions appeals process). For more information please visit <http://www.ug.cal.dal.ca/UREG.htm>.

Note that both the Dalhousie University Calendar and the Faculty of Health Professions policies appear on the Dalhousie University website: <http://www.ug.cal.dal.ca/UREG.htm>.

## III. Diploma Requirements

Students must complete all ten half credits however may choose between DISM 4060 and DISM 4070.

## IV. Class Descriptions

### DISM 3010.03: Introduction to Occupation and Disability Management.

This course asks the following questions in seeking to understand the meaning and importance of occupation to individuals. What is occupation? What is the meaning of occupation? What is the meaning of work injury and loss of occupation? It also explores: What is disability management? What are some of the professional and ethical issues, as well as the philosophy, roles, conceptual framework for program? What are levels of disability management in organizational systems, injury prevention, and on-site management?

FORMAT: Distance Education

CROSS-LISTING: KINE 3010.03

### DISM 3020.03: Workers and the Work Environment.

This course identifies what is normal human function in the workplace in relation to occupational health and injury prevention. The class looks at normal human function in work processes, ergonomic support, Health and Safety Acts, injury prevention in the workplace, occupation health, organization of the workplace, and interpersonal factors.

FORMAT: Distance Education

RESTRICTION: Restricted to Disability Management students

### DISM 3030.03: Understanding Occupational Injury and Disability.

In this class learners gain an Understanding of Occupational Injury and Disability by examining mechanisms and processes involved when injury does occur, that either allow for recovery and return to work, or precipitate a further decline into impairment, disability or handicapping processes. Topics addressed are: mechanisms of injury, recovery processes, impairment, disability, handicap, types of physical injuries, mental disorder/disabilities, and occupational illness.

FORMAT: Distance Education

RESTRICTION: Restricted to Disability Management students

### DISM 3040.03: Occupational Assessment.

Following an Introduction to Occupational Assessment, learners will be given the opportunity to build skills around carrying out Occupational Assessment based on existing data and using a case study approach. Case studies will assist students in using existing data, coordinating information, worker participation, employer participation, communication/collaboration, grief issues and self-reflection on difficult cases.

FORMAT: Distance Education

RESTRICTION: Restricted to Disability Management students

### DISM 4010.03: Return to Work Planning and Communication.

This course will consider processes including factors that create resistance among workers. Introduction to return to work planning and communication processes in understanding resistance and compliance/motivation in workers.

FORMAT: Distance Education

### DISM 4020.03: Referral, Co-ordination and Follow-up.

This course provides an opportunity to build on competencies and utilize health professionals and other services to assist the injured worker to return to employment. This looks at team building, group dynamics, using medical and health professional information, prevention of re-injury and examination of professional and ethical issues.

FORMAT: Distance education

RESTRICTION: Restricted to Disability Management students

### DISM 4030.03: Return to Work.

Resources may be required from within the community and may need to be applied in actual return to work situations with modifications made to the job-related activity and/or to the workplace. Topics include functional restoration programs & work conditioning, workplace modification, ease-back programs, work hardening, employer responsibility.

FORMAT: Distance education

RESTRICTION: Restricted to Disability Management students

### DISM 4040.03: Strategies for Alternative Work and Prevention.

In situations where return to a worker's former occupation is impossible, learners will identify strategies to assist the client. Such strategies include dealing with issues of job loss, vocational rehabilitation and employment for persons with disabilities. Students will look at prevention strategies in dealing with job loss, vocational rehabilitation, employment for persons with disabilities, meaningful occupation, case closure, and prevention strategies within systems, structures and organizations.

FORMAT: Distance education

### DISM 4050.03: Psycho-social Issues in Disability Management.

Many complex psycho-social issues involve the injured worker's family, community and employer dynamics. Topics studied in this course include: family, community and unemployed persons, psycho-social dynamics, employer dynamics employer/employee relationships, societal trends, dependence and disability categorization, and medical authorization.

FORMAT: Distance education

### DISM 4060.03: Program Evaluation in Disability Management.

The principal objective of this course is to prepare the student to be an informed participant in, and consumer of, program evaluations. This includes the ability to contribute as a stakeholder or sponsor representative to the effective design of a program evaluation. It also involves development of the knowledge required to be an informed consumer of evaluation reports, to be able to interpret and apply assessment outcomes and recommendations, and to recognize when inadequate methodologies have been employed and identify the resulting limitations of the findings.

FORMAT: Distance education

RESTRICTION: Restricted to Disability Management students

### DISM 4070.03: Disability Management of Mental Health Issues in the Workplace.

This course is aimed at enhancing the learner's understanding of the impact of mental illness on the individual and the workplace, and the intervention strategies designed to facilitate the return to work process.

FORMAT: Distance Education

RESTRICTION: Restricted to Disability Management students

# Health Administration

## School of Health Administration

Location 5161 George Street, Suite 700  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-7097  
Fax: (902) 494-6849  
Email: [healthadmin@dal.ca](mailto:healthadmin@dal.ca)  
Website: <http://www.dal.ca/sha>

### Dean

Webster, William, G., PhD

### Director

Byrne, J., BA (St. FX), MA, PhD (Kansas), MHSA (Dalhousie)

### Professor Emeritus

Nestman, L. J., BComm (Sask), CA, MHSA (Alberta)

### Professors

Byrne, J., BA (St. FX), MA, PhD (Kansas), MHSA (Dalhousie)  
Johnston, G., BSc (Hons) (McGill), MHSA (Alberta), PhD (Western)  
Rockwood, K., BA (MUN), MPA (Queen's), MD, FRCPC, Major appointment in  
Faculty of Medicine  
Sketris, I., BSc (Pharm) (Toronto), PharmD (Minn), MPA (HSA) (Dalhousie),  
major appointment in College of Pharmacy

### Associate Professors

Lahey, W., BA (Mt. A), BA (Juris) (Oxford), LLM (Toronto) Major appointment  
in Schulich School of Law  
Persaud, D., MSc (Queen's), MSA (Cntrl Mich), PhD (Toronto)

### Assistant Professors

Haardt, D., PhD (Essex)  
Luu, S., BS (Taiwan), MPH (Emory), PhD (VCU)  
Simms, C., BA (SMU), MPA (Dalhousie), MHSc (Johns Hopkins), DPhil  
(Sussex)

### Lecturers

Jreige, S., BSc (Hons) (SMU), MHSA (Dalhousie)  
Karim, S., BSc (UBC), BSc (Kines), MHSA, MBA (Dalhousie)  
Mouland, D., BA, DHSA, MHSA (Dalhousie)

The School of Health Administration offers a Diploma in Health Services Administration and a Diploma in Emergency Health Services Management.

## I. Introduction - Diploma in Health Services Administration (DHSA)

The Diploma in Health Services Administration (DHSA) program is designed to prepare students for a career in healthcare at the managerial level. It meets the needs of students interested in health services administration and of those currently employed in the healthcare sector in a managerial capacity, particularly, middle managers in medium and large institutions, administrators in small facilities, and employees in community health, long-term care, primary care, multi-service centres, and community health boards.

The program provides a conceptual background for the increasingly complex managerial tasks performed in health institutions, agencies, and health-related government departments. Every effort is made to balance political, social, economic, cultural, medical, and ethical approaches to understanding the healthcare delivery system with those of the management sciences.

All students must observe the University and Academic Regulations described in the calendar.

Students may complete the DHSA on a full-time or part-time basis.

The program is conducted through the Internet and Web-based conferencing with a learning platform called BbLearn. BbLearn is a distance education class management system. It provides a learning environment where students direct their learning. BbLearn consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

NOTE: Classes offered through the online format are assessed a per class Distance Education Fee (DEF) in addition to the class-based tuition.

### A. Application Procedure

Applicants must meet the Dalhousie University undergraduate admission requirements to warrant consideration into this program. Applicants require university preparation (you may not apply from high school). In addition to transcripts, students are required to submit a current resume and at least one letter of reference with their application to the Diploma program.

Applications should be submitted as early as possible, and not later than July 1 for September admission, November 15th for January admission and March 15 for May admission.

Students may be considered for advanced placement if they have completed classes equivalent to the required or elective classes. Application for advanced placement must be made in writing after an applicant has been accepted to the program.

Further information on the Diploma in Health Services Administration program may be obtained from: School of Health Administration, Dalhousie University, 5161 George Street, Suite 700, PO Box 15000, Halifax, NS B3H 4R2, (902) 494-7097. Application forms are available online at [www.dal.ca/admissions/](http://www.dal.ca/admissions/) apply.html

### B. Curriculum

The one-year program features both an academic and outcome-oriented curriculum. Students accepted into the DHSA program take the following half-credit classes:

#### Fall term

- HESA 4000.03: Canadian Health Care Delivery System
- HESA 4002.03: Health Human Resource Management
- HESA 4003.03: Quality Management
- HESA 4004.03: Health Care Planning
- HLTH 4040.03: Health Law for Non-Lawyers

#### Winter term

- HESA 4001.03: Management Roles and Competencies
- HESA 4005.03: Health Care Financial Management
- HESA 4200.03: Epidemiology for Managers

#### Summer term

- HESA 4400.03: Introduction to Health Care Economics
- One half credit elective as approved by the School

## II. Introduction - Diploma in Emergency Health Services Management (DEHSM)

The School of Health Administration offers an undergraduate diploma program in Emergency Health Services Management. The program meets the need for an educational program for students interested in emergency health services management and for mid-career managers working in the Emergency Health Services systems in Canada. The academic objectives of the program are to provide education in emergency health services management for potential managers of large and small emergency health services organizations, and to provide access to further education in Health Services Administration and Emergency Health Services for such individuals.

The program is designed for professionals working in emergency and/or first responder settings.

The program is conducted through the Internet and Web-based conferencing with a learning platform called BbLearn. BbLearn is a distance education class management system. It provides a learning environment where students direct their learning. BbLearn consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

NOTE: Classes offered through the online format are assessed a per class Distance Education Fee (DEF) in addition to the class-based tuition.

## A. Application Procedure

Applicants must meet the university's undergraduate admission requirements to be considered for admission into the program. Applicants require university preparation (you may not apply from high school). Prospective students should submit a letter outlining their work experience and other activities with their application, fee and high school transcripts. In addition, students are required to submit a current resume and at least one letter of reference with their application to the diploma program.

Students may be considered for advanced placement if they have completed classes equivalent to the required or elective classes. Application for advanced placement must be made in writing after an applicant has been accepted to the program.

Further information on the Diploma in Emergency Health Management program may be obtained from: School of Health Administration, Dalhousie University, 5161 George Street, Suite 700, PO Box 15000, Halifax, NS B3H 4R2 (902) 494-7097. Application forms are available online at [www.dal.ca/admissions/apply.html](http://www.dal.ca/admissions/apply.html). Deadline for September admission is July 1, November 15 for January admission and March 15 for May admission.

## B. Curriculum

### Fall term

- HESA 4000.03: Canadian Health Care Delivery System
- HESA 4010.03: Management Process and Human Resource Issues in EHS
- HESA 4004.03: Health Care Planning
- HESA 4020.03: Quality Improvement in EHS
- HLTH 4040.03: Health Law for Non-Lawyers

### Winter term

- HESA 4005.03: Health Care Financial Management
- HESA 4200.03: Epidemiology for Managers

### Summer term

- HESA 4030.03: EHS System Design
- HESA 4040.03: Principles of Community-Based EHS
- HESA 4400.03: Introduction to Health Care Economics

## Class Description

### HESA 4000.03: Canadian Healthcare Delivery System.

The class is designed to provide an overview of healthcare in Canada, and more specifically in Nova Scotia, where the health reform process will be addressed. Aimed specifically at supervisors, middle management, and administrators the existing trends in healthcare from a national and provincial perspective will be reviewed. The goal of this class is to provide the student with a snapshot view of the existing healthcare system, its past development, and future direction. CROSS-LISTING: CANA 4300.00

### HESA 4001.03: Management Roles and Competencies.

This class seeks to help students to examine what managers do to add value to their organizations. As a starting point we will briefly explore the evolution of management theories, comparing the founding theories with more recent literature. We will also examine the role of managers in public organizations such as hospitals. Finally, we will examine specific skills and duties of healthcare managers including: leadership, power, motivation, decision making, communication, teamwork, conflict resolution, organizational change, and others. Learning is facilitated through a mix of individual study and group discussions, and direct feedback from the instructor.

### HESA 4002.03: Health Human Resource Management.

This class will provide the student with a working knowledge of the day to day operational management of human resources. The class will focus on the requirements of a manager to mentor, lead and manage the organization's human resources. The interaction and interdependencies between the manager and the human resource department will be examined. Topics include labor management relations; human rights and labor related legislation; recruitment and selection; performance development and management; professional development and training; compensation related issues; collective bargaining and dealing with special employment related issues. Approved with Canadian Studies.

PREREQUISITE: HESA 4000.03

CROSS-LISTING: HESA 4010.03

### HESA 4003.03: Quality Management.

This class will provide an introduction to the concept of quality improvement. Students will be exposed to the various methods to measure and assess quality in healthcare and be provided exposure with tools and techniques utilized in practice. A focus on safety and risk, patient satisfaction, team leadership as well as accreditation will be undertaken to ensure students gain practical understanding of the drivers of quality in Canadian healthcare. Approved with Canadian Studies.

PREREQUISITE: HESA 4000.03

CROSS-LISTING: HESA 4020.03

### HESA 4004.03: Healthcare Planning.

This class will use lectures, readings and case discussion to explore issues and methods related to health planning and evaluation. Emphasis will be placed on learning how to apply theory to practice at the system, organization, and service levels.

### HESA 4005.03: Healthcare Financial Management.

This class will introduce the student to financial management concepts. The key concepts of financial resource management will be explored with particular emphasis on implementation in the healthcare sector. Introduction of the basic components will enable the student to understand the concepts within the larger framework of strategic and organizational resource planning and utilization. Topics covered include preparing, managing, and evaluating department budgets, payment systems, and fiscal accountability.

### HESA 4010.03: Management Process and Human Resource Issues in EHS.

The course is designed to develop skills in the eight core management processes required to effectively manage an EHS operation. The core management skills taught in this course include: Interpersonal Communications and Coaching, Building Effective Teams, Monitoring and Managing Performance, Project Management, Leading Others, productivity Improvement, Influencing and Negotiating with Others, and Managing Innovation and Change. The overall aim of this course is to provide EHS practitioners with the skills required to manage people effectively. The course has two principle goals: provide EHS practitioners with the management and human resource skills necessary to manage effectively in their own work environment, and introduce EHS practitioners to innovations in EHS systems design and management practices.

PREREQUISITE: HESA 4000.03

CROSS-LISTING: HESA 4002.03

### HESA 4020.03: Quality Improvement in EHS.

The objectives of this course are to (1) lead EHS managers through a step by step process to design, plan, implement, monitor and evaluate a continuous quality improvement initiatives, (2) link continuous quality improvement principles to the concepts and practices of Higher Performance Systems (HPS), (3) apply the principles, practices and tools of continuous quality improvement to an EHS operation, and (4) create a team based continuous quality improvement environment. Participants will be introduced to and will apply the concepts of healthcare improvement teams throughout the course.

PREREQUISITE: HESA 4000.03

CROSS-LISTING: HESA 4003.03

### HESA 4030.03: EHS System Design.

The advent of the high performance EHS system makes it evident that it is possible to "do more with less", however, that possibility requires sensible design tempered by the political realities of the services area. It also requires the use of CQI practices to modify the design and ever vigilant system status management to maintain high performance. This course will consider first the public policy issues that bear upon EHS system design. This course will consider first the structure issues, both external and internal, that bear upon EHS system design. Then the course will consider the different designs originated from organizational theory. In

the second half of the course the various system components will be presented. Finally, the course will consider disaster management of EHS systems. The objectives of this course are: (1) provide managers and management-bound students a broad perspective of the process of providing EHS services, (2) identify the scope of factors that influence, create and alter the design of EHS systems, (3) provide a foundation for system evaluation, and (4) challenge students to anticipate the factors that will affect system design when disaster strikes.

### **HESA 4040.03: Principles of Community-Based EHS.**

Emergency Health Service (EHS) systems face challenging environments. However, strategies can be developed that go beyond merely reacting to what occurs in the environment. This course presents public relations planning so that a disaster or even a scandal can be turned into an opportunity. In addition, the course offers a basic understanding of marketing strategies that can help offset market pressures and demands.

The objectives of the course are: (1) appreciate how marketing strategies vary when designed for the public good or a public service, (2) develop a marketing plan specific to the student's emergency health service system, (3) develop and evaluate an emergency health services public relations plan, and (4) facilitate a collaborative activity between the student's emergency health organization and some of its stakeholders.

### **HESA 4200.03: Epidemiology for Managers.**

This class is a general, introductory course in the principles of epidemiology. Discussion will concentrate on the occurrence of disease and injuries in human populations, examine methods of determining the causes of illness and death, and analyze conclusions which have been gained through the application of epidemiological studies.

PREREQUISITE: HESA 4000.03

### **HESA 4400.03: Introduction to Healthcare Economics.**

This class is an introduction to economic issues in the Canadian Health Care System. The purpose of this class is to provide students with economic tools with which to examine issues affecting the Canadian health system. Specific topics to be examined include: the supply of, and demand for, healthcare; investment appraisal; healthcare systems and markets; health insurance schemes; rationing healthcare services; human resource planning; health technology assessment; and, outcome measurement and evaluation.

## **Health and Human Performance**

### **School of Health and Human Performance**

Location: 6230 South Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2152  
Fax: (902) 494-5120  
Website: <http://www.hahp.healthprofessions.dal.ca>

#### **Dean**

Webster, W.G., PhD

#### **Director**

McGinn, F., BRec (Dalhousie), MA (Western Michigan), PhD (Southern Illinois Univ. at Carbondale)

#### **Professor Emeritus**

Belzer Jr., E. G., BS (West Chester State Coll), MS (Maryland), PhD (Illinois)

#### **Professors**

Gahagan, J., BA (Carleton), BA Honours (Carleton), MA (Univ of Windsor), PhD (Wayne State Univ)  
Jackson, L. A., BA, MA, PhD (Toronto)  
Rehman, L. A., BHK, MA (UBC), PhD (Waterloo)  
Singleton, J. F., BA (Waterloo), MS (Penn State), PhD (Maryland)

#### **Associate Professors**

Hutchinson, S. L., BA (Victoria), MA (Dalhousie), PhD (Georgia)  
Kirk, S., BSc Honours (Leeds Metropolitan Univ.), PhD (Univ. of Leeds)  
Kozey, J. W., BSc, MSc (Waterloo), PhD (TUNS)  
MacGregor, L. A., BPE (Dalhousie), MS (Illinois)  
McGinn, F., BRec (Dalhousie), MA (Western Michigan), PhD (Southern Illinois Univ. at Carbondale)  
Robinson, L. M., BSc Honours 1st. class (UVIC), MA, PhD (Simon Fraser)  
Westwood, D. A., BSc, MA, PhD (Waterloo)

#### **Assistant Professors**

Barnes, L. J., BPE, MSc (Dalhousie)  
Dechman, G., BSc (Physio) Honours, PhD (McGill). Major appointment with School of Physiotherapy  
Dithurbide, L., BA (St. Mary's), MA (Brock), PhD (Michigan State)  
Keats, M., BA (Calgary), MA (Alberta), PhD (Calgary)  
Kimmerly, D.S., BSc (Hons) (Univ. of Waterloo), MSc, PhD (Univ. of Western Ontario)  
Ladouceur, M., BSc, MSc (Sherbrooke), PhD (McGill)  
Martin, D., BRec (MUN), MA, PhD (Dalhousie)  
Moreside, J., BSc (UBC), MHK (Windsor), PhD (Waterloo)  
Rainham, D.G.C., BES (Hons) (Waterloo), MSc (Alberta), PhD (Univ. of Ottawa).  
Major appointment - Elizabeth May Chair in Sustainability and Environmental Health  
Stone, M., BPHE, BSc (Queen's), MSc (Sask), PhD (Exeter)  
Welch, J., BA, BSc Honours (Carleton), MSc (Alberta), PhD (Purdue Univ.)

#### **Adjunct Professors**

Bayers, L., BA, BEd (Dalhousie), MA (SMU), PhD (South Australia)  
Boe, S., BPhEd (Brock), MSc, PhD, MPT (Western Ontario). Major appointment with School of Physiotherapy  
Holt, L., BSc, MSc (Springfield Coll.), PhD (Southern Illinois)  
Landry, S., BScH (Acadia), BEng, PhD (Dalhousie)  
Neupert, A., MSc (Calgary)  
Steeves, D., BEd (UNB), MSc (Dalhousie)

Sullivan, A. M., BRec (Dalhousie), MA (Waterloo), PhD (Guelph)  
 Thornley, L., BSc (Univ of Brighton), MSc (Dalhousie)  
 Willgress, S., BSc, MSc (Calgary)

## I. Introduction

### A. Purposes of the School

The School's mission is to develop professionals and scholars who can generate, disseminate and apply knowledge to advance health and human performance. We do this by offering undergraduate and graduate programs as well as by conducting research in health promotion, kinesiology and recreation/leisure studies.

### B. Limited Enrolment

All programs offered by the School of Health and Human Performance have enrolment limits.

### C. Interprofessional Health Education

Students are required to maintain enrolment in IPHE 4900.00 (see calendar section on Health Professions, Interprofessional Health Education) for the duration of their studies. Successful completion is a requirement for graduation, and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration to be presented by the Faculty of Health Professions. Students are asked to consult with their individual school/college to determine the specific guidelines and expectations regarding the required portfolio.

### D. Affirmative Action Admission Policy

#### Purpose of the Policy

This policy is intended to create opportunities for the admission of under-represented African Canadians, Aboriginal peoples, and persons with disabilities, in the School of Health and Human Performance.

#### Eligibility

Persons eligible to be considered under this policy must self-identify as African Canadian, Aboriginal, or a person with a disability. Although the School of Health and Human Performance is committed to supporting eligible students from across Canada, preference will be given to those who are a resident of Atlantic Canada or who have a parent residing in Atlantic Canada at the time of application.

Consideration for admission under this policy is optional. Applicants wishing to be considered under this policy must identify themselves to the Admissions Committee on the School of Health and Human Performance Supplemental Form submitted to the Registrar's Office.

#### Requirements

To be considered for admission under this policy, the following criteria must be met:

1. Those applying directly from high school must have attained a minimum grade of 65% in each of the prerequisites listed for the program of choice. Transfer students (i.e., individuals having completed post secondary classes) must have achieved a minimum overall GPA of 2.3 (C+).
2. The applicant would otherwise not have been admitted through the regular admission process.
3. The application, Supplemental Form, and a written statement outlining his/her motivation for applying must be submitted to the Registrar's Office no later than March 15.

#### Support Services

Once admitted to the School, students wishing to access the following support services must identify their need to the Student Services Administrator, or the class professor.

#### 1. School of Health and Human Performance:

- a) The Student Services Administrator will meet regularly with students to assist with advising, administrative needs, and other concerns.
- b) Faculty members will facilitate extra support or instruction for their class content if necessary.
- c) Faculty members who are members of the designated groups, or who are closely affiliated with those groups, will be asked to provide academic mentorship if required.

- d) Faculty whose office is in a building that might be inaccessible to students with a physical disability will arrange an alternative, more accessible, space for meeting with those students.

### 2. Dalhousie University offers a variety of services to students

For further information go to [www.dal.ca/campus\\_life/student\\_services.html](http://www.dal.ca/campus_life/student_services.html)

## II. School of Health and Human Performance Regulations

1. All students must observe the University and Academic Regulations described in this Calendar.

### 2. Attendance

All students must attend the classes of their prescribed class regularly and punctually. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to discontinue the class concerned.

### 3. Workload

The maximum class load for any fall or winter term is 15 credit hours (five half-credits) and during spring and summer terms, the maximum class load for each is 6 credit hours. Students wishing to exceed the maximum class load must receive permission from the academic advisor within the School. Permission will not normally be granted to any student in his or her first year of study or to any student who does not have a cumulative GPA of 3.00 or above. Other requests based on extenuating circumstances will be considered.

### 4. Grade Point Average Requirements

The grade point average system is described in the Academic Regulations.

### 5. Supplemental Examinations

The School of Health and Human Performance does not offer supplemental examinations in any of its programs.

### 6. Academic Appeals Procedures

A student wishing to appeal a decision based on School regulations should in the first instance attempt to resolve the issue with the instructor(s) concerned before proceeding as per School Appeal Procedures, See Academic Regulation 24.6.

#### 6.a School Committee on Undergraduate Student Appeals

A School-wide Committee on Undergraduate Student Appeals exists for the purpose of hearing initial student appeals of academic decisions.

The student appellant is responsible for the preparation of all documentation in support of his/her appeal.

The student must submit the appeal to the Chair, Committee on Undergraduate Student Appeals.

The student has the right to appear before the Committee on Undergraduate Student Appeals and he/she should notify the Chair of his/her desire to do so. The student also has the right to be represented by an advocate of his/her choice.

The decision of the Committee on Undergraduate Student Appeals shall be conveyed to the student, in writing, by the Chair, Committee on Undergraduate Student Appeals within three working days after the conclusion of the appeal. If the student's appeal is being denied, this notification should include information about procedures to appeal to the Committee on Undergraduate Student Appeals of the Faculty of Health Professions (see Academic Regulation 25.6). It should be noted that this appeal to the Faculty Committee on Undergraduate Student Appeals must be presented within 30 days of notification from the School of the disputed academic decision.

### 7. Student Advisory Programs

Although many classes are compulsory in the School's programs, considerable latitude exists for the development and extension of individual interests. To help in planning a total personal program each student is assigned to the Student Services Administrator. He/she can help students to select classes, avoid common pitfalls, interpret regulations, and solve various types of problems. Although students are responsible for their own programs and for maintaining high academic standards, they should consult their advisor regularly.

### III. Degree Programs

The School offers eight undergraduate degree programs:

- A. BSc (Health Promotion)
- B. BSc (Health Promotion) with Honours\*
- C. BSc (Kinesiology)
- D. BSc (Kinesiology) with Honours\*
- E. BSc (Recreation)\*\*
- F. BSc (Recreation)/Bachelor of Management\*\*\*
- G. BSc (Recreation) with Honours\*
- H. BSc (Recreation) with Honours\*/Bachelor of Management\*\*\*

\* Application is made to the Honours Coordinator by November 15 for HPRO, Rec (TR), Rec/Mgmt and April 1 for Kinesiology, of the student's third year. Consult department for further information.

\*\* The BSc (Recreation) is a degree in Therapeutic Recreation.

\*\*\*This is a five-year combined degree in which the student will graduate with both a Bachelor of Science (Recreation) and Bachelor of Management degree.

NOTE 1: Students entering into any of the above degree programs from high school should refer to the Admission Requirements section of this calendar.

NOTE 2: Students who are transferring into any of the above degree programs with previous academic work will formulate a program of study with the Student Services Administrator, based on previous work and area of concentration. Students transferring into the BSc (Health Promotion), BSc (Recreation) and BSc (Recreation)/BManagement programs should note that the internship experiences required in the final year of these programs are normally only offered in the fall and winter terms.

#### A. School of Health and Human Performance Classes

The following classes are required for certain degree programs within the School. Please refer to the Required Classes section of the specific degree program of interest:

• HAHP 1000.03	3
• HAHP 2000.03	3
• HAHP 3000.03	3
• HAHP 3100.03	3

#### HAHP Class Descriptions

##### HAHP 1000.03: Introduction to Health, Health Promotion and Health Professions.

This class provides the philosophical and practical scope of the School's unique perspective on health. It includes an examination of theories, research, politics and practices that have helped to define health, and health promotion as an umbrella for health-related activities. An historical perspective of health and healthcare is offered and current international, national and local issues are considered. Also included is an introduction to the professional streams offered in the School and how they fit into health promotion and the Canadian healthcare system.

FORMAT: Lecture/seminar

##### HAHP 2000.03: Human Growth and Development.

A study of factors influencing human growth and development from birth to maturity and throughout the lifespan, as revealed by observational and experimental studies.

FORMAT: Lecture/3 hours

RESTRICTION: Restricted to students in the School of Health and Human Performance, and Bachelor of Health Science students. Others by permission of instructor with priority to Health Professions students.

##### HAHP 3000.03: Community Development.

This class examines the nature and process of community development, reviews differing interpretations and approaches to community development, and provides students the opportunity to develop skills to catalyze and engage in the process. The class will investigate current Canadian initiatives and projects that encourage the practice of community development, and provide the opportunity to witness and become involved in local health-related projects that foster the principles of community development.

FORMAT: Lecture/discussion/tutorial/3 hours

RESTRICTION: Restricted to students in the School of Health and Human Performance.

##### HAHP 3100.03: Introduction to Research Methods.

This class provides students with basic knowledge for conducting research in health professions. The content covers ethics associated with research, research design, issues in measurement, sampling, data collection strategies, data analysis and report writing. Students will learn about different approaches to research from the classical scientific model to more subjective interpretative models of inquiry. Testing, as well as written assignments will serve as evaluative techniques.

FORMAT: Lecture/discussion 3 hours

EXCLUSION: HSCE 3010.03

RESTRICTION: Restricted to students in the School of Health and Human Performance, and Bachelor of Health Informatics students.

#### A. Bachelor of Science (Health Promotion)

The Bachelor of Science (Health Promotion) is a four-year degree program. The goal of health promotion is to educate health promotion professionals in promoting, maintaining and improving the health and well-being of individuals, families and communities. As a profession, Health Promotion is principally devoted to employing health promotion processes and to fostering healthy behaviors.

The responsibilities of health promoters include: assessing health promotion needs; planning, conducting and evaluating health promotion programs; coordinating health promotion activities and resources; promoting health promotion throughout the community; and professional development.

The BSc (Health Promotion) program guides students in attaining: (1) knowledge, attitudes and practices conducive to a healthy lifestyle; (2) professional preparation for a career in community health promotion; and (3) academic preparation for advanced study and research in health promotion or health-related fields.

##### Program of Study

NOTE: On admission into the BSc (Health Promotion) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the requirements for the degree as outlined on the form are completed for graduation.

##### Required Classes - BSc (Health Promotion)

##### Stream Requirements

###### Common Year One

HAHP 1000.03	3
HPRO 1195.03	3
ANAT 1020.03	3
CSCI 1200.03	3
STATS 1060.03	3
PHYL 1010.06	6
SOSA 1000.06 or 1050.06 or 1100.06 or 1200.06	6
Open Elective **	3

###### Community Health Promotion Stream

###### Year Two

HAHP 2000.03	3
HPRO 2110.03	3
HPRO 2120.03	3
HPRO 2361.03	3
One of:***	
(HPRO 2255.03, HPRO 4412.03, HPRO 4365.03)	3
PSYO 1011 or 1021 and PSYO 1012 or 1022	6
Language and Humanities Elective*	3
Writing Requirement****	6

###### Year Three

HAHP 3000.03	3
HAHP 3100.03	3
HPRO 3397.03	3
HPRO 3325.03	3
One of:***	
(HPRO 3335.03, HPRO 3345.03, HPRO 3351.03)	3
Open Electives**	9
Health Related Elective(s)****	6

**Year Four**

One of\*\*\*:

(HPRO 2255.03, HPRO 4412.03, HPRO 4365.03) 3

One of\*\*\*:

(HPRO 3335.03, HPRO 3345.03, HPRO 3351.03) 3

HPRO 4450.03 3

Open Elective(s)\*\* 6

HPRO 4495.15 15

**Research and Policy Stream****Year Two**

HAHP 2000.03 3

HPRO 2110.03 3

HPRO 2120.03 3

HPRO 2361.03 3

PSYO 1011 or 1021 and PSYO 1012 or 1022 6

Language &amp; Humanities Elective\* 3

Writing Requirement\*\*\*\*\* 6

PHIL 2660 or 2670 3

**Year Three**

HAHP 3000.03 3

HAHP 3100.03 3

HPRO 3397.03 3

HPRO 4101.03 3

One of:

(HPRO 3360.03, HPRO 3370.03) 3

Open Elective\*\* 3

Health Related Electives\*\*\*\* 12

**Year Four**

Health Related Elective\*\*\*\* 9

Open Elective(s)\*\* 6

HPRO 4495.15 15

\* Language/Humanities Elective - see list under Degree Requirements Section in the Academic Calendar.

\*\* Open Electives can be chosen from any available class at Dalhousie

\*\*\*HPRO A, B, C (as per program of study form available from the School of Health and Human Performance).

\*\*\*\* Health Related Electives - To ensure the classes you select fill this requirement, please check with an advisor.

\*\*\*\*\* See list of writing requirement classes under Degree Requirements Section in the Academic Calendar. If students take SOSA 1050 in Year One, the Writing Requirement becomes six credit hours of open electives.

At graduation, valid Standard First Aid and CPR Level C Certification are required. Students must submit copies of valid certification to the Student Services Administrator before the end of their final term.

## B. Bachelor of Science (Health Promotion) with Honours

Students wishing to be considered for entrance into the Honours Program must meet the minimum requirements listed below. *Acceptance to the program after meeting these requirements will depend on a faculty member being willing to supervise the honours thesis.*

1. Completed a minimum 90 credit hours towards his/her undergraduate degree<sup>1</sup>.
2. Obtained a GPA of 3.5 based on the previous 60 credit hours of work.
3. Completed HAHP 3100 with a minimum grade of B.
4. Completed a 3000 level or higher HPRO class most related to the area of research.
5. Completed the Financial, Technical, Equipment and Space Support Form indicating the financial needs of the thesis can be met.

Application is made by November 15th of the student's third year.

NOTE: Students accepted into the Honours program must complete HPRO 4101.03 and HPRO 4102.03

The Honours Program is part of the 120 credit hours required for the Bachelor of Science (Health Promotion) degree. These six credit hours may be attributed as open electives or as health-related electives.

Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

<sup>1</sup> A student who has completed 87 credit hours may apply to the School of Health and Human Performance Committee on Studies for a waiver of the requirement. Successful appeal will depend upon the merits of the argument.

## Honours Conversion

Students who have graduated with a Bachelor of Science (Health Promotion) degree can apply for the Honours Conversion program. Before taking HPRO 4101.03 and HPRO 4102.03, they must have satisfied the requirements for the Honours Program. With the approval of the Honours Coordinator, it may be possible to take certain prerequisite classes concurrently with HPRO 4101.03 and HPRO 4102.03. Application is made through the Honours Coordinator (details in the BSc (Health Promotion) with Honours section). Acceptance into the Honours Conversion program can only be considered provided a faculty member has agreed to supervise the project.

## HPRO Class Descriptions

### HPRO 1195.03: Introduction to Health Promotion.

While students are developing knowledge, understandings, attitudes and appreciations related to health and professional health promotion, they will be improving skills in library research, scholarly writing, and public speaking. In addition to the regular classroom meetings, the class includes a self-study assignment related to the organization and functioning of a charitable community-based health-related agency.

FORMAT: Lecture/discussion/seminar/self-study assignment/3 credit hours

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### HPRO 2110.03: Health Promotion Theory.

This course is designed to encourage those working and studying in the areas of health promotion to better understand the connection between health promotion theory and research, policy and community practice. This course will also provide students with an opportunity to explore and critically analyze the principal methods and theoretical approaches in the evolution and assessment of evidence for effectiveness of health promotion programs and interventions.

PREREQUISITE: HPRO/HEED 1195.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### HPRO 2120.03: Health Promotion Policy.

The purpose of the course is to introduce students to the concept of policy and health promotion policy in particular. Students will be exposed to content that describes how policy is developed/approved/changed on the basis of research/evidence and what processes/tools can be used to influence political decision-making as it relates to the adoption of new/changed policy. Through the use of case studies, students will be asked to critically analyze existing health promotion policies and understand issues related to policy interpretation, application and compliance at national, provincial and local levels.

PREREQUISITE: HPRO/HEED 1195.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### HPRO 2250.03: Interdisciplinary Class in Human Nutrition.

This course focuses on the science of nutrition and the role of nutrition in health. We study how the body responds to different nutrients including protein, carbohydrate, fat, vitamins, minerals, and water. Current knowledge and controversies regarding the role of diet in disease and optimal health will be explored.

FORMAT: Lecture 3 hours

CROSS-LISTING: KINE 2250.03

### HPRO 2255.03: Drugs and Drug Education.

International, national and regional issues of promotion, prevention, treatment and legislation of drug use are examined. Recreational, over-the-counter and some prescription drugs will be considered. Some strategies and methods of educating about drugs and drug-related issues will be included.

FORMAT: Lecture 3 hours

RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

### HPRO 2361.03: Program Planning.

Designing, planning, implementing and evaluating programs is fundamental to both leisure services and health promotion. Both disciplines develop programs to

enhance the quality of life for individuals, groups and communities. This class reviews the principles of program planning, various program planning models, and examples of programs that are pertinent to leisure services and health education/promotion. The planning process will include issues such as targeting specific populations, scanning for needs and assets, partnering, managing stakeholder relationships, and evaluation.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: HPRO/HEED 1195.03 or LEIS 1127.03

CROSS-LISTING: LEIS 2361.03

RESTRICTION: Restricted to Recreation and Health Promotion students

### **HPRO 3325.03: Mental Health Promotion.**

Concepts and issues of mental health are explored through an examination of related theories, research, writings and practices. Emphasis is placed on promoting individual and community mental health, but mental illness and its treatment are included. Mental health-related organizations and services will also be studied.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: PSYO 1011.03 or 1021.03 and PSYO 1012.03 or PSYO 1022.03, HAHF 2000.03, or permission of instructor

RESTRICTION: Restricted to School of Health and Human Performance students; limited space for other students may be made available.

### **HPRO 3335.03: Introduction to Disease Prevention.**

This class will consider the concept of disease, the study of disease, and the causes of disease from the perspective of prevention. Primary, secondary and tertiary prevention strategies and methods will be examined, along with the role of the health promotion specialist. Selected communicable diseases will be used to illustrate these concepts.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, HPRO/HEED 1195.03, PHYL 1010X/Y.06 or PHYL 1000X/Y.06, or PHYL 2030X/Y.06, or permission of instructor

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

### **HPRO 3345.03: Epidemiological Approach to Disease.**

This class introduces students to the basic concepts of epidemiology - the study of the causes and distribution of disease in human populations. Emphasis will be on disease causation, morbidity and mortality through studying selected chronic conditions. In addition, this course examines social determinants of health and their relationship to chronic conditions.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: ANAT 1020.03, or ANAT 1010.03, HPRO/HEED 1195.03, PHYL 1010X/Y.06 or PHYL 1000X/Y.06 or PHYL 2030X/Y.06, or permission of instructor

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

### **HPRO 3351.03: Injury Prevention and Safety Education.**

Students are introduced to the concept of safety, the causes and effects of injuries, and strategies for reducing same through safety education, engineering and legislation. Specific study of injuries, their causes, and preventive measures and programs is preceded by a review of definitions of health, health promotion/education models and policies. The latter part of the class focuses on community orientations to injury prevention.

FORMAT: Lecture/discussion 3 hours

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

### **HPRO 3360.03: Multicultural Health Promotion Research and Policy.**

The purpose of this course is to provide students with an opportunity to explore the distinct and integrated influence of research and policy on the health of multicultural populations within the Canadian context. In particular, this course will assist students in developing a critical understanding of the intersection of multicultural health with policies and power. Through engagement with multidisciplinary perspectives, students will examine health research and policy issues pertaining specifically to New Canadians (Immigrants), African Canadians, and Aboriginal peoples.

PREREQUISITE: HPRO/HEED 1195.03, HPRO 2110.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### **HPRO 3370.03: International Health Promotion Research and Policy.**

The main goal of the course is to introduce students to the ways in which health promotion research questions, methods and ethics, as well as health policies, vary depending upon the specific international context (local and national). A comparative analysis will be undertaken of the disparities in health/well-being between (and within) developed and developing countries while considering the historical development of underdevelopment. Each year the students will choose from a number of cases two that will be examined in-depth by the class. Students will choose from among a variety of key global health issues (e.g. tobacco addiction, health issues for migrant workers, HIV/AIDS and nutrition). Focus will be placed on the social determinants of these health issues/problems, and the types of health promotion research and policy issues needed to address these health problems within particular geographical contexts/countries. One of the central tenets of the course is how societies are organized, and the way in which resources are invested and whose interests the investments serve, affect the health of individuals and populations within the society.

PREREQUISITE: HPRO/HEED 1195.03, HPRO 2110.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### **HPRO 3397.03: Community Health Promotion Strategies.**

A broad spectrum of health promotion strategies is available to facilitate health in various community settings and with diverse populations. The class reviews these major strategies and offers students practice in applying them. In addition, the various models and theories of health behaviour change will be examined.

FORMAT: Lecture 3 hours

PREREQUISITE: HPRO/HEED 1195.03, HPRO/HEED 2361.03

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor with priority to Health Professions students

### **HPRO 4101.03: Advanced Topics in Applied Research Methods in Health Promotion and Policy.**

The purpose of this course is to provide students with an opportunity to develop their understanding of research methodologies and apply their knowledge to a specific health promotion topic. Health policies will be discussed and considered relative to specific health issues.

PREREQUISITE: HPRO/HEED 1195.03, HAHF 3100.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### **HPRO 4102.03: Honours Thesis.**

The purpose of the course is to develop research skills by completing a major independent research project and writing a formal research report in the form of a thesis. By way of their research, students will demonstrate skills, knowledge and ability in literature research, research design, data collection/analysis and formal academic writing.

PREREQUISITE: HAHF 3100.03 and HPRO 4101.03 with a grade of B or better in each, and ethical approval by August 1

RESTRICTION: Restricted to Health Promotion honours students.

### **HPRO 4365.03: Health: A Biopsychosocial Approach.**

Health is increasingly recognized as multiply determined by the complex interactions of biological, psychological, and social systems and determinants. Research into these interactions is advancing rapidly. Students in this class are expected to develop an understanding of these processes, be aware of the most recent research and be capable of seeking out new research in the future and applying this knowledge to health problems in Canada.

PREREQUISITE: HPRO 3335.03 or HPRO 3345.03

RESTRICTION: Restricted to Health Promotion students. Others by permission of instructor with priority to Health Professions students.

### **HPRO 4412.03: Human Sexuality.**

This class is concerned with biological, cultural, ethical, historical, psychological, religious and semantic aspects of human sexuality. Four themes are threaded throughout the class - diversity in gender roles and in sexual attitudes, behaviours and customs; critical thinking; making responsible decisions; sexual health. The class is designed to support positive integration of sexuality into the lives of



individuals and to foster the prevention of sexuality-related problems, at all stages of life.

FORMAT: Lecture/discussion 3 hours

CROSS-LISTING: GWST 2412.03

### HPRO 4422.03: Environmental Health.

Individual health and well-being is partially determined by the values we hold and the choices we make as individuals. Equally important is the environment that enables us to make those choices that maintain and enhance our health. This class emphasizes the importance of the environment, both physical and social, and how it is implicated in the work of health promoters and other health professionals. The content reviews principles of natural and social ecology, the role of policy in shaping our environments, and research aimed at understanding the impact of various environmental conditions on health. Students will explore environmental health issues within the community and propose educational strategies to maintain and enhance health and well-being.

FORMAT: Lecture/discussion

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

### HPRO 4450.03: Comprehensive School Health Promotion.

This class will provide students with an overview of the components of a comprehensive health promotion program in the public school system from a community health promotion perspective. The school health curriculum, school health services, and the healthy school environment - and how a community health promoter might interact with the school system will comprise the content of the class.

FORMAT: Lecture/tutorial 3 hours

PREREQUISITE: HPRO 1195.03, HPRO, 2110.03, HPRO 2361.03, HPRO 3397.03; at least two of HPRO 2255, HPRO 4412, HPRO 4365, HPRO 3335, HPRO 3345, or HPRO 3351

RESTRICTION: Restricted to Health Promotion students in their final year of study.

### HPRO 4495.15: Health Promotion Internship.

This class is an extended professional development internship during the final year of study. It requires completion of a 14-week, 40 hours per week internship in a health promotion agency. The internship involves an in-depth agency analysis and the completion of a special service project for the agency, as well as several other academic projects. Details of the goals and specific procedures for the internship are contained in the current Internship Handbook.

FORMAT: : Internship – 14 weeks in the Fall term (September-December), or Winter term (January-April). Spring term (April to mid-July) available only with permission of the Internship Coordinator.

PREREQUISITE: Completion of all other program requirements and approval of the Student Services Administrator.

RESTRICTION: Restricted to Bachelor of Science (Health Promotion) students in their final term.

### HPRO 4700.06/4701.03/4702.03: Senior Seminar.

This class is tailored for small groups of students. It is designed to allow students to focus on a particular issue or set of related issues, that are not part of the regular curriculum. Part of this class could entail a practicum experience. The class will only be offered if a faculty member is available to supervise the work.

FORMAT: Seminar

RESTRICTION: Restricted to Health Promotion students in their final year

### HPRO 4800.06/4801.03/4802.03: Independent Study.

The Independent Study allows students to develop an area of specialization with library, laboratory or field research, under the tutelage of an appropriate faculty member.

NOTE: Students may take no more than a total of 6 credit hours of independent studies.

FORMAT: Research/tutorial 3 or 6 hours

PREREQUISITE: Fourth year status; a GPA of at least 3.00; a "B" grade in an earlier class in the area of study (where appropriate); consent of advisor; consent of tutor. Intention to register for an Independent Study should be confirmed with the undergraduate secretary by April 1st of the preceding academic year.

RESTRICTION: Restricted to School of Health and Human Performance students; others by permission of instructor, with priority to Health Professions students

## C. Bachelor of Science (Kinesiology)

### Program Description

Kinesiology is the study of the structure and function of the human body within the context of human movement and with a focus on the maintenance and enhancement of health and well-being. Students may elect to concentrate in one of three professional areas - ergonomics; fitness and lifestyle; or coaching science\* - or follow a more general stream with a focus on research or other professional areas in which human movement and health are central. The School offers a four-year BSc (Kinesiology) degree as well as a four-year honours degree in Kinesiology (see Section E below).

\* See stream requirements under Program of Study below.

The goals of these degrees are to provide students with:

1. A broad background in various subdisciplines of Kinesiology, including anatomy, physiology, neuropsychology, biomechanics, movement control and psychology of performance;
2. An exposure to several science disciplines which are prerequisite and/or complementary to the kinesiology subdisciplines (e.g., biology, physics, psychology, mathematics);
3. An introduction to the discipline of health promotion and an appreciation of the role kinesiology plays in health and well-being concerns of the individual;
4. An exposure to some aspects of the humanities and social sciences, as a means of enhancing the liberal education of the student and addressing social concerns in relation to health promotion;
5. A solid foundation in research methodology and statistics, including opportunities for independent research if the student should so choose;
6. An understanding of the principles and tools necessary to evaluate human movement from a variety of perspectives and in a variety of settings, as well as hands-on experience in several evaluative procedures;
7. Professional preparation in the areas of fitness and lifestyle; ergonomics; or coaching sciences;
8. Experiences in active and problem-based learning;
9. The necessary background to enable the student to pursue graduate work in kinesiology or other related fields.

### Program of Study

On admission into the BSc (Kinesiology) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the class requirements for the degree as outlined on the form are completed for graduation.

### Required Classes - BSc (Kinesiology)

• HAHF 2000.03	3
• HAHF 3100.03	3
• ANAT 1020.03	3
• PHYC 1310.03	3
• PHYL 1010.06	6
• KINE 1102.03	3
• KINE 1104.03	3
• KINE 1106.06	3
• KINE 1108.03	3
• KINE 2250.03	3
• KINE 2310.03	3
• KINE 2320.03	3
• KINE 2430.03	3
• KINE 2465.03	3
• KINE 3200.03	3
• KINE 3500.03	3
• KINE 4600.03	3
• MATH/STAT 1060.03	3

Kinesiology Electives \*18

Science Electives\*\*24

Open Electives\*\*\*21

\* Kinesiology electives must be at 3000 or 4000 level courses.

\*\* Science electives must be from the Faculties of Computer Science, Engineering, Science, or Medicine.

12 credit hours of science electives must be selected from the following list:

- BIOL 1010.03: Principles of General Biology I
- BIOL 1101.03: Principles of General Biology II

- PHYC 1320.03: Physics In and Around You
- CHEM 1011.03: General Chemistry Part I
- CHEM 1012.03: General Chemistry Part II
- MATH 1000.03: Differential & Integral Calculus
- MATH 1010.03: Differential & Integral Calculus
- PSYO 1011 or 1021.03: Introduction to Psychology and Neuroscience I
- PSYO 1012 or 1022.03: Introduction to Psychology and Neuroscience II

Six credit hours of the total 24 credit hours must be 2000 level or above.

\*\*\* Open electives must include: (1) six credit hours from Language and Humanities or Sociology (see list in Language & Humanities section under Degree Requirements in the Academic Calendar); (2) at least nine credit hours must be at the 2000 level or above.

Students considering the Honours degree are required to take six credit hours of Math, and are required to have 30 credit hours of science electives, with 12 credit hours of those Science electives at the 2000 level or above by the end of their final year. For further information see section B. Bachelor of Science (Kinesiology) with Honours (P: 348).

### Stream Requirements

Students interested in focusing on Ergonomics; Fitness and Lifestyle; or Coaching Science at an advanced level will be guided into one of three specialty streams. A maximum of 12 students/year/stream will be selected, primarily on the basis of GPA. Students wishing to complete a stream should consult the student advisor.

The following is a list of required classes for each stream. Any classes over the 18 credit hours of required KINE electives can be counted as open electives:

#### Ergonomics Stream

- KINE 3414.03: Physical Fitness Assessment and Program Design
- KINE 3476.03: Principles of Ergonomics
- KINE 3482.03: Care & Prevention of Injuries
- KINE 4466.03: Advanced Biomechanics
- KINE 4577.03: Cognitive Ergonomics
- KINE 4578.03: Physical Ergonomics
- KINE 4588.03: Clinical and Occupational Kinesiology

#### Fitness & Lifestyle Stream

- KINE 3414.03: Physical Fitness Assessment and Program Design
  - KINE 3419.03: Application of Physiological Principles to Human Performance
  - KINE 3485.03: Psychology of Sport
- OR**
- LEIS 3492.03: Counselling for Health and Well-being
  - KINE 4108.03: Mind/Body Connections and Well-being
  - KINE 4412.06: Advanced Fitness Assessment Exercise Prescription and Lifestyle Counselling

#### Coaching Science Stream

- KINE 3320.03: Anatomical Basis of Human Movement
- KINE 3419.03: Application of Physiological Principles to Human Performance
- KINE 3430.03: Principles of Skill Acquisition
- KINE 3482.03: Care and Prevention of Injuries
- KINE 3485.03: Psychology of Sport
- KINE 3740.03: Coaching Science Seminar
- KINE 3741.03: Coaching Science Practicum
- KINE 4740.03: Advanced Coaching Science Seminar
- KINE 4741.03: Advanced Coaching Science Practicum
- MGMT 2401.03: Introduction to Marketing

### D. Bachelor of Science (Kinesiology) with Honours

Students who wish to complete the Honours Program may apply at the end of their third year of study. *Acceptance into the honours program is contingent upon the willingness of a faculty member to serve as the honours thesis advisor.* To be considered for admission into the program, students must have fulfilled the following requirements:

1. Completed MATH/STAT 1060.
2. Completed a minimum of 24 credit hours of science electives, including a math class in addition to the required MATH/STAT 1060. The other math credit can be chosen from any MATH/STAT class at Dalhousie except for

MATH 1001.03, 1002.03, 1110.03, 1120.03, or 1115.03. Of the 24 credit hours of science electives, at least six credit hours must be 2000 level or above.

3. Completed an upper level Kinesiology class (at the 3000 level or above) in the area in which the research will be undertaken (e.g., ergonomics, biomechanics, exercise physiology, neuromuscular physiology) with a grade of at least B;
  4. Obtained an overall GPA of 3.5 on the previous 60 credit hours of work;
  5. Completed HAHF 3100.03 (Research Methods) with a minimum grade of B.
- Application is made through the Honours Coordinator by April 1st of the student's third year.

The completed Honours Program requires 30 credit hours of Science electives, six credit hours of which may be taken in the 4th year. 12 credit hours must be at the 2000 level or above.

NOTE: Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

NOTE: Students accepted into the Honours program must complete KINE 4900.06. This requirement is in lieu of six credit hours of Open Electives listed as part of the requirements for the BSc (Kinesiology).

### Honours Conversion

Students who have graduated with a Bachelor of Science (Kinesiology) degree can apply for the Honours Conversion program. Before taking KINE 4900.06, they must have satisfied the requirements for the Honours Program. With the approval of the Honours Coordinator, it may be possible to take certain prerequisite classes concurrently with KINE 4900. Application is made through the Honours Coordinator (details in the BSc (Kinesiology) with Honours section). Acceptance into the Honours Conversion program can only be considered provided a faculty member has agreed to supervise the project.

### KINE Class Descriptions

#### KINE 1102.03: Physical Activity and Health.

This course is designed to introduce students to the connection between exercise and health. The lecture portion explores how exercise affects the most prevalent diseases currently afflicting our society. The laboratory portion is designed to help students develop a progressive exercise program for themselves based on their current fitness and strength levels as well as physical activity preferences.

FORMAT: Lecture 3 hours, lab 1.5 hours

RESTRICTION: Restricted to Kinesiology students only

#### KINE 1104.03: Foundations in Kinesiology.

The objective of this class is to introduce students to Kinesiology as a discipline and for them to learn about the sub-disciplines and content areas that contribute to the general body of knowledge in Kinesiology. In addition to understanding what these sub-disciplines are, students will gain an understanding of the interrelationships among these sub-disciplines and the types of careers that students can enter. Students will be exposed to discipline content as well as the methods of measurement and evaluation and the technology involved in each of the disciplines. Problem Based Learning (PBL) will be used as the class instruction method.

FORMAT: Lecture 3 hours, lab 1.5 hours

RESTRICTION: Restricted to Kinesiology students

#### KINE 1106.03: Philosophy and Ethics for Kinesiologists.

Physical activity figures prominently in many aspects of society and culture. Kinesiologists are in a unique position to bridge the gap between the scientific study of physical activity and the implementation of physical activity programs in public and professional contexts. This course develops core principles in philosophy and ethics to help the aspiring kinesiologist think about and evaluate their role in society. Debate and critical analysis will figure prominently in the course.

FORMAT: Lecture 3 hours, tutorial 1 hour

RESTRICTION: Restricted to Kinesiology students only

#### KINE 1108.03: Psychology and Physical Activity.

Physical inactivity is widely recognized as a lifestyle associated with considerable health risk. The challenge of increasing the level of physical activity in the population requires an in-depth understanding of the individual and environmental factors that either promote or inhibit regular activity. Accordingly, this introductory course will provide students with the fundamental knowledge of how psychological concepts are related to physical activity participation and health. The main focus is to provide (a) a basic understanding of various social-

psychological concepts and principles involved in health and exercise psychology, and (b) to see how these concepts and principles might be translated into promoting health and wellness via physical activity participation. Core concepts include the basics of psychology research, theories, motivation, adherence, and behaviour modification.

FORMAT: Lecture 3 hours, lab 1.5 hours

RESTRICTION: Priority given to Kinesiology students

### **KINE 2250.03: Interdisciplinary Class in Human Nutrition.**

This course focuses on the science of nutrition and the role of nutrition in health. We study how the body responds to different nutrients including protein, carbohydrate, fat, vitamins, minerals, and water. Current knowledge and controversies regarding the role of diet in disease and optimal health will be explored.

FORMAT: Lecture 3 hours

CROSS-LISTING: HPRO 2250.03

### **KINE 2310.03: Physiology of Exercise.**

This is an introductory class for students with a basic knowledge of anatomy and physiology. It concentrates on the respiratory, cardiovascular and neuromuscular systems in terms of their involvement during exercise, their adaptation to different types of training and how they limit performance during exercise in different environmental conditions.

FORMAT: Lecture 3 hours, lab 1.5 hours

PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, PHYL 1010.06 or PHYL 1000.06 or PHYL 2030.06

RESTRICTION: Restricted to Kinesiology students

### **KINE 2320.03: Kinesiological Anatomy.**

Neuroanatomical and musculoskeletal structures are presented and discussed in order to establish the understandings necessary for an in-depth analysis of human movement.

FORMAT: Lecture 3 hours, lab 1 hour

PREREQUISITE: ANAT 1020.03 or ANAT 1010.03 and PHYL 1010.06 or PHYL 1000.06 or PHYL 2030.06

RESTRICTION: Restricted to Kinesiology students

### **KINE 2430.03: Motor Control and Learning.**

This class deals with efficiency in completing movements to achieve a desired goal. It involves systematic changes in perception of the environment, decisions about what movements to make, as well as changes in how these movements are carried out. This class covers what is known about these processes as well as how this information can be applied.

FORMAT: Lecture 3 hours, lab 1.5 hours

RESTRICTION: Restricted to Kinesiology students

### **KINE 2465.03: Introductory Biomechanics.**

The purpose of this class is to introduce students to the area of biomechanics in human motion analysis. Students will be exposed to the concepts of kinematic and kinetic analysis of motion as well as muscle forces and moments of force as applied to the human system.

FORMAT: Lecture 3 hours, lab 1.5 hours

PREREQUISITE: PHYC 1300.06 or PHYC 1310.03

EXCLUSION: PHYC 2610.03

RESTRICTION: Restricted to Kinesiology students

### **KINE 3010.03: Introduction to Disability Management.**

Introduction to Disability Management is designed to provide students with a comprehensive understanding of an occupational injury, its impact and recovery processes. In particular, the class will expose students to levels of disability management in organizational systems, injury prevention and on-site management.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

CROSS-LISTING: DISM 3010.03

### **KINE 3200.03: Sociocultural Issues in Physical Activity.**

This course will provide students with an introduction to social theory, culture, and social psychology as applied to physical activity and sport. While recognizing that physical activity does not take place in a social vacuum, and that social content often influences how physical activity and sport are experienced, this course explores participation in, and perceptions of physical activity and sport according to gender, social class, age, sexual orientation, ethnic group and

nationality. The meaning of physical activity and sport in society, the role of Canadian public policy in promoting and facilitating participation in physical activity, and sport as an agent for social change will also be explored.

FORMAT: Lecture

### **KINE 3320.03: Anatomical Basis of Human Movement.**

The purpose of this class is to integrate information from movement sciences in order to analyze a broad spectrum of human activities, from simple single contractions to complex patterns of both fine motor and gross motor activities. Industrial, recreational, sport and fitness movements will be examined using an integrated digital video/8 channel EMG approach.

FORMAT: Lecture 3 hours

PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, PHYL 1010.06 or PHYL 1000.06 or PHYL 2030.06, KINE 1104.03, KINE 2310.03, KINE 2320.03, KINE 2430.03, KINE 2465.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3384.03: Physical Activity for Persons with Disabilities.**

The etiology and effects of the more prevalent disabling conditions form the bases of strategies for teaching, coaching and rehabilitating those affected. Emphasis is placed on the physical components of disability and the adaptation of the environment and equipment to facilitate learning of ADL skills and sport. A practicum is required.

FORMAT: Lecture/practicum 3 hours

PREREQUISITE: KINE 2320.03

### **KINE 3414.03: Physical Fitness Assessment and Program Design.**

Evaluation of various methods of physical fitness assessment, designing fitness programs for diverse populations and identifying motivational techniques with emphasis on the areas of cardiovascular fitness, weight reduction, pre- and post-natal programs and the elderly. In addition, laboratory work prepares the student for the Canadian Society for Exercise Physiology (CSEP) Certified Personal Trainer (CPT) theory and practical exams.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: KINE 2310.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3419.03: Application of Physiological Principles to Human Performance.**

This course focuses on physiological adaptations made by the body to different kinds of physical training. How selected factors can influence these adaptations is also examined. Students apply their knowledge of exercise physiology to athletic performance in a research project.

FORMAT: Lecture 3 hours, lab 1 hour

PREREQUISITE: KINE 2310.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3430.03: Principles of Skill Acquisition.**

This class will provide students with experience in applying the theoretical concepts of motor control and learning. Variables that impact on skill acquisition, practice and instruction will be examined and applied. Real world settings will be used to illustrate the application of the principles of skill acquisition.

FORMAT: Lecture 3 hours

PREREQUISITE: KINE 2430.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3440.03: Neural Basis of Sensory and Motor Function.**

This course will provide students with a comprehensive understanding of the neural systems that mediate sensory and motor functions in the human.

Proprioception, vision, somatosensation and vestibular sense will be explored in detail. Spinal reflexes, supraspinal pathways and cortical systems will be analyzed in detail, using case studies to illustrate key principles. Students will learn about the major classes of neurological movement disorders, from assessment to intervention. The course will build upon introductory courses in neural basis of behaviour.

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: KINE 2430 or PSYO/NESC 2470

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3476.03: Principles of Ergonomics.**

This class applies health and human performance concepts in kinesiology to the workplace. The class content includes identifying characteristics of work environments and the effect on performance and health, the design of effective workplaces and the use of training and educational programs to increase productivity and to reduce injuries.

FORMAT: Lecture 3 hours, lab 1.5 hours

PREREQUISITE: KINE 2310.03; KINE 2320.03; KINE 2430.03; KINE 2465.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3482.03: Prevention and Care of Injuries.**

An introduction into the fields of Sports Medicine and work-related musculoskeletal disorders, specifically the basic injury mechanisms, early recognition, care and prevention, pathology, tissue healing, emergency care, and basic principles of therapeutic exercise and modalities.

FORMAT: Lecture 3 hours, lab 1.5 hours bi-weekly

PREREQUISITE: ANAT 1020.03 or ANAT 1010.03, PHYL 1010.06 or 1000.06 or PHYL 2030.06, KINE 2320.03

RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3485.03: Psychology of Sport.**

This class offers an awareness and understanding of the phenomena involved in mental preparation in sport. It will systematically analyze, investigate and assess psychological skills, attributes and preparation in this area, and their application in other environments. Emphasis will also be placed upon personal experience and practical application.

FORMAT: Lecture/3 hours

PREREQUISITE: PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03 or permission of instructor

### **KINE 3500.03: Principles of Measurement and Evaluation.**

An introduction to the fundamentals involved in measurement and evaluation, including writing objectives, designing and administering tests, organizing and analyzing test results. Tests used to measure physical fitness, specific motor skills and health knowledge are investigated.

FORMAT: Lecture 3 hours, lab 1 hour

PREREQUISITE: KINE 1104.03, ANAT 1020.03 or 1010.03, PHYL 1010.06 or PHYL 1000.06 or PHYL 2030.06, STAT 1060.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 3740.03: Coaching Science Seminar.**

The purpose of this class is to provide students with the opportunity to learn about the fundamental principles and concepts of effective coaching planning and practice. Students will explore the role of the coach; the philosophical approaches to coaching pedagogy; the holistic attainment of individual potential; as well as the coaching code of ethics. Identification of issues related to risk management; developmental age; skill analysis and development; and physical preparation will also prepare students to meet the requirements for the Part A and Part B of the Theory component of the National Coaching Certification Programme (NCCP).

FORMAT: Lecture/group activities/3 hours

PREREQUISITE: HAHF 2000, KINE 1104, KINE 2310, KINE 2320, KINE 2430, KINE 2465

### **KINE 3741.03: Coaching Science Practicum.**

The purpose of this class is to provide students with the opportunity to observe, identify, apply and evaluate the fundamental principles and methodologies of coaching that are associated with the creation of an effective practice, and training environment, for the developing athlete. This will be facilitated through the completion of a twelve week placement with a school, or club, mentor coach.

FORMAT: Placement with mentor coach, 3 hours per week

PREREQUISITE: KINE 3740.03

### **KINE 4108.03: Mind/Body Connections and Well-being.**

The connection of mind and body as it relates to well-being is addressed through a survey of complementary (or alternative) healthcare practices including mind/body medicine (e.g., relaxation, meditation), therapeutic systems (e.g.,

chiropractic, homeopathy), herbology, bodywork techniques (e.g., massage, pressure point therapies), movement therapies and exercises (e.g. Alexander, yoga) and integrated medical systems (e.g., Chinese medicine, Ayurveda). Theoretical and scientific bases of each are covered and controversies surrounding these practices are addressed. This class is not designed to train students to be practitioners of any technique.

FORMAT: Lecture 3 hours

PREREQUISITE: HAHF 3100.03

RESTRICTION: Restricted to students enrolled in their final year of study in the School of Health and Human Performance or by permission of instructor

### **KINE 4412.06: Advanced Fitness Assessment, Exercise Prescription and Lifestyle Counselling.**

The objective of this class is to provide the student with advanced techniques to assess physical fitness, design physical activity/exercise programs and lifestyle counselling skills. In addition, this class will assist the student with the theoretical and practical knowledge required to write the Certified Exercise Physiological exam.

SIGNATURE REQUIRED

FORMAT: Lecture 3 hours, lab 1 hour

PREREQUISITE: ANAT 1020.03 or 1010.03, PHYL 1010.06 or PHYL 1000.06 or PHYL 2030.06, KINE 2310.03, KINE 3414.03, KINE 3419.03, CPR

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 4466.03: Advanced Biomechanics.**

This class takes a quantitative approach to understanding human movement from a mechanical perspective. Concepts presented in the class will be illustrated with examples taken from the areas of sport, exercise, activities of daily living, and ergonomics. Students will be introduced to several techniques used in biomechanics research.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: KINE 2465.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 4577.03: Cognitive Ergonomics.**

This class examines the role of cognition in injury prevention and human performance in the workplace. The class generally takes an information processing approach to consider the various topics and related issues. The class requirements include a written test on the content, a data collection project and a class presentation.

FORMAT: Lecture 3 hours

PREREQUISITE: KINE 3476.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 4578.03: Physical Ergonomics.**

This advanced level class examines the application of the physical sciences in the productivity, health and safety of the workplace. The class will consider the design of work and the workplace from a physical science perspective. Due emphasis will be placed on the importance of the understanding of, and designing for, the capacity and capabilities of the human operator. When possible, the class will consider the present national and international standards in health and safety related to the content areas. The class requirements include a written test on the content, a project and a class presentation.

FORMAT: Lecture 3 hours, lab 1 hour as required

PREREQUISITE: STAT 1060.03 or STAT 2060, KINE 2310.03, KINE 2320.03, KINE 2465.03, KINE 3476.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### **KINE 4588.03: Clinical and Occupational Kinesiology.**

This advanced level class examines the role that Kinesiology can play in clinical and occupational settings. In particular, the class will expose the student to an integrated approach in human motion analysis with a primary focus on the use of electromyography and its relationship to other biomechanical and physiological measures. Due emphasis will be placed on the importance of understanding the strengths and weaknesses of present laboratory and field measures of human motion. The class requirements include a written test on the content, a project and a class presentation.

FORMAT: Lecture 3 hours, lab 1 hour

PREREQUISITE: KINE 3414.03, KINE 4466.03

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### KINE 4600.03: Practicum in Kinesiology.

Students take part in a supervised practical experience that links classroom knowledge to professional practice. Under the supervision of a kinesiologist, fitness or training professional, physical or occupational therapist, ergonomist or other related professional, students gain hands-on experience in a fitness/wellness/allied health field. Students document and critically evaluate their experiences.

FORMAT: Field placement/seminar

PREREQUISITE: KINE 1104.03, KINE 2310.03, KINE 2320.03, KINE 2430.03, KINE 2465.03, HAHP 2000.03, HAHP 3100.03, KINE 3500.03, and at least three 3000 or 4000 level kinesiology courses.

RESTRICTION: Restricted to Kinesiology students enrolled in their final year of study in the School of Health and Human Performance.

### KINE 4700X/Y.06/4701.03/4702.03: Senior Seminar.

This class is tailored for small groups of students. It is designed to allow students to focus on a particular issue or set of related issues, that are not part of the regular curriculum. Part of this class could entail a practicum experience. The class will only be offered if a faculty member is available to supervise the work.

NOTE: Students taking KINE 4700 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Seminar

RESTRICTION: Restricted to Kinesiology students in their final year of study.

### KINE 4740.03: Advanced Coaching Science Seminar.

The purpose of this class is to provide students with the opportunity to learn about the advanced principles and concepts of effective coaching planning and practice. Students will design, quantify and monitor a season training plan using PLAN software, addressing the performance factors of speed, strength, suppleness, stamina and skill appropriate to the maturational level of the athlete, as well as the integration of psychological preparation and competitive strategies. The class will also prepare students to meet the requirements for Level Three of the Theory component of the national Coaching Certification Programme (NCCP).

FORMAT: Lecture/group activities/3 hours

PREREQUISITE: KINE 3740.03 and KINE 3741.03, Level 1 Technical, National Coaching Certification Programme. (Students are required, at their own expense, to pursue this certification externally.)

### KINE 4741.03: Advanced Coaching Science Practicum.

The purpose of this class is to provide students with the opportunity to observe, identify, apply and evaluate the advanced principles and methodologies of coaching that are associated with the creation of an effective practice, and training environment, for the developing athlete. This will be facilitated through the completion of a twelve week placement with a varsity, school, or club, mentor coach. Students will also apply an intervention strategy developed to enhance a controllable specific performance factor in a sport of choice.

FORMAT: Placement with mentor coach, 3 hours

PREREQUISITE: KINE 4740.03

### KINE 4800X/Y.06/4801.03/4802.03: Independent Study.

Senior undergraduate students develop an area of specialization under the direction of a faculty member.

FORMAT I: Experimental research (laboratory experiment) or other research study, 3 or 6 hours

FORMAT II: Literature research, 3 or 6 hours

NOTE: Students may take no more than a total of 6 credit hours of independent studies

PREREQUISITE: The same as those for experimental research independent studies described under FORMAT I above, except that classes in research methods and statistics are not required

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

### KINE 4900X/Y.06: Honours Thesis.

Students carry out an independent piece of original research in the respective field of expertise of their supervisor. Students become familiar with the experimental procedures involved in data collection, analysis, literature searches and scientific writing.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Independent research.

RESTRICTION: Restricted to Kinesiology honours students.

## E. Bachelor of Science (Recreation) - Therapeutic Recreation

### Program Description

Therapeutic Recreation involves the delivery of change-oriented services to individuals with disabilities, illness and other limitations, with the focus on increasing quality of life through leisure and recreation involvement. The graduates of the Therapeutic Recreation degree will be skilled in the areas of: disability and illness, leisure theory, assessment, planning (program and client planning), program implementation and evaluation, and documentation. Graduates will find employment in both traditional clinical settings such as rehabilitation facilities, psychiatric hospitals and nursing homes, and in community settings such as community mental health centres or associations for community living, etc.

### Objectives

The general objectives of the program are:

1. To provide the student with a broad educational exposure to various social science and humanities disciplines (e.g., Psychology, Sociology, Economics, Political Science, Anthropology, History);
2. To familiarize students with current social science-based research methods and statistics;
3. To provide the student with the necessary skills and knowledge for entry into the roles of leadership, advocacy, constancy and education in recreation and leisure services;
4. To provide the necessary background to enable students to pursue graduate work in leisure studies, management studies or the social sciences and humanities.

### Program of Study

On admission into the BSc (Recreation) program, all students will be issued a Program of Studies Form. It is the responsibility of the student to ensure that all of the class requirements for the degree as outlined on the form are completed for graduation.

### Required Classes BSc (Recreation) - Therapeutic Recreation

• HAHP 2000.03	3
• HAHP 3000.03	3
• HAHP 3100.03	3
• ANAT 1020.03	3
• PHYL 1010.06	6
• KINE 3384.03	3
• LEIS 1127.03	3
• LEIS 2127.03	3
• LEIS 2130.03	3
• LEIS 2361.03	3
• LEIS 2384.03	3
• LEIS 3127.03	3
• LEIS 3296.03	3
• LEIS 3426.03	3
• STAT 1060.03/MATH 1060.03	3
• LEIS 3492.03	3
• LEIS 4365.03	3
• LEIS 4597.15	15

### Required Arts & Social Science Classes

• PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03	6
• PSYO 2220.03	3
• SOSA 1000.06 or SOSA 1050.06 or SOSA 1200.0	6

### Therapeutic Recreation Electives

Two of the following:

• LEIS 4482.03	3
• LEIS 4512.03	3
• LEIS 4540.03	3
• LEIS 4563.03	3
• Designated Elective*	3
• Open Electives**	27

\* Designated electives can be chosen from the classes in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions or Interdisciplinary Health Professions, Health Services Administration or Social Sciences.

\*\*12 of the 27 credit hours of the open electives must be 2000 level or above.

NOTE: Students should consult the NCTRC website (<http://www.NCTRC.org>) for CTRS Certification requirements.

## F. Bachelor of Science (Recreation)/Bachelor of Management

### Program Description

The curriculum of this combined program was developed in response to guidance from alumni and practicing professionals in the field — it was clear that while graduates entering the field of recreation administration needed the strong grounding in the recreation discipline, they also needed more management skills. The Faculty of Management's Bachelor of Management degree emphasizes an orientation to management in the public and non-profit sector. This combined degree program enhances career options of future recreation students.

The Bachelor of Science (Recreation)/Bachelor of Management is a five-year program comprising 25 full credits (50 half credits). Upon completion of this program, the successful student graduates with a Bachelor of Science (Recreation) degree and a Bachelor of Management degree.

### Objectives

1. To provide the student with a broad educational exposure to various social science and humanities disciplines (e.g., Psychology, Sociology, Economics, Political Science, Anthropology, History);
2. To familiarize students with current social science-based research methods and statistics;
3. To provide the student with the necessary skills and knowledge for entry into the professional roles of leadership, advocacy, education and service delivery in recreation.
4. To provide the necessary background to enable students to pursue graduate work in leisure studies, management studies, or the social sciences and humanities.

### Required Classes - Bachelor of Science (Recreation)/Bachelor of Management

#### Required Health and Human Performance Classes

• HAHP 2000.03	3
• HAHP 3000.03	3
• HAHP 3100.03	3
• LEIS 1127.03	3
• LEIS 2127.03	3
• LEIS 2361.03	3
• LEIS 2384.03	3
• LEIS 3296.03	3
• LEIS 3360.03	3
• LEIS 3362.03	3
• LEIS 3370.03	3
• LEIS 4362.03	3
• LEIS 4597.15	15

#### Required Management Classes

• MGMT 1000.03	3
• MGMT 1001.03	3
• MGMT 1501.03	3
• MGMT 1601.03	3
• MGMT 1702.03	3
• MGMT 2101.03	3
• MGMT 2303.03	3
• MGMT 2304.03	3
• MGMT 2401.03	3
• MGMT 2702.03	3
• MGMT 2801.03	3
• MGMT 2803.03	3
• MGMT 3201.03	3

• MGMT 3501.03	3
• MGMT 3602.03	3
• MGMT 4001.03	3

### Other Required Classes

- ECON 1101.03
- ECON 1102.03
- SOSA 1000.06 or SOSA 1050.06 or SOSA 1100.06 or SOSA 1200.06
- Designated Elective (6)\*
- Open Electives (27)\*\*
- MGMT/LEIS electives (06)\*\*\*

\*Designated electives can be chosen from classes in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions, or Interdisciplinary Health Professions, Health Services Administration, or Social Sciences.

\*\*The equivalent of 27 credit hours chosen from all classes offered in the University. Twelve of the 27 credit hours must be 2000 level or above.

\*\*\*The equivalent of 6 credit hours must be chosen from any MGMT or LEIS class.

NOTE: Students must complete a six credit hour writing requirement. This can be completed by taking either SOSA 1050 for the introductory Sociology requirement in year one or by choosing six credit hours from the list of Writing Classes within the College of Arts and Science Degree requirements.

### Internship Requirement (LEIS 4597.15)

The equivalent of 2.5 (five half credits) fulfills the internship requirement during the student's final year.

## G. Bachelor of Science (Recreation) with Honours and Bachelor of Science (Recreation) with Honours/Bachelor of Management

Students wishing to be considered for entrance into the Honours Program must meet the minimum requirements listed below. Acceptance to the program after meeting these requirements will depend on a faculty member being willing to supervise the honours thesis.

1. Completed a minimum of 75 credit hours towards the Bachelor of Science (Recreation) degree. Normally students will have completed five semesters prior to beginning the honours component of the program.
2. Obtained a GPA of 3.5 based on the previous 45 credit hours of work.
3. Complete HAHP 3100: Research Methods with a minimum grade of B.
4. Completed a 3000 level or higher LEIS class most related to the area of research.
5. Completed the Financial, Technical, Equipment and Space Support Form indicating the financial needs of the thesis can be met.

Application is made by November 15th of the student's third year (for Therapeutic Recreation students) and fourth year (for Recreation Management students).

NOTE: Students accepted into the Honours program must complete LEIS 4101.03 and LEIS 4102.03. These six credit hours may be attributed as open electives or as recreation-related electives.

The Honours Program is part of the 120 credit hours required for the Bachelor of Science (Recreation) degree, or part of the 150 credit hours for Recreation Management.

Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

### Honours Conversion

Students who have graduated with a Bachelor of Science (Recreation) degree can apply for the Honours Conversion program. Before taking LEIS 4101.03 and LEIS 4102.03, they must have satisfied the requirements for the Honours Program. With the approval of the Honours Coordinator, it may be possible to take certain pre-requisite classes concurrently with LEIS 4101.03 and LEIS 4102.03. Application is made through the Honours Coordinator (details in the BSc (Recreation) with Honours section). Acceptance into the Honours Conversion program can only be considered provided a faculty member has agreed to supervise the project.

## LEIS Class Descriptions

### LEIS 1127.03: Foundations of Recreation.

An understanding of the place and potential of leisure for individual Canadians and Canadian society is essential if we are to move beyond the conviction that only labor is to be valued. This class introduces students to concepts including play, sport, recreation and leisure; how they are viewed and valued in our society; and how they relate to health and well-being. The content provides an overview of leisure service delivery, public access to leisure opportunities, variations in leisure involvement due to social and cultural differences, and issues that are important for future leisure service professionals. Students will have the opportunity to increase writing, verbal communication and computer skills, and learn how to use the library effectively. Participation in a professional conference is a component of the learning experience of this class. The students are required to participate in an Orientation to the recreation program that will provide the environment that will create a learning community for the next three to four years of their education experience. Students are also required to join a recreation professional group while enrolled in this class.

FORMAT: Lecture/discussion 3 hours

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to health Professions students.

### LEIS 1217.03: Leisure Theory.

This class will provide an introductory analysis of leisure in modern society from sociological, psychological, and social psychological perspectives. The role of leisure in the everyday life of individuals will be discussed in terms of social relationships, life stage, gender, the family, work, attitudes and motivations, etc. In addition, since the role and function of leisure is affected by political, economic, and cultural systems, a main-level perspective on leisure will also be provided by focusing on such topics as the influence of modern technology, the commercialization of leisure, the influence of social institutions and of the mass media.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: SOSA 1000.06 or SOSA 1200.06 or PSYO 1021.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1012.03; LEIS 1127.03

RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 2130.03: Foundations and Concepts of Therapeutic Recreation.

This class provides the conceptual foundation for the study of therapeutic recreation. Philosophical, conceptual and historical issues related to the delivery of therapeutic recreation services will be discussed in terms of health and health promotion. The class will also involve the examination of professional issues such as standards of practice, ethics, quality assurance, etc.; the scope of therapeutic recreation service delivery; and service delivery settings. Finally, students will be exposed to the variety of therapeutic recreation settings through site visits and observation. Students are required to join a therapeutic recreation professional group or provide the instructor with documentation on their current membership in a therapeutic recreation organization.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: LEIS 1127.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 2361.03: Program Planning.

Designing, planning, implementing and evaluating programs is fundamental to both leisure services and health education. Both disciplines develop programs to enhance the quality of life for individuals, groups and communities. This class reviews the principles of program planning, various program planning models, and examples of programs that are pertinent to leisure services and health education/promotion. The planning process will include issues such as targeting specific populations, scanning for needs and assets, partnering, managing stakeholder relationships, and evaluation.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: LEIS 1127.03

CROSS-LISTING: HPRO/HEED 2361.03

RESTRICTION: Restricted to Bachelor of Science (Recreation), Bachelor of Science (Recreation)/Bachelor of Management and Bachelor of Science (Health Promotion) students or with permission of the instructor.

### LEIS 2384.03: Leisure and Individuals with Disabilities.

An introduction of current philosophy, issues and practices relating to leisure opportunities for persons who, due to physical, mental, and social conditions, have difficulty gaining access to community services. An analysis of leisure behaviours, attitudes and attitudinal development, barriers, and needs of individuals with various disabilities and members of the community will be provided throughout the class. Issues related to mainstreaming, integration and normalization will be themes throughout the class. A practicum is required in order to facilitate hands-on experience with individuals with disabilities.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03

RESTRICTION: Restricted to School of Health and Human Performance students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 3127.03: Leisure Education.

This class is designed to provide students with the knowledge and skills required to facilitate leisure education interventions designed to bring about desired changes in the leisure behaviour of individuals with disabilities. While the focus of the class is on leisure education, the overarching concepts of health, wellness, and health promotion will be incorporated into the class material. The class will address the following three broad areas: a) concepts and models of leisure education, b) content related to specific skills required for leisure involvement [leisure awareness, values clarification, social skills development, friendship development, stress management, assertiveness, leisure resources, decision making, etc.] and c) instructional and interactional techniques used in leisure education. In addition, students will have the opportunity to plan and facilitate leisure education experiences in class.

FORMAT: Lecture/discussion/lab 3 hours

PREREQUISITE: LEIS 1127.03; LEIS 2130.03; LEIS 2361.03; LEIS 2384.03

RESTRICTION: Restricted to Recreation students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 3296.03: Leadership and Group Dynamics.

This class will focus primarily on the function of leadership and the process of small group dynamics, as applied to recreation and health education service delivery. Emphasis will be placed on the achievement of individual and group goals in health related settings. In addition, effective leadership of individuals and groups within a community, through direct experience and observation, will be emphasized.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: LEIS 1127.03 or HPRO 1195.03

RESTRICTION: Restricted to Health Promotion and Recreation students.

### LEIS 3360.03: Analysis of Leisure Service Delivery Settings.

Reflections on the twentieth century reveal tremendous changes in the way people live. These changes have impacted work, family structure, and mental and physical well-being, and signal the importance and need of opportunities for leisure pursuits. Leisure is one of life's greatest gifts — an important dimension influencing the quality of an individual's life. Similarly, leisure enhances the quality of life available to a society or culture. The growth of the leisure industry reflects the ever increasing value that individuals are placing upon leisure in their lives. It is essential for the student of recreation management to know and understand that leisure delivery and life satisfaction are dependent upon effective organizational analysis and the quality of services provided. This class presents historical and contemporary concepts of the diverse types of agencies and institutions providing leisure services in North America. It will review the nature and effectiveness of services provided by various leisure service agencies in the private, private non-profit, commercial recreation, travel and tourism sectors of the leisure industry. It will seek to (a) evaluate the political, social, physical and economic impact on each of the sectors, (b) determine ways of assessing the assurance of quality service delivery, and (c) find ways of motivating improvements in the identifying and meeting of consumers' leisure needs, today and in the future. Consideration is also given to organizational structure and governance within leisure service settings, and the incorporation of the "benefits based approach" to leisure service delivery.

FORMAT: Lecture/discussion/case study/agency analysis/3 credit hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS/HPRO/HEED 2361.03, MGMT 1000.03, MGMT 1001.03, PUAD 2801.03

RESTRICTION: Restricted to Bachelor of Science (Recreation)/Bachelor of Management students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 3362.03: Financial Management and Fundraising.

This course builds on previous functions of management such as program planning and analysis of leisure services by further focusing on the budgeting process, cost analysis, pricing of services, resource inventory and management, fundraising and grant writing. Strategic analysis of economic trends in understanding financial management, purchasing, inventory control, fiscal policy and accountability, and financial auditing will also be examined. Course content will be presented through lecture, case study analysis, budget, and grant proposal development. Such information will be applicable to management of public, private, commercial and/or community non-governmental recreation, health, and/or sport organizations.

PREREQUISITE: LEIS/HPRO/HEED 2361.03, MGMT 2101.03

EXCLUSION: LEIS 4361.03

RESTRICTION: Restricted to Bachelor of Science (Recreation)/Bachelor of Management students. Others with permission of the instructor.

### LEIS 3370.03: Recreation Facility Design and Operations Management.

This class will emphasize the management functions of planning, organizing, and coordinating as it looks at the role of the manager in effectively managing recreation physical facilities and environmental resources. The class will review the new and emerging trends in facility design and cover the management process in the planning, and construction of indoor and outdoor recreation facilities, parks, playgrounds and pools. The class content will also focus on the core operational management competencies essential for the management of recreational facilities: namely, organizational structure and staffing; facility operations and maintenance, control and security; risk management and litigation; equipment procuring and inventory control.

FORMAT: Lectures/guest lectures/facility analysis/practicum experience, 3 credit hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS/HPRO/HEED 2361.03, INFO 1601.03, MGMT 2303.03 and MGMT 2304.03

RESTRICTION: Restricted to Bachelor of Science (Recreation)/Bachelor of Management students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 3426.03: Therapeutic Recreation Service Delivery.

Issues related to the delivery of therapeutic recreation services will be the focus of this class. In particular, the following topics will be addressed: documentation in therapeutic recreation; client assessment issues; therapeutic recreation program planning (identifying client needs, selecting appropriate interventions, task and activity analysis, planning change-oriented programs, writing behavioural objectives, etc.); program and client evaluation; written plans of operation. The final component of this class will be the opportunity to work with individuals with disabilities in a program planning context.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2130.03, LEIS/HPRO/HEED 2361.03, LEIS 2384.03, KINE 3384.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 3492.03: Counselling for Health and Well-being.

This class is designed to provide students with the knowledge and skills required to utilize effective communication and helping behaviours which are designed to facilitate change in the leisure behaviour of individuals with disabilities or other health problems. While the focus of the class is on facilitation techniques, the overarching concepts of quality of life, health, and health promotion will be incorporated into the class material. The class will address four broad topical areas: a) concepts of quality of life, health, health promotion, and lifestyle; b) concepts and models of helping; c) communication skills and therapeutic techniques; d) lifestyles issues related to health and well-being. Finally, students will have the opportunity to practice counselling techniques through role playing and simulations.

FORMAT: Lecture/discussion/lab 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 4101.03: Advanced Research Methods.

The purpose of this course is to provide students with an opportunity to develop their understanding of research methodologies and apply their knowledge to a specific recreation/leisure studies topic. Theories and methodologies will be

discussed with relevance to leisure studies. The students will develop an honours thesis and ethics proposal as part of the course requirements.

PREREQUISITE: LEIS 1127.03, HAHF 3100.03

RESTRICTION: Restricted to Recreation honours students.

### LEIS 4102.03: Honours Thesis.

The purpose of this course is to develop research skills by conducting an independent research project and writing a formal research report based on the findings. Students will demonstrate their knowledge and ability in research methodologies, data collection, analysis, and formal academic writing.

PREREQUISITE: HAHF 3100.03 and LEIS 4101.03 with a grade of B or better in each, and ethical approval by August 1.

RESTRICTION: Restricted to Recreation honours students.

### LEIS 4362.03: Recreation Entrepreneurship and Special Events.

Through lecture, discussion, and case study analysis, this class will provide the student with advanced insight and applied experience in selective people-based management concepts and functions of directing, coordinating and staffing that will be useful to the potential or practicing manager in sport administration, community, or commercial leisure and health service delivery agencies. In particular, a focus will be directed towards special event management and planning, and marketing and business plan development.

PREREQUISITE: LEIS/HPRO/HEED 2361.03, LEIS 3362.03, MGMT 2303.03, MGMT 2401.03

EXCLUSION: LEIS 3361.03

RESTRICTION: Restricted to Bachelor of Science (Recreation)/Bachelor of Management students. Others with permission of the instructor.

### LEIS 4365.03: Administrative Concepts in Therapeutic Recreation.

This class emphasizes the essentials of management that are pertinent to being an effective practicing therapeutic recreation manager in either a clinical setting, a healthcare facility, or a community-based leisure or health service setting. After introducing the student to the theory and discipline of management and related ethical perspectives, the class will examine selective administrative functions in each of the areas of (a) Operational Management, i.e. budgeting and financial management, sources of revenue generation and grant writing, decision making, problem solving and conflict management, etc.; (b) Human Services Management, i.e., staff recruiting and selection, staff training and development, effective communication, motivation, performance appraisal, and volunteer management, etc. (c) Consumer Management, i.e., quality service management, practitioner performance, legal liability and risk management, etc.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students. Others by permission of instructor, with priority to Health Professions students.

### LEIS 4482.03: Therapeutic Recreation Specialization: Youth at Risk.

Youth as a sector of society and as a stage in human development is of great significance in the study of leisure. Particularly relevant is the issue of unemployment and underemployment which has created a number of problems such as low self-worth, alcohol abuse, teenage suicide, etc. There are programs being developed to address these problems, many of which are experientially based, e.g., Outward Bound, study service, service learning and national service. This class will study the phenomenon of youth development in the light of experiential educational approaches. During the class there will be an expectation that the students will meet and interact with a variety of youth. A practicum is included.

FORMAT: Lecture/practicum 3 hours. discussion

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, PSYO 2220.03

RESTRICTION: Bachelor of Science (Recreation) students in their final two years of study.

### LEIS 4512.03: Therapeutic Recreation Specialization: Physical and Developmental Disabilities.

This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to clients with physical and developmental disabilities. Initially, issues related to etiology, characteristics, and treatment needs of clients with various physical and developmental disabilities will be discussed. The



implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to physical and developmental disabilities will be examined, including assessment procedures, program intervention techniques, etc. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, KINE 3384.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

### **LEIS 4540.03: Therapeutic Recreation Specialization: Addiction and Mental Illness.**

This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to clients with mental health problems and/or addiction. Initially, issues related to etiology, characteristics, and treatment needs of clients with addiction and mental illness will be discussed. The implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to mental illness and addiction will be examined, including assessment procedures, program intervention techniques, etc. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, PSYO 2220.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

### **LEIS 4563.03: Therapeutic Recreation Specialization: Aging and Lifestyle.**

This class is an upper level therapeutic recreation specialization class which takes the concepts and skills learned in the previous therapeutic recreation classes and applies them specifically to older adults. Initially, issues related to theories of aging, characteristics of older adults and pre-retirement planning will be discussed. The implications of these characteristics for therapeutic recreation services and the various service settings in which therapeutic recreation services are provided will then be examined. Finally, the therapeutic recreation service delivery issues specific to older adults will be examined, including assessment procedures, program intervention techniques, documentation and efficacy of therapeutic recreation service delivery for this population. Site visits, observations, and simulations will be used to facilitate the application of this material.

FORMAT: Lecture/discussion/practicum 3 hours

PREREQUISITE: LEIS 1127.03, LEIS 2127.03, LEIS 2130.03, LEIS 2384.03, LEIS 3127.03, LEIS 3426.03, LEIS 3492.03, PSYO 2220.03

RESTRICTION: Restricted to Bachelor of Science (Recreation) students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

### **LEIS 4597.15: Recreation Internship.**

This class is an extended professional development internship during the final year of study. It requires the completion of a minimum 16 week, 35 hours per week internship in a recreation service delivery agency. The internship involves an in-depth agency analysis and the completion of a special service project for the agency, as well as several other academic projects. Details of the goals and specific procedures for the internship are contained in the current Internship Handbook.

FORMAT: Internship - 16 weeks in the Fall term (September-December), or

PREREQUISITE: Completion of all other program requirements and approval of the Student Services Administrator. Standard First Aid and Level C CPR certifications.

RESTRICTION: Restricted to Bachelor of Science (Recreation), and Bachelor of Science (Recreation)/Bachelor of Management students in their final term.

### **LEIS 4700.06/4701.03/4702.03: Senior Seminar.**

This class is tailored for small groups of students. It is designed to allow students to focus on a particular issue or set of related issues, that are not part of the regular curriculum. Part of this class could entail a practicum experience. The class will only be offered if a faculty member is available to supervise the work.

FORMAT: Seminar

RESTRICTION: Restricted to Recreation students in their final year of study

### **LEIS 4800X/Y.06/4801.03/4802.03: Independent Study.**

Senior undergraduate students develop an area of specialization under the direction of a faculty member.

NOTE: Students taking 4800X/Y.06 must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Library survey or other research study 3 or 6 credit hours

PREREQUISITE: A GPA of at least 3.00, a "B" grade in an earlier class in the area in which the project will be conducted (where applicable), consent of advisor, consent of faculty. Intention to register for an Independent Study should be confirmed with the undergraduate secretary by April 1st of the preceding academic year. NOTE: Students may take no more than 6 credit hours of independent studies.

## Health Professions, Interdisciplinary

### HLTH 4040.03: Health Law for Non-Lawyers.

The objective of this course is to provide the non-law student with an overview of significant legal issues that arise in the healthcare context. The first part of the course covers an introduction to the Canadian legal system, the Canadian healthcare system from a legal perspective, and the nature of legal proceedings. The second part focuses on issues of particular relevance in the provision of health services; these issues may include: practice management; confidentiality and disclosure of information, including whistle blowing; consent to treatment, including issues regarding minors and those lacking capacity; mental health law; and the regulation of drugs. Finally, the third part addresses contemporary issues in health law such as cost containment, issues of care at the end of life, and the impact of human rights legislation on healthcare services and delivery.

FORMAT: Fall term BLS

RESTRICTION: Health Profession students only

## Health Sciences

Location: School of Health Sciences, VG Site  
6th Floor, Bethune Building  
1276 South Park Street  
Halifax, NS B3H 2Y9  
Telephone: (902) 473-5510  
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Email: [health.sciences@dal.ca](mailto:health.sciences@dal.ca)  
Website: <http://www.dal.ca/shs>

### Dean

Webster, W. G., PhD

### Acting Director

Gillis, C., RTR, CRGS, CRVS, CRCS, BHSc, MAEd (MSVU)

### Administrative Staff

Fitzgerald, I., Administrator  
Mahalik, A., Clinical Coordinator  
Hubley, M., Admissions Officer

### Associate Professor

Gilbert, R., BSc, MSc, PhD (Dalhousie)

### Adjunct Assistant Professors

Gillis, C., RTR, CRGS, CRVS, CRCS, BHSc, MAEd (MSVU)  
Spurr, K., BSc, RRT, MHI (Dalhousie), FSCRT

### Adjunct Lecturers

Avery, J.  
Chauder, S.  
Fader, K.  
Gardiner, S.  
Gilby, J.  
Gunn, C.  
Hill, L.  
Lea, S.  
MacDonald, B.  
Martell, R.  
Munro, P.  
Murphy, C.  
Pendergast, N.  
Perrin, C.  
Scott, T.  
Sharp, R.

## I. Bachelor of Health Science Degree Program

The BHSc program is a four-year degree program that provides an integrated class of studies including both theory and practice. There is also a post-diploma offering for practising professionals.

The program offers education in six professional streams:

- Diagnostic Cytology
- Diagnostic Medical Ultrasound
- Medical Laboratory Technology (Post-Diploma Only)
- Nuclear Medicine Technology
- Radiological Technology
- Respiratory Therapy

Students follow an integrated curriculum that includes core, interdisciplinary and discipline-specific classes. Clinical practica are included in each year of study requiring a full-time commitment in the May-June time period.

In order to accommodate all third year Respiratory Therapy students in required clinical rotations, classes for this group only will begin on August 28, 2013.

Dalhousie University confers a Diploma in Health Science (for Diagnostic Cytology, Diagnostic Medical Ultrasound, and Respiratory Therapy only) and a Bachelor of Health Science (Specific Discipline) degree. The programs leading to these credentials are accredited. The University *does not* determine eligibility for certification/ registry exams. Rather, through accreditation, the University ensures that graduates of its programs meet the eligibility criteria set by the professional associations. Diagnostic Cytology, Diagnostic Medical Ultrasound (General, Cardiac and Vascular), Nuclear Medicine and Radiological Technology are accredited by The Canadian Medical Association. Respiratory Therapy is accredited by The Council on Accreditation for Respiratory Therapy Education.

### A. For the professions of Diagnostic Cytology, Diagnostic Medical Ultrasound, and Respiratory Therapy

Students are eligible to write the certification/registry exam upon successful completion of Year 3, when all requirements for a diploma exit have been met. They are eligible even if they choose not to exit with a diploma. Students should check with faculty concerning examination dates.

Following degree completion, students in Diagnostic Medical Ultrasound may be eligible to write certification /registry exams in the specialized areas of cardiac and vascular sonography.

### B. For the professions of Nuclear Medicine Technology and Radiological Technology

Students are eligible to write the CAMRT certification exam upon successful completion of the Bachelor of Health Science degree.

## II. The Professions

### Diagnostic Cytology

A cytotechnologist is a health professional who specializes in detecting and diagnosing cancer at a cellular level. A cytotechnologist requires expertise and precise diagnostic skills to identify and accurately evaluate minute changes within cells to provide a diagnosis. A cytotechnologist integrates scientific knowledge, cellular morphology and clinical history to formulate a cytological report. The cytotechnologist must be comfortable with using a compound microscope as this is how s/he must spend a great portion of their day. The cytotechnologist has limited patient contact, but must communicate effectively with other health care professionals in discussing results, procedures and/or policies and practices.

### Diagnostic Medical Ultrasound

The Diagnostic Medical Sonographer utilizes high frequency sound waves, specialized equipment, and other diagnostic techniques to collect detailed information on the anatomical, physiological and pathological state of the patient. This health professional is able to produce and evaluate ultrasound images and related data that are used by specialized physicians to render a medical diagnosis. Sonographers typically provide technical expertise in abdomen, superficial structures, obstetrics/gynecology, vascular and cardiac applications.

### Nuclear Medicine Technology

A nuclear medicine technologist is a health professional responsible for performing diagnostic and therapeutic nuclear medicine procedures. The technologist administers radiopharmaceuticals to the patient most often by way of an intravenous injection while adhering to proper drug preparation techniques, radiation protection guidelines and patient care practices.

The technologist operates a variety of radiation detection equipment, one of which is the gamma camera, in order to provide an assessment of the distribution of the radiopharmaceutical within the patient. By using various computer programs, the technologist analyzes the data to obtain the best information from the study which is then interpreted by a nuclear medicine physician.

Optimum operation of all equipment used in the practice of nuclear medicine is accomplished by the technologist, through the accurate implementation of a quality control program involving the assessment of radiation detection equipment, gamma cameras, and computers.

### Radiological Technology

The radiological technologist is a health professional who utilizes radiation to produce images of patient's anatomical structures. The quality of the image is

critical as it will assist the physician in the diagnosis/treatment of the disease or injury.

The technologist must be knowledgeable and skilled in a wide variety of procedures as all body systems are imaged. Responsibilities include (but are not limited to) positioning the patient for radiologic procedures, care of the patient, appropriate choice and use of equipment, image manipulation, selection of radiation exposure factors, implementation of radiation protection techniques and critique of the radiograph. Whatever the procedure, the technologist must be adaptable to meet challenges presented by the patient's physical or psychological state.

### Respiratory Therapy

A respiratory therapist is a health professional who assists in the diagnosis, treatment and health promotion of patients with cardio-respiratory disorders through therapeutic means. Respiratory therapists provide cardio-pulmonary support, including cardio-pulmonary resuscitation, mechanical ventilation support, administration of medical gases, aerosolized medications, humidity therapy and airway management. The respiratory therapist also performs respiratory assessments of patients, tests and monitors cardio-pulmonary function, assists with the transport of high-risk patients and participates in home care programs.

The therapist plays an important role in the education of patients, families and hospital staff. The therapist is also involved in the maintenance, repair, testing and evaluation of respiratory equipment. The therapist must be able to provide competent assistance in cardio-pulmonary research.

## III. Pre-Enrolment Requirements

**Immunization (current detailed version of policy can be found at <http://www.dal.ca/shs> (current students, Policies & Guidelines))**

1. It is a regulation of the Faculty of Health Professions and affiliated health care agencies that all students must be immunized. This has been instituted to protect patients as well as to protect students and employees.
2. Upon entering the program students must show certification for current immune status against tetanus, diphtheria, measles, mumps, rubella, rubeola and varicella (chickenpox). Evidence of tuberculin testing (Mantoux – two step method) must also be shown. It is also recommended that students be immunized for influenza on an annual basis.
3. The Hepatitis-B vaccination is required for all students. It is a series of three injections: the second and third shots are administered one month and six months after the first injection. The vaccination lasts for several years. This cost (approximately \$105, subject to change) must be paid by the student. The School of Health Sciences arranges for a clinic where Hepatitis-B immunization shots are administered by University Health Services nurses. Information regarding these clinics and payment will be mailed to all students prior to the beginning of each academic year.

### BLS-HCP Certification

- All BHSc students must show proof of Healthcare Provider BLS (in accordance with 2010 Guidelines for CPR & ECC) current certification prior to entry into the program. BLS-HCP must be recertified annually.

### Criminal Record Check

- All BHSc students must provide a criminal record check (obtained within the previous six months) prior to attendance at any Capital Health facility. An additional check may be required depending on clinical site requirements.

### First Aid Certification

- All BHSc students must show proof of Standard First Aid current certification prior to entry into the program. Standard First Aid must be recertified bi-annually.

### N95 Mask Fit Testing

- All BHSc students must be mask fit tested for a particulate respirator according to clinical site requirements. This must be recertified every two years, and may need to be recertified annually, depending on the mask in use at your clinical site. Note: There is a cost to the student for this procedure. Consult your school for details.

## IV. Additional Costs

There are additional costs associated with all professional streams of the BHSc program, including but not limited to Standard First Aid and BLS-HCP certification, immunization, uniforms, membership in professional associations, equipment, fees for writing registry exams, mask-fit testing, criminal record check, and travel to clinical sites. These additional costs are the responsibility of the student. A detailed list is available from the School.

## V. Intellectual, Emotional & Physical Demands

The health professions included in the Bachelor of Health Science program are intellectually, emotionally and physically demanding. It is important that students become familiar with the profession before entering the program so that they are able to function at an acceptable standard. It is common to have to lift and move heavy equipment, position patients, wear lead aprons, manipulate valves and knobs on equipment, remain on your feet for extended periods of time and move frequently from one clinical area to another. It is also common to have to view information displayed on computer monitors or on slides under a microscope. It might be necessary to distinguish fine gradations of color and to respond to alarms and buzzers. There may be emergency situations that arise in the health care setting that require students to respond immediately. Shift work may be required, including rotating 12-hour shifts. Latex gloves are in wide use and chemicals are used in a variety of settings. Refer to <http://www.dal.ca/shs> (Admissions) for Statements of Fitness required for each profession. Students who have concerns about fitness should contact the School for further information.

## VI. Program Outline

### Four-Year Entry-Level Program

The curriculum is comprised of four years of full-time study with each year including core, interdisciplinary, discipline-specific, health professional and basic science classes.

Fourth-year BHSc students must meet the School's clinical skills maintenance requirements and complete the "Record of Clinical Practise for Year 4" each term, until the 4th-year classwork is completed. Students should contact the School for full details.

### Diagnostic Cytology

#### Year 1

- BIOC 1420.03
- BIOL 1020.03
- CHEM 1410.03
- DCYT 1000.03
- DCYT 1010.03
- DCYT 1500.03
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- IPHE 4900.00
- STAT 1060.03

#### Year 2

- BIOL 2020.03
- DCYT 2001.03
- DCYT 2002.03
- DCYT 2010.03
- DCYT 2500.03
- HESA 4000.03
- HSCE 2000.03
- HSCE 3000.03
- HSCE 3010.03
- IPHE 4900.00
- MICI 1100.03
- Electives (three credit hours)

#### Year 3

- BIOL 3024.03
- BIOL 3430.03

- DCYT 3000.03
- DCYT 3010.03
- DCYT 3020.03
- DCYT 3200.03
- DCYT 3210.03
- DCYT 3220.03
- DCYT 3230.03
- DCYT 3240.03
- DCYT 3500.03
- IPHE 4900.00

#### Year 4

Required:

- HLTH 4040.03
- HSCE 4030.03
- HSCE 4200.03
- HSCE 4220.03

Choose 18 credit hours:

- DCYT 4100.06
- DCYT 4000.12
- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4400.03
- HPRO 2361.03/LEIS 2361.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3397.03
- IPHE 4900.00
- Approved electives (six credit hours)

### Diagnostic Medical Ultrasound

#### Year 1

- DMUT 1000.03
- DMUT 1010.03
- DMUT 1020.03
- DMUT 1500.03
- HAHF 2000.03
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- IPHE 4900.00
- PHYC 1300X/Y.06

#### Year 2

- DMUT 2000.03
- DMUT 2010.03
- DMUT 2020.03
- DMUT 2030.03
- DMUT 2040.03
- DMUT 2500.03
- HSCE 2000.03
- HSCE 2010.03
- HSCE 2040.03
- HSCE 3000.03
- IPHE 4900.00
- STAT 1060.03

#### Year 3

- DMUT 3000.03
- DMUT 3010.03
- DMUT 3200.03
- DMUT 3210.03
- DMUT 3220.03
- DMUT 3230.03
- DMUT 3240.03
- DMUT 3500.03
- HESA 4000.03
- HSCE 3010.03
- IPHE 4900.00

- Elective (three credit hours)

#### *Year 4*

Required:

- HLTH 4040.03
- HSCE 4030.03
- HSCE 4200.03
- HSCE 4220.03
- IPHE 4900.00

Choose 18 credit hours:

- DMUT 4000.12
- DMUT 4100.06
- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4400.03
- HPRO 2361.03/LEIS 2361.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3397.03

- Approved electives (six credit hours)

Note: DMUT 4010 and DMUT 4020 are considered “approved electives.”

### **Nuclear Medicine Technology**

#### *Year 1*

- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- HSCE 2020.03
- HSCE 2030.03
- IPHE 4900.00
- NUMT 1000.03
- NUMT 1020.03
- NUMT 1500.03
- PHYC 1300X/Y.06

#### *Year 2*

- HSCE 2000.03
- HSCE 2010.03
- HSCE 2040.03
- HSCE 3010.03
- HESA 4000.03
- IPHE 4900.00
- NUMT 1010.03
- NUMT 2000.03
- NUMT 2010.03
- NUMT 2020.03
- NUMT 2500.03
- STAT 1060.03

#### *Year 3*

- HLTH 4040.03
- HSCE 3000.03
- HSCE 4030.03
- IPHE 4900.00
- NUMT 3100.03
- NUMT 3020.03
- NUMT 3200.03
- NUMT 3220.03
- NUMT 3222.03
- NUMT 3230.03
- NUMT 3500.03
- Elective (three credit hours)

#### *Year 4*

Required:

- HSCE 4200.03
- HSCE 4220.03
- IPHE 4900.00
- NUMT 3210.03
- NUMT 3240.03

- NUMT 4210.03
- NUMT 4220.03

Choose 12 credit hours:

- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4400.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3397.03
- HPRO 2361.03/LEIS 2361.03
- NUMT 4100.06
- Approved electives (six credit hours)

### **Radiological Technology**

#### *Year 1*

- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- IPHE 4900.00
- PHYC 1300X/Y.06
- RADT 1000.03
- RADT 1010.03
- RADT 1020.03
- Elective (three credit hours)
- RADT 1500.03

#### *Year 2*

- HSCE 2000.03
- HSCE 2010.03
- HSCE 2020.03
- HSCE 2030.03
- HSCE 2040.03
- IPHE 4900.00
- RADT 2000.03
- RADT 2020.03
- RADT 2010.03
- RADT 2500.03
- STAT 1060.03
- Elective (three credit hours)

#### *Year 3*

- HESA 4000.03
- HSCE 3000.03
- HSCE 3010.03
- HSCE 4030.03
- IPHE 4900.00
- RADT 3000.03
- RADT 3010.03
- RADT 3210.03
- RADT 3220.03
- RADT 3240.06
- RADT 3500.03

#### *Year 4*

Required:

- HLTH 4040.03
- HSCE 4200.03
- HSCE 4220.03
- IPHE 4900.00
- RADT 4200.03
- RADT 4220.03

Choose 15 credit hours:

- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.05
- HESA 4400.03
- HPRO 2361.03/LEIS 2361.03
- HPRO 3335.03

- HPRO 3345.03
- HPRO 3397.03
- RADT 4100.06
- RADT 4000.12
- Approved electives (six credit hours)

Note: RADT 4210.03 is considered an “approved elective.”

## Respiratory Therapy

### Year 1

- BIOC 1420.03
- CHEM 1410.03
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- IPHE 4900.00
- RSPT 1000.03
- RSPT 1020.03
- RSPT 1030.03
- RSPT 1500.03
- STAT 1060.03

### Year 2

- HSCE 2000.03
- HSCE 3010.03
- IPHE 4900.00
- RSPT 2000.03
- RSPT 2020.03
- RSPT 2030.03
- RSPT 2050.03
- RSPT 2063.03
- RSPT 2065.03
- RSPT 2070.03
- RSPT 2500.03
- Elective (three credit hours)

### Year 3

- IPHE 4900.00
- RSPT 3000X/Y.06
- RSPT 3010X/Y.06
- RSPT 3020X/Y.06
- RSPT 3230X/Y.06
- RSPT 3250X/Y.06
- RSPT 3500.03

Note: Fall term start date for RSPT year three is August 29, 20112

### Year 4

Required:

- HESA 4000.03
- HLTH 4040.03
- HSCE 4030.03
- HSCE 4200.03
- HSCE 4220.03
- IPHE 4900.00

Choose 15 credit hours:

- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.03
- HESA 4400.03
- HPRO 2361.03/LEIS 2361.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3397.03
- RSPT 4000.12
- RSPT 4100.06
- Approved electives (six credit hours)

Note: RSPT 4010, 4020, 4030 are considered “approved electives.”

## BHSc Degree Completion Program

This program requires five full credits (30 credit hours) of university study. It is available only to students who have successfully completed the Dalhousie

diploma portion of the BHSc degree program in the professional stream for which you are applying.

For Admission Requirements see page 14 of the calendar under Faculty of Health Professions, School of Health Sciences (BHSc Degree Completion Program).

## Post Diploma Program

The School of Health Sciences offers a post diploma program leading to a Bachelor of Health Science in any of: Diagnostic Cytology, Diagnostic Medical Ultrasound, Medical Laboratory Technology, Nuclear Medicine Technology, Radiological Technology and Respiratory Therapy. The program has been developed to meet the needs of practicing technologists, sonographers and Respiratory Therapists who have expressed an interest in the opportunity to complete a baccalaureate degree as a means of pursuing life long learning and increasing career opportunities.

Through a guided selection process, students will choose classes that contribute to their professional growth and interest. Students will be provided the opportunity to broaden their knowledge and scope of the Canadian health care system as well as to enhance leadership abilities and to equip themselves for participation in a rapidly changing health care environment.

The post-diploma BHSc curriculum is equivalent to two years of full time university study (60 credit hours). Classes may be completed in the sequence best suited for the student; however, attention must be paid to the class pre-requisites. To accommodate the working professional the post diploma program is available on a full time or part-time basis and most of the classes are delivered via Online Web Learning (OWL). There are university regulations concerning the maximum length of time allowed for degree completion. Refer to Academic Regulation 15.2 (Duration of Undergraduate Studies).

## Required Classes (30 credit hours)

- STAT 1060.03: Introductory Statistics for Science and Health Sciences
- HSCE 1000.03: Introduction to Health Professional Practice
- HSCE 2000.03: Health Care Ethics
- HSCE 3000.03: Culture, Diversity and Health
- HSCE 3010.03: Introduction to Research Methods
- HSCE 4030.03: Leadership in Healthcare
- HESA 4000.03: Canadian Health Care Delivery
- HSCE 4200.03: Foundations in Clinical and Professional Education
- HLTH 4040.03: Health Law for Non-Lawyers
- HSCE 4220.03: Critical Research Evaluation
- Electives (30 credit hours)

Students may choose electives from the Pre-Approved list but are not limited to this list. Contact the Post Diploma Advisor or visit the School website at <http://www.dal.ca/shs>.

## Anaesthesia Assistant Certificate Program has been suspended until further notice.

## VII.Regulations

All students are required to observe the University Regulations and Academic Regulations as described in this calendar.

### A. Academic

#### Workload

The normal workload is five credits per year (30 credit hours) during the regular academic session (September - April). In addition, an eight to 10 week clinical practicum worth one half-credit (three credit hours) takes place in May - June following Years 1, 2, and 3 of the BHSc program:

Fall Term	15 credit hours
Winter Term	15 credit hours
Spring Term (May-June)	three credit hours

Normally, only a full-time class of studies (30 credit hours during the regular academic year and a three credit-hour practicum in the May-June time period) can be taken in the first three years of the four-year entry-level program. Interruption of studies will only be granted for leave of absence or voluntary withdrawal. The fourth year can be pursued on a part-time basis, subject to Academic Regulation 15.2, which regulates duration of undergraduate studies.

It is the responsibility of each individual student to ensure she/he is enrolled in the classes required to complete the BHSc program of study. Therefore students are expected to meet with their academic advisors to seek counselling in this regard, to ensure that class selections and class load are appropriate, and will not cause difficulties later on in the program.

The BHSc post-diploma program is available on a part time basis.

### Permission to carry more than a normal workload

A workload exceeding these credit hours in any given term will be considered an *Overload*.

- Students who wish to take on an overload must have the approval from the School of Health Sciences Committee on Studies. Any student applying for an increased workload (overload) must apply at least four weeks in advance of the start of the semester or year in question.
- In their request, students should include their reasons for seeking an overload and include supporting arguments and evidence, such as their academic record and any other relevant considerations.
- Applications from students who give good reasons for wishing to take an overload will be considered. The Committee on Studies will consult with the 4th Year Academic Advisor on overload requests pertaining to fourth year studies. However, in accordance with Academic Regulation 3.1.3 - such permission will not normally be granted to any student in the first year of study, or to any student who, in the preceding academic term, obtained a grade point average of less than 3.00.
- During Clinical Practicum and/or Clinical Education Classes no additional classes will be permitted without prior approval from the Committee on Studies.
- Such requests require student completion of a Waiver of Academic Regulation Application, available from the Administrator, School of Health Sciences, or the Registrar's Office.
- Students who exceed the normal workload per academic term without Committee on Studies approval, will be required to withdraw from the class.

### Attendance at Classes

Regular and punctual attendance at classes is required; students are expected to notify instructors if they are going to miss a class. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to withdraw from the school.

### Grade Requirements

A student must receive a grade of C in each class with a class number in the School of Health Sciences (HSCE, DCYT, DMUT, MDLT, NUMT, RADT, RSPT) in order for that class:

- to be counted as a credit towards the Bachelor of Health Science or Diploma in Health Science
- to be considered as a prerequisite for another class

Since most professional classes are prerequisites for more advanced classes and for clinical practica, the student's academic progress will be severely impacted by a failure. Students must seek academic advice.

Any student failing a required class for the second time must withdraw from the School of Health Sciences. Such a failure will be deemed an academic dismissal. See Regulation 20.2 for information on applying for readmission following an academic dismissal.

Students are reminded of Academic Regulations 18, 19.2 and 20.2 governing good standing, probation and academic dismissal.

### Grade Point Average

A description of the grade point average (GPA) is found in Regulation 17.1.1 in the Dalhousie Undergraduate Calendar. The grade scale and definitions are found in Regulation 17.1.

### Grading of Clinical Classes

Clinical education and speciality practice classes are graded on a letter grade basis.

Students who have been removed from any class due to unsafe or unsatisfactory clinical performance will receive a failing (F) grade.

### Supplemental Exams

In classes with a class number in the School of Health Sciences, supplemental privileges may be granted only at the discretion of the class professor to a student with a final grade of FM (Regulation 16.5, Dalhousie Undergraduate Calendar). Each class outline will state the conditions that must be met in order to be eligible. The supplemental may be practical, written or combined practical/written exam at the discretion of the professor. Students who receive a grade of F are ineligible for supplemental privileges and will be required to repeat the class.

The date and time of the supplemental exam will be negotiated between the student and class professor within the following guidelines: For Fall Term classes, the supplemental exam must be completed before the end of the first week of classes of the Winter Term. For Winter Term classes, the supplemental exam must be passed before the student can begin their clinical placement. In no case will a clinical placement be delayed for more than two weeks.

No more than two supplemental exams for classes with class numbers in the School of Health Sciences will be allowed in one year. Only one supplemental exam is allowed per class.

### Voluntary Withdrawal

Students who voluntarily withdraw from the School of Health Sciences, having satisfactorily completed classes toward the BHSc (specific discipline) degree, with the intention of returning at a later date are advised that re-acceptance is contingent upon there being an available place.

### Leave of Absence

1. Students who apply for a leave of absence (LOA) from their program of study must do so in writing to the School of Health Sciences Committee on Studies. If possible, such applications should be made in advance of the term or year for which a LOA is being requested.
2. A request for Leave of Absence may be for a duration of one term to a maximum of one year in length. Students are eligible for a maximum of one such leave for the duration of their program.
3. Following approval of the application for LOA, the Committee on Studies will notify the following individuals:
  - a) The student;
  - b) Dalhousie University Registrar's Office;
  - c) Students Services office at the School; and
  - d) Student's academic advisor
4. Students may apply to return to the program prior to the designated end of the LOA. At the time students return to the program, the LOA is considered ended.
5. At least two to three months prior to returning to the program, students granted LOA will inform the following, in writing, of their intent to resume their studies:
  - a) Chair, Committee on Studies; and
  - b) Student's academic advisor
 Students should also initiate discussion with his/her academic advisor to discuss plans for resumption of classes and required remedial action plan.
6. The Chair of the Committee on Studies will notify the Dalhousie Registrar's Office and the Student Services office at the School of the student's planned return date to the program.
7. It is important to note that for the duration of a leave of absence, the clock stops on the six year rule for discipline-specific classes, and the 10 year rule for all other classes.
8. No academic credit will be granted towards BHSc class requirements for work completed at another institution during a LOA.
9. If a leave of absence is granted, students must ensure they formally withdraw from classes in accordance with Dalhousie University regulations.
10. Students on approved leave of absence will be considered in abeyance from regular academic programming, and therefore not a student at Dalhousie University, until such time that they reactivate their student status through the Registrar's Office.

### Policy on Students at Academic Risk

The School of Health Sciences is concerned with providing students every opportunity for success in their program. Although the responsibility ultimately lies with the student, processes are in place at the School to identify, and assist students at academic risk.

The School of Health Sciences Studies at Academic Risk Policy aims to identify students at risk and recommend a class of academic and clinical remediation to ensure minimum clinical competencies are maintained.

### Re-Admission of Academically Dismissed Students Policy

The primary goal of the School of Health Sciences and Dalhousie University is to ensure students are successful in their chosen profession while maintaining integrity of the program. Academic Regulation Section 20.1.3 allows for students who have been academically dismissed to apply for readmission to the University. Decisions on readmission to a program in the School of Health Sciences are made in consultation with the individual stream, clinical coordinator, and the Admissions Committee and will include, but not be limited to, consideration of availability of clinical placements.

### Appeal

Students who wish to appeal a decision based on school or university regulations should consult the Chair of the Committee on Studies concerning the correct procedure. Contact the School office for complete terms of reference for the Committee on Studies and the application regarding academic appeals.

## VIII. Clinical Education Components of Health Sciences

Health Sciences education encompasses a broad spectrum of learning experiences that together prepare caring, competent and ethical practitioners able to function in a rapidly changing health care environment. The BHSc program is delivered through an integrated curriculum and students receive clinical education logically sequenced within core, interdisciplinary, discipline-specific, and clinical education classes and clinical practica. Clinical education components enable students to integrate theory with practice, master clinical competencies, develop critical reasoning skills and demonstrate professional behavior in a variety of settings with a diversity of patients.

Successful completion of all clinical components of the program is mandatory. Clinical practica and clinical education classes are required classes in the program of study and it is not possible to exercise the diploma exit option or to receive a BHSc degree without successfully completing these classes. In addition, each of the clinical experiences is a prerequisite for further progress in the program. Class outlines provide specific information about criteria for successful completion and opportunities for remediation.

In preparation for clinical practicum, all students must participate in a workshop dedicated to various aspects of professional behavior.

Two elements of clinical education are:

### 1. Clinical Practicum

The program includes three clinical practica scheduled during the May - early July time period following Years 1, 2, and 3. The Clinical Practicum is designed to provide students with opportunities to develop the knowledge, skills and professional attitudes necessary to function as competent entry-level practitioners within a variety of settings and with a broad range of patients. Students are assigned to various clinical sites, based on their level within the program, the expected learning outcomes of their professional stream, and the availability of appropriate sites.

Clinical placements will be arranged by the Clinical Coordinator for the School of Health Sciences. Students may be assigned to clinical sites located within the Halifax region, throughout the Atlantic provinces, and in various sites across Canada. All expenses related to clinical placement are the responsibility of the student. Students are scheduled in a clinical setting for eight-to-ten consecutive weeks, and are supervised by faculty and/or preceptors. The normal student/preceptor ratio is one-to-one. Evaluation may include, but is not limited to, assessment of skills competencies, demonstration of professional behaviors, and application of theory to practice. Students monitor their personal and professional growth through introspection and reflection by maintaining journals, recording experiences in skills log books, successfully passing examinations or presenting case studies.

### 2. Clinical Education Classes

These classes provide students with an opportunity to gain hands-on experience in a specific area of clinical practice. Scheduling requires full-time rotations in the clinical setting and, depending on the area, may require shift work and/or off-site

rotation. Students may be required to travel to a site outside Halifax in order to meet their clinical learning objectives. Preceptors supervise and guide students through this period of study and skills practice. Faculty continue to support students by facilitating seminars/tutorials, conducting assessments, providing constructive feedback and structuring learning experiences to further develop critical reasoning skills. Medical specialists and practitioners may be invited to share their expertise with students. There may be interprofessional learning experiences designed to enhance students' understanding of the team approach to health care. Evaluation methods may include, but are not limited to, a written examination to assess knowledge of subject matter, and practical assessments to confirm that clinical skills and professional behavior are readily applied at the expected level of performance. Clinical Education Classes are taken in Year 3 at all programs. In addition, Clinical Education Classes are a required part of the Year 4 curriculum for students in Nuclear Medicine Technology and Radiological Technology.

## IX. Interprofessional Health Education

Students are required to maintain enrolment in IPHE 4900 (see calendar section on Health Professions, Interprofessional Health Education) for the duration of their studies. Successful completion of this class is a requirement for graduation and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration to be presented by the Faculty of Health Professions. Students are asked to consult with their individual school/college to determine the specific guidelines and expectations regarding the required portfolio.

## X. Class Descriptions

### DCYT 1000.03: Diagnostic Cytology Laboratory Applications.

This course provides a comprehensive study of topics relevant to the Diagnostic Cytology laboratory. Safety, collection of specimens, interpretation of clinical data, cytopreparatory techniques, and specimen processing are examined. Topics such as quality assurance, fixation and transportation of biological specimens, record keeping and organization of the Diagnostic Cytology laboratory will be discussed. Laboratory sessions will demonstrate the techniques required to prepare, and process a specimen adequate for cytologic diagnosis. In this context, emphasis will be placed on safe professional practice and the delivery of care.

FORMAT: Lecture 3 hours, lab 2 hours

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

### DCYT 1010.03: Gynecological Cytopathology I.

This course is designed to provide the foundation of gynecological Cytopathology. The purpose of the course is to introduce the basic skills and knowledge required to integrate, interpret and evaluate the cellular morphology of normal histologic tissues, cytologic cellular specimens of normal and benign processes of the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics of normal and benign processes. The course will further allow students to maintain their professional practice in the role of respect towards the patient.

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: HSCE 1000.03, DCYT 1000.03, HSCE 1020.03

CO-REQUISITE: HSCE 1030.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

### DCYT 1500.03: Laboratory and Clinical Gynecological Applications I.

This clinical practicum enables the student to integrate theoretical knowledge with application to specimen procurement and normal gynecological diagnoses. The student consolidates concepts, techniques and knowledge required to perform skills introduced in DCYT 1000.03, DCYT 1010.03, HSCE 1000.03. Students are expected to work under direct supervision, assume responsibility for their actions and decisions and to interact effectively with peers, technologists, supervisors and medical staff.

FORMAT: Full time rotations in clinical settings.

PREREQUISITE: BIOL 1010.03 OR 1020.03 and DCYT 1010 and HSCE 1020, and HSCE 1030

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology.



**DCYT 2001.03: Gynecological Cytopathology II**

This course will focus on the cellular morphology and nomenclature of abnormal and malignant disease in gynecological cytology. Emphasis will be placed on the interpretation and critical evaluation of the cellular morphology of normal, benign and malignant disease processes. A variety of therapy modalities and recent advances will be examined.

NOTE: Students taking this class must register in both DCYT 2001 and DCYT 2002 in consecutive terms.

FORMAT: Lecture 3 hours, labs 3 hours

PREREQUISITE: DCYT 1500.03

EXCLUSION: DCYT 2000.06

RESTRICTION: Restricted to the Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 2002.03: Clinical Application for Gynecological Cytopathology**

This clinical education course will provide an opportunity for students to integrate theory from DCYT 2001.03 into clinical practice. This course will offer a simulated environment where diagnosis and reporting of gynecologic specimens will be the focus.

FORMAT: Labs 3 hours twice a week

PREREQUISITE: DCYT 1500 and DCYT 2001

EXCLUSION: DCYT 2000.06

RESTRICTION: Restricted to Bachelor of Health Science in the professional stream of Diagnostic Cytology

**DCYT 2010.03: Pathology and Histopathology for Diagnostic Cytology.**

This course provides a basic understanding of the disease process at the tissue level. It provides the appropriate information that will allow a student to recognize conditions and to orient themselves about the origin of the cells. In the General Pathology component, topics covered include: cell injury and adaptation, inflammation and repair, disorders of growth, fluid and hemodynamic arrangements, neoplasia, environmental and nutritional diseases, microbiology and cancer. The Systems Pathology component covers all the body systems and enables the student to identify histologic processes related to various disease processes.

FORMAT: Lecture 3 hours

PREREQUISITE: DCYT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science in the professional stream of Diagnostic Cytology

**DCYT 2500.03: Gynecological Cytopathology Practicum.**

This practicum will prepare the student, in a clinical setting, to integrate and apply knowledge and skills introduced during DCYT 2000. The student consolidates cytologic concepts and microscopy skills necessary to render an accurate cytologic diagnosis. Students are required to diagnose gynecological cases ranging from normal to malignant. Students are expected to assume responsibility for their actions and decisions and to interact effectively with patients, peers, technologists, supervisors and medical staff.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: DCYT 2000.03, DCYT 2010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3000.03: Non-Gynecological Cytopathology I.**

This course provides a high level of study of non-gynecological Cytopathology. The purpose of the course is to introduce and develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant processes of non-gynecological specimens with particular emphasis on exfoliative cytology. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of all disease processes diagnosed cytologically from all body sites external to the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The students are placed in a simulated environment where diagnosis and reporting will be the focus. This environment provides an opportunity for active learning, feedback, communication between student and faculty as well as self evaluation. The course further allows students to maintain their professional practice in the role of respect towards the patient.

FORMAT: Lecture 3 hours, labs 3 hours.

PREREQUISITE: DCYT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3010.03: Non-Gynecological Cytopathology II.**

This course provides a high level of study of non-gynecological Cytopathology and reflects the content provided in DCYT 3000.03. The purpose of the course is to introduce and develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant processes of non-gynecological specimens with particular emphasis on Fine Needle Aspiration Biopsy (FNAB) cytology. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of all disease processes diagnosed cytologically from all body sites external to the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The students are placed in a simulated environment where diagnosis and reporting will be the focus. This environment provides an opportunity for active learning, feedback, communication between student and faculty as well as self evaluation. The course further allows students to maintain their professional practice in the role of respect towards the patient.

FORMAT: Lecture 3 hours, labs 3 hours.

PREREQUISITE: DCYT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3020.03: Issues and Trends in Cytopathology.**

Diagnostic cytology as a specialty of pathology and medicine will be scientifically analyzed. A critical appraisal of the literature relevant to advances in the detection and treatment of cancer will be conducted. Adjunctive techniques and practices will be evaluated. Emphasis will be placed on the understanding and application of research methodology. Research findings will be presented in oral and written format.

FORMAT: Lecture 3 hours

PREREQUISITE: DCYT 3000.03, DCYT 3010.03, DCYT 3200.03, 3024.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3200.03: Diagnostic Gynecological Cytology Application I.**

This third year course is a 3.0 credit hour gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to gynecological clinical competencies. This provides an opportunity to implement and enhance knowledge with application to diagnosis. Under supervision, students assume responsibility and build their case load to approximately 70% of that of an entry-level diagnostic cytotechnologist.

FORMAT: Full time clinical rotation

PREREQUISITE: DCYT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3210.03: Diagnostic Gynecological Cytology Application II.**

This third year course is a 3.0 credit hour gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to gynecological clinical competencies. This provides an opportunity to implement and build upon knowledge and experience with application to diagnosis gained in DCYT 3200.03. Under supervision, students assume responsibility and build their case load to approximately 80% of that of an entry-level diagnostic cytotechnologist.

FORMAT: Full time clinical rotation

PREREQUISITE: DCYT 3200.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

**DCYT 3220.03: Diagnostic Gynecological Cytology Application III.**

This third year course is a 3.0 credit hour gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to gynecological clinical competencies. This provides an opportunity to implement and further build upon knowledge and experience with application to diagnosis gained in DCYT 3210.03. Under supervision, students assume responsibility and build their case load to approximately 90% of that of an entry-level diagnostic cytotechnologist.

FORMAT: Full time clinical rotation

PREREQUISITE: DCYT 3200.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

### DCYT 3230.03: Diagnostic Non-Gynecological Cytology Application I.

This third year course is a 3.0 credit hour non-gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to non-gynecological clinical competencies. This provides an opportunity to implement and further build upon knowledge and experience with application to diagnosis gained in DCYT 3000.03 and DCYT 3010.03. Under supervision, students assume responsibility and build their case load to approximately 80% of that of an entry-level diagnostic cytotechnologist.

FORMAT: Full time clinical rotation

PREREQUISITE: DCYT 3010.03 and DCYT 3200.03, DCYT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

### DCYT 3240.03: Diagnostic Non-Gynecological Cytology Application II.

This third year course is a 3.0 credit hour non-gynecological clinical education course. This will provide an opportunity for students to further their abilities, formulate decisions and implement diagnostic expertise in relation to non-gynecological clinical competencies. This provides an opportunity to implement and further build upon knowledge and experience with application to diagnosis gained in DCYT 3230.03. Under supervision, students assume responsibility and build their case load to approximately 90% of that of an entry-level diagnostic cytotechnologist.

FORMAT: Full time clinical rotation

PREREQUISITE: DCYT 3010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Cytology

### DCYT 3500.03: Gynecological and Non-Gynecological Clinical Applications - Practicum III.

This clinical practicum provides the student with an opportunity to integrate the theoretical knowledge and the application of cytopathologic diagnoses to gynecologic and non-gynecologic sites. The purpose of this practicum is to further develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal, benign and malignant gynecological and non-gynecological disease processes. Emphasis will be placed on the critical evaluation of pathologic and cytologic morphology while continuing to meet the objectives set by the School. The course will further allow the student to maintain their professional practice in the role of respect towards the patient.

FORMAT: Full time rotations in clinical settings.

PREREQUISITE: DCYT 3240.03, DCYT 3220.03, DCYT 3020.03

### DCYT 4000.12/4100.06: Specialty Practice I/Specialty Practice II.

Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.

PREREQUISITE: DCYT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in DCYT. Enrolment may be limited due to clinical site availability.

### DMUT 1000.03: Fundamentals of Sonography I.

This course provides a general overview of organs and structures within the abdominopelvic cavity which are fundamental to sonography. It includes concepts of relational sectional anatomy and basic ultrasound scanning principles. Also included is an historical perspective and discussions involving the national Code of Ethics for the profession of Diagnostic Medical Ultrasound.

FORMAT: Lecture 3 hours, lab 3 hours

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 1010.03: Principles and Instrumentation of Diagnostic Medical Ultrasound I.

This course provides the student with the basic knowledge of the physical principles of ultrasound. It examines how diagnostic ultrasound works (how it is generated and how it interacts with tissues). Also covered in this course is the

instrumentation used to transmit, receive and present echo information and the application of these to the practice of Diagnostic Medical Ultrasound.

FORMAT: Lecture 3 hours

CO-REQUISITE: PHYC 1300X/Y.06

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 1020.03: Fundamentals of Sonography II.

This course provides a general overview of the normal sonographic appearance of organs and structures of the abdominopelvic cavity which are fundamental to sonography. Where applicable, the sonographic application and normal variants of specific organs and structures within the abdominopelvic cavity are also discussed. Included are reference charts highlighting other common diagnostic tests, normal measurements, and laboratory values associated with each organ and structure of interest.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: DMUT 1000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 1500.03: Clinical Practicum I in Diagnostic Medical Ultrasound.

This clinical practicum introduces students to Diagnostic Medical Ultrasound. Within the Diagnostic Imaging Department, students will develop a knowledge of departmental procedures, an ability to interpret and utilize requisitions and demonstrate proficiency in equipment selection and instrumentation. Students will develop clinical skills in performing abdominal and pelvic ultrasound examinations. Students will apply health professional practice skills when interacting with patients and healthcare professionals.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: DMUT 1010.03, 1020.03, HSCE 1010.03, PHYC 1300.06, HSCE 1020.03, HSCE 1030.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 2000.03: Sonography of the Abdomen/ Superficial Structures I.

This is the first of three courses related to abdomen and superficial structures. This course will focus on the pathology of the vascular system, liver, biliary system and the mammary glands. This course will provide further opportunity to develop skills and integrate knowledge from all discipline specific first year courses. The etiology, incidence, laboratory testing, sonographic presentation, differential diagnosis and treatment modalities will be examined. Documented ultrasound images with relevant pathology will be challenged, analyzed, and reviewed in a simulated clinical laboratory environment. This simulated environment will further provide an opportunity for students to integrate their knowledge of anatomy and pathology to formulate sonographic scanning strategies.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: DMUT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 2010.03: Sonography in Gynecology.

This course focuses on the normal structure, development, and pathologies of the female genitourinary system in the non-gravid state. Sonographic scanning techniques, presentation and documentation of normal and abnormal gynecological ultrasound examinations are covered. Critical evaluation of uterine and ovarian pathologies and sonographic characteristics associated with these pathologies will be fully explored.

FORMAT: Lecture 3 hours

PREREQUISITE: DMUT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 2020.03: Principles and Instrumentation of Diagnostic Medical Ultrasound II.

This course builds on knowledge and experience gained in DMUT 1010. This class provides the student with principles and instrumentation of continuous-wave/ pulsed-wave Doppler spectral analysis and color-flow imaging. Imaging artifacts, quality assurance, and bioeffects/safety are investigated thoroughly. Application of this knowledge and the development of skills and competence needed in the clinical practice of Diagnostic Medical Ultrasound will be included in this class.

FORMAT: Lecture 3 hours

PREREQUISITE: DMUT 1500.03, HSCE 2010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 2030.03: Sonography of the Abdomen/ Superficial Structures II.**

This is the second of three courses related to Abdomen and Superficial Structures. The course will focus on the pathology of the: pancreas, adrenals, retroperitoneum, lymphatic system, urinary tract, thyroid and parathyroid glands. Etiology, incidence, laboratory testing, sonographic presentation, differential diagnosis and treatment modalities related to these body systems will be examined. Students will be challenged to analyze, formulate sonographic scanning strategies, and diagnose appropriately relevant pathology viewed in a hospital clinical environment. The course will provide students with the opportunity to integrate skills and concepts learned in previous courses and continue development of professional skills in Diagnostic Medical Ultrasound.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: DMUT 2000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 2040.03: Sonography in Obstetrics I.**

This course provides the learner with a comprehensive study of normal and abnormal first trimester and normal second trimester obstetrical ultrasound examinations. Critical evaluation of first trimester pregnancy complications and the sonographic appearances in a second trimester obstetrical patient essential to continuing study in DMUT 3000. Multiple gestations, infertility and assisted reproductive technologies are also explored in detail. The study of embryology is an important focus of this course and the sonographic appearance associated with the growing fetus. Ethical issues related to obstetrical ultrasound will be examined and discussed.

FORMAT: Lecture 3 hours

PREREQUISITE: DMUT 1500.03

RESTRICTION: HOLD Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 2500.03: Clinical Practicum II in Diagnostic Medical Ultrasound.**

Practicum II provides students with the opportunity to continue skill development in abdominal and pelvic ultrasound examinations including the recognition, identification and documentation of pathologies. In addition, students will develop clinical skills in performing first and second trimester obstetrical ultrasound examinations. This clinical practicum requires the student to travel to clinical sites outside the Halifax Regional Municipality. Students will be responsible for travel and accommodation arrangements.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: DMUT 2010.03, 2020.03, 2030.03, HSCE 2040.03, DMUT 2040.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3000.03: Sonography in Obstetrics II.**

This course provides a comprehensive study of the normal and abnormal second and third trimester ultrasound examinations. Critical evaluation of fetal pathologies and sonographic characteristics associated with these pathologies will be fully explored. Maternal complications associated with pregnancy and antenatal testing will also be covered.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: DMUT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3010.03: Sonography of Abdomen/ Superficial Structures III.**

The third and final course DMUT 3010, Abdomen and Superficial Structures III, focuses on abdominal pathology of the gastrointestinal tract and organs of the male reproductive system, noncardiac chest, abdominal Doppler, musculoskeletal, extracranial cerebral vascular and lower extremity venous ultrasound. This course will prepare the student for a more advanced level of study and clinical practice in ultrasound interventional biopsy, aspiration techniques and procedures. An integration of previously acquired knowledge and clinical skills will be applied to a more advanced level of theoretical and clinical application using Doppler ultrasound technology.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: DMUT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3200.03: Abdominal Imaging.**

This clinical education course allows the student to integrate and consolidate knowledge, concepts and skills developed and maintained from previous courses. The expectation is that the student will be able to recognize, identify and document normal and abnormal sonographic images of the abdomen under indirect supervision. This experience will enhance the student's ability to make independent decisions and to critically evaluate images of abdominal organs and related structures. Students are expected to assume responsibility for their actions and decisions. Students are expected to interact effectively with patients and all healthcare team professionals while maintaining accepted professional practice standards in an ultrasound environment.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: DMUT 3010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3210.03: Obstetrical Imaging.**

Building on experience developed in Clinical Practicum II and knowledge and concepts learned in Sonography in Obstetrics and Gynecology I and II, this obstetrical ultrasound clinical education course enhances the student's ability to recognize, identify and document normal and abnormal obstetrical ultrasound examinations. This course provides the opportunity to reflect on their own clinical and professional skills in dealing with the obstetrical patient. Assuming responsibility for their actions and decisions in the clinical setting, the student becomes competent in performing obstetrical sonographic examinations.

FORMAT: Full-time rotation in clinical setting

PREREQUISITE: DMUT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3220.03: Gynecological Imaging.**

This clinical course allows the student to integrate knowledge, concepts and skills developed in previous courses and enhance their independent decision making skills. The expectation is for the student to achieve competency in recognizing, identifying, and documenting normal and abnormal sonographic images of the female pelvis under indirect supervision. The student will experientially reflect on their own skills and assume responsibility for their actions and decisions in the clinical setting.

FORMAT: Full-time rotation in clinical setting

PREREQUISITE: DMUT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3230.03: Superficial Structure Imaging.**

This clinical education course allows the student to integrate and consolidate knowledge, concepts and skills developed and maintained from previous courses. The expectation is that the student will be able to recognize, identify and document normal and abnormal sonographic images of superficial structures under indirect supervision. This clinical experience will enhance the student's ability to make independent decisions and to critically evaluate images of superficial structures. Students are expected to assume responsibility for their actions and decisions. Students are expected to interact effectively with patients and all healthcare professionals while maintaining accepted professional practice standards in an ultrasound environment.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: DMUT 3010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### **DMUT 3240.03: Application of Ultrasound Instrumentation.**

This clinical education class further expands the student's ability to analyze and process data. Integrating knowledge, concepts and skills developed in previous courses, the student will enhance their independent decision making skills. The expectation is for the student to achieve competency in their utilization of ultrasound instrumentation in a variety of ultrasound examinations. The student will experientially reflect on their own skills in their application of theory to practice.

FORMAT: Full-time rotation in clinical setting

PREREQUISITE: DMUT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 3500.03: Clinical Practicum III in Diagnostic Medical Ultrasound.

Practicum III provides students with the clinical exposure to various specialties which include: related imaging modalities, vascular technology, echocardiography and fetal assessment (biophysicals, amniocentesis etc.). This clinical practicum will provide the student with the opportunity to correlate ultrasound imaging with other imaging specialties. This clinical practicum also allows the student to gain clinical exposure to specialty practice areas which they may choose to pursue in the fourth year.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: Successful completion of all other third year DMUT courses

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

### DMUT 4000.12/4100.06: Specialty Practice I/Specialty Practice II.

Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.

PREREQUISITE: DMUT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in DMUT. Enrolment may be limited due to clinical site availability.

### DMUT 4010.03: Vascular Ultrasound.

This course builds on knowledge and experience gained in DMUT 2020 (Principles and Instrumentation of Diagnostic Medical Ultrasound II) and DMUT 3010 (Sonography of the Abdomen/Superficial Structures III). The student will review hemodynamics, physics and instrumentation, spectral analysis, colorflow imaging and the use of contrast agents in vascular sonography. Applications in vascular sonography and technology to include, examinations of the cerebral vessels, arteries and veins of the extremities and abdominal vessels will be covered.

FORMAT: Online delivery via BLS

PREREQUISITE: DMUT 3500.03

RESTRICTION: Restricted to Bachelor of Health Sciences students in the professional stream of Diagnostic Medical Ultrasound. Post diploma students by permission of instructor

### DMUT 4020.03: Cardiac Ultrasound.

This course builds on knowledge and experience gained in DMUT 2020 (Principles and Instrumentation of Diagnostic Medical Ultrasound II) and HSCE 2040 (Pathophysiology for Health Sciences). This course provides a comprehensive study of the normal and abnormal cardiac ultrasound examinations. The student will review anatomy and physiology and hemodynamics of the heart and relate theory to echocardiography. General principles of cardiac ultrasound, normal echo examination techniques and standard views will be covered including: two-dimensional, M-mode and Doppler. Clinical indications for echocardiography examinations will be covered as well as congenital and acquired cardiac disease processes evaluated with echocardiography.

FORMAT: Online delivery via BLS

PREREQUISITE: DMUT 3500.03

RESTRICTION: Restricted to Bachelor of Health Sciences students in the professional stream of Diagnostic Medical Ultrasound. Post diploma students by permission of instructor

### HSCE 1000.03: Foundations of Health Care Practice.

This course introduces students in the five BHSc professions to the Canadian Health Care System and the role of the health professional within that system. The course compares the Canadian system to systems from other countries and covers diverse healthcare models such as primary care, palliative care, long term care, etc. The role of the health professional is explored through the study of professionalism, scope of practice, and risk management in an interprofessional context. The course will allow students the opportunity to develop/improve essential skills to help them study and work in a multi-disciplinary system including critical thinking, writing skills, communication and teamwork.

FORMAT: Lecture 3 hours

RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor

### HSCE 1010.03: Clinical Skills for Health Sciences.

This course will further the students' understanding of working within a healthcare environment as they learn the skills required to provide patient-centered care. The course provides academic knowledge and laboratory experiences for students to develop clinical skills essential in all five professional streams of the BHSc program.

FORMAT: Lecture 3 hours, lab 1.5 hours

PREREQUISITE: HSCE 1000.03 and one discipline specific course

RESTRICTION: Restricted to Bachelor of Health Science students

### HSCE 1020.03: Human Anatomy and Physiology I.

This course, which is along with HSCE 1030 is designed to provide the student with an understanding of the cellular, organ, and system levels of organization of the human body. It includes a comprehensive study of facts pertaining to the covering, support and movement of the human body. Topics covered will include: organization of the body, the integumentary, skeletal and muscular systems.

FORMAT: Lecture 3 hours

EXCLUSION: ANAT 1010.03, ANAT 1020.03, PHYL 1000.06, PHYL 1010.06

RESTRICTION: None, however priority is given to Health Sciences students.

### HSCE 1030.03: Human Anatomy and Physiology II.

This course studies the systems that serve in maintaining the human body and ensuring its continuity. Topics covered will include: cardiovascular, immune, respiratory, digestive, urinary and reproductive systems. This course will provide students with an appreciation of the complexities of the human function and form, and set the stage for understanding the integration of organ system functions.

FORMAT: Lecture 3 hours

PREREQUISITE: HSCE 1020.03

EXCLUSION: ANAT 1010.03, ANAT 1020.03, PHYL 1000.06, PHYL 1010.06

RESTRICTION: None, however priority is given to Health Sciences students

### HSCE 2000.03: Health Care Ethics.

This is an introductory course in healthcare ethics. Students will be provided with an overview of moral theory and principles; a chance to reflect upon and discuss contemporary ethical issues in healthcare; and an opportunity to acquire the conceptual and practical tools required to make competent ethical decisions in their own practice. Teaching methods will include lecture, group instruction and case analysis.

FORMAT: Lecture 3 hours

RESTRICTION: None, however priority is given to Health Sciences students

### HSCE 2010.03: Digital Imaging.

This course provides an overview of computer basics, digital file structure, digital imaging principles and their applications in radiological technology, magnetic resonance imaging, nuclear medicine technology, and diagnostic medical ultrasound. The principles of image distribution by Teleradiology and Picture Archiving Communication Systems are also provided. The class operates as a distance education class using BLS, with materials being distributed via the Internet. Tutorial sessions are scheduled throughout the term.

FORMAT: On-line delivery via BLS and tutorial sessions

PREREQUISITE: RADT 1010.03 or NUMT 1020.03 or DMUT 1010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional streams of Diagnostic Medical Ultrasound, Nuclear Medicine Technology and Radiological Technology

### HSCE 2020.03: Radiation Physics.

The purpose of this course is to build on the basic principles of the science of radiation physics with a focus on the concepts that directly apply to the medical radiation fields of nuclear medicine technology and radiological technology.

Topics of study include atomic physics, radioactivity and electromagnetic radiation. The class will explain radiation interaction with matter in relation to attenuation, absorption and dosimetry. X-ray production, as well as fission and reactor production of radioactive materials used in nuclear medicine will be investigated. Students will be provided an opportunity to investigate the newest modalities connected with their fields.

FORMAT: Lecture 3 hours, lab 1.5 hours

CO-REQUISITE: PHYC 1300.03 or Equivalent

RESTRICTION: Restricted to students enrolled in the Bachelor of Health Science; students in the professional streams of Nuclear Medicine Technology and Radiological Technology programs

### HSCE 2030.03: Radiation Biology and Protection.

This course provides a theoretical overview of the bioeffects of radiation. This knowledge is linked to radiation physics principles as applied to the practice of medical radiation technology. Current regulations regarding radioactive

substances and imaging and survey equipment will be presented. Emphasis will be placed on practical means of radiation protection for the technologist, the patient and the general public.

FORMAT: Lecture/student presentations/assignments/team projects

PREREQUISITE: HSCE 2020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional streams of Nuclear Medicine Technology and Radiological Technology

### **HSCE 2040.03: Pathophysiology for Health Sciences.**

This course is intended to provide a concentrated study of the biological and behavioural interactions of the human body in disease. Emphasis will be placed on the examination of the Pathophysiology of diseases prevalent in Canada. This class will examine various therapeutic strategies used in treating these diseases and their implications for patient care.

FORMAT: Lecture 3 hours

PREREQUISITE: HSCE 1020.03, HSCE 1030.03

RESTRICTION: None, however priority is given to the Health Sciences students

### **HSCE 3000.03: Culture, Diversity and Health.**

Community development, community advocacy, social justice and primary healthcare will be the theoretical frameworks for exploring the Health Science practitioner's role and practice in the context of working with populations in high risk environments. The emphasis is on understanding the issues, collaborating with those involved, and building individual and group capacities to enhance and promote the health and well-being of specific populations.

FORMAT: Online delivery via BLS

RESTRICTION: None, however priority is given to the Health Sciences students

### **HSCE 3010.03: Introduction to Health Research.**

HSCE 3010 is designed to help students make sense of the research they can be expected to encounter in their professional practices. By focusing on the role of research in contemporary health professional practice this course will provide the student with a sound basis in the principles underlying research theory, measurement issues, experimental, exploratory and descriptive research designs, data analysis and communication skills.

FORMAT: Online delivery via BLS

EXCLUSION: HAHF 3100.03

RESTRICTION: None, however priority is given to the Health Sciences students

### **HSCE 3600.01: Clinical Elective.**

This clinical elective is available for visiting students only, in the health professions of diagnostic medical ultrasound, diagnostic cytology, nuclear medicine technology, radiological technology, or respiratory therapy. Contact department for details.

### **HSCE 4030.03: Leadership in Health Care.**

This course will consider various elements of leadership in a complex, multi-professional and rapidly changing healthcare system, and will enable students to assess and strengthen their own leadership style. An understanding of current trends and issues in healthcare will provide a basis for the development of leadership skills. Critical thinking, decision-making processes and other leadership behaviours will be examined.

FORMAT: Online delivery via BLS

RESTRICTION: None, however priority is given to the Health Sciences students

### **HSCE 4040.03: Independent Study.**

The student will carry out an independent study or complete a project related to health sciences. Facilitation is provided by faculty or a course supervisor and is dependent upon the nature of the course of study. Students wishing to pursue HSCE 4040.03 must consult with the fourth year post diploma advisor for approval a minimum of three months prior to the beginning of the term in which they hope to enrol in the course.

This course may not be offered every year and will be contingent upon the availability of faculty.

### **HSCE 4041.03: Independent Study.**

The student will carry out an independent study or complete a project related to health sciences. Facilitation is provided by faculty or a course supervisor and is dependent upon the nature of the course of study. Students wishing to pursue HSCE 4041.03 must consult with the fourth year / post diploma advisor for approval a minimum of three months prior to the beginning of the term in which they hope to enroll in the course.

This course may not be offered every year and will be contingent upon the availability of faculty.

### **HSCE 4200.03: Foundations in Clinical & Professional Education.**

Using an adult education theoretical perspective, this course introduces students to elements of program design, objective setting, selection of instructional methods and assessment strategies for application to their roles as preceptors, patient educators, and lifelong students. This course will discuss a variety of teaching, learning and delivery methods as well as their appropriateness to clinical and professional education.

FORMAT: Online delivery via BLS

RESTRICTION: Restricted to students within the Faculty of Health Professions

### **HSCE 4220.03: Critical Research Appraisal and Practices.**

This course is designed to give students and practicing professionals the opportunity to further develop and practice those skills essential to the competent translation of knowledge into clinical practice. Through evaluation and use of evidence-informed decision making and change management processes students will be prepared to assist their future workplaces in staying at the forefront of clinical practice.

FORMAT: On line delivery via BLS

PREREQUISITE: HAHF 3100 or HSCE 3010 or equivalent

RESTRICTION: None, however priority is given to the Health Sciences students

### **MDLT 4000.12: 4100.06: Specialty Practice I.**

Specialty practice provides students with learning experiences at a level not previously available and affords the opportunity to attain additional competence and knowledge in a specialty practice area. This may include learning directed toward additional certification or clinical and theoretical opportunities that stretch the boundaries of a particular discipline. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Six-credit hour specialty practice required 220 clinical hours and twelve credit hours requires 440 clinical hours. Specialty Practice is arranged through consultation with the fourth year/post diploma advisor.

PREREQUISITE: Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to BHSc students MDLS; Enrollment may be limited due to clinical site availability.

### **NUMT 1000.03: Fundamentals of Nuclear Medicine.**

This course is designed to provide the students with an introduction to nuclear medicine technology by exploring how radiation and detection equipment are used to perform clinical procedures. The course is divided into sections with each section containing content which builds on the previous concepts. Concepts covered include: detectors used in measuring radiation, semiconductors and scintillation detectors with a focus on the gamma camera - components, acquisition techniques, SPECT reconstruction and quality control.

FORMAT: Lecture 3 hours, lab 2 hours

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 1010.03: Nuclear Medicine Instrumentation I.**

This course is designed to expand on the learner's knowledge of gamma camera instrumentation acquired in NUMT 1000.03. Image acquisition, processing and quantitative image analysis will be explored in detail. Special emphasis will be placed on theory, practical applications, and quality control of Single Photon Emission Computed Tomography (SPECT) as it relates to current clinical practice. Opportunity to apply and expand on the theory will be provided through laboratory and self-directed learning sessions. In addition students will cover the concept of quality assurance and gain the ability to design and critique a Nuclear Medicine quality assurance program.

FORMAT: Lecture 3 hours, lab 3 hours. Online delivery via BLS (some content and supplemental material)

PREREQUISITE: NUMT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 1020.03: Nuclear Medicine Clinical Procedures I.**

In this course the student will learn the Nuclear Medicine procedures that involve the use of radiopharmaceuticals in the investigation in the function of organs in the skeletal, genitourinary and tumour/inflammatory systems.

FORMAT: Lecture 3 hours, clinical 6 hours

PREREQUISITE: NUMT 1000.03, HSCE 1000.03, HSCE 2020.03, HSCE 1020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 1500.03: Nuclear Medicine Clinical Practicum I.**

This clinical practicum introduces students to the Nuclear Medicine and Diagnostic Imaging Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and healthcare professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have opportunities in; image acquisition and critique, patient management/care instrumentation skills and quality control.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: HSCE 1010.03, HSCE 2030.03, NUMT 1020.03, HSCE 1030.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 2000.03: Radiopharmacy.**

This course encompasses all aspects of radiopharmaceutical preparation utilized in a nuclear medicine facility. Classification of radiopharmaceuticals, the production of nuclides, generator construction and elution, labeling methods and pharmaceutical standards are covered in detail. Emphasis is placed on preparing, assaying, dispensing, calculating, safe handling and storing of radiopharmaceuticals. A comprehensive quality assurance program is presented, as well as licensing and record keeping.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: NUMT 1010.03, NUMT 2010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 2010.03: Nuclear Medicine Clinical Procedures II.**

This course provides students with the knowledge and skills to perform Nuclear Medicine procedures in the central nervous, respiratory and gastrointestinal systems. Image critique and interpretation, radiopharmaceutical distribution, computer analysis, related pathologies and procedural troubleshooting will be covered. Clinical lab sessions will enable students to observe and practice these skills.

FORMAT: Lecture 3 hours, tutorial 1 hour, clinical lab 4.5 hours

PREREQUISITE: NUMT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 2020.03: Nuclear Medicine Clinical Procedures III.**

In this course the student will learn the Nuclear Medicine procedures that involve the use of radioactive pharmaceuticals in the investigation of the function of organs in the endocrine and cardiovascular systems.

Image critique and interpretation, radiopharmaceutical distribution, computer analysis, related pathologies and procedural troubleshooting will be covered. Clinical lab sessions will enable students to observe and practice these skills.

FORMAT: Lecture 3 hours, clinical 4 hours, tutorial 1.5 hours

PREREQUISITE: NUMT 1010.03, NUMT 2010.03, and HSCE 2010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 2500.03: Nuclear Medicine Practicum II.**

This clinical practicum is designed to enable the student to integrate primary nuclear medicine and patient care principles. The student will consolidate concepts, theories and skills in performing nuclear medicine procedures. The student will be exposed to image evaluation, patient management/care as well as radiopharmaceutical preparation and quality control.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 2000.03, 2020.03

RESTRICTION: RESTRICTIONS: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 3020.03: Positron Emission Tomography.**

The course provides students with advanced knowledge of Positron Emission Tomography (PET) scanner physics, instrumentation, and quality control. Students will also explore cyclotron physics and radiopharmaceutical synthesis in hot cells. A section of the course content involves the use of various PET radiopharmaceuticals in clinical imaging, presented in the larger context of current

PET clinical procedures. Clinical application of fusion imaging with PET/CT will also be covered.

FORMAT: On line delivery through BLS, in weekly tutorials

PREREQUISITE: NUMT 3100.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 3100.03: CT for Hybrid Technologies.**

This course provides students with knowledge of CT instrumentation, procedures and cross sectional anatomy. CT image acquisition, processing and quantitative analysis will be explored in detail. Processing and post-processing of CT will be contrasted to single photon computed tomography (SPECT) processing and post-processing. Special emphasis will be placed on the role of CT as it relates to current clinical practice in hybrid technologies. Opportunity to apply and expand upon the knowledge gained through lectures will be provided through clinical exposure and self-directed learning sessions.

PREREQUISITE: NUMT 2500.03

RESTRICTION: Restricted to students enrolled in the Bachelor of Health Science Program in the professional stream of Nuclear Medicine Technology.

### **NUMT 3200.03: Radiopharmacy.**

Students will be exposed to the daily operation of a central radiopharmacy. Generator elution, product preparation and performance of quality control procedures will be practiced. Record keeping and documentation of daily operations will be stressed. Emphasis will be on efficiency and organization in order to respond to the demands of the nuclear medicine department. Students will also have exposure to non-routine radiopharmaceutical duties: dilutions, stock-solutions, and radiopharmacy research and development. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 3210.03: Non-Imaging Procedures.**

This clinical course will allow students to apply theory to clinical practice by performing a variety of non-imaging Nuclear Medicine procedures to include: white blood cell labelling; <sup>14</sup>C urea breath tests, and radioiodine therapeutic procedures, including ablations. Proper lab technique will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 3220.03: General Imaging I.**

Students will apply theory to clinical practice by performing a variety of procedures. Emphasis will be on the application and evaluation of nuclear medicine general imaging procedures as they relate to the diagnosis and management of patients. Students will be assessed and required to obtain a minimum number of general imaging clinical competencies. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality control procedures, evaluation and troubleshooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 2500

RESTRICTION: Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

### **NUMT 3222.03: General Imaging II.**

Students will apply theory to clinical practice by performing a variety of procedures. Emphasis will be on the application and evaluation of nuclear medicine general imaging procedures as they relate to the diagnosis and management of patients. Students will be assessed and required to obtain a minimum number of general imaging clinical competencies beyond those obtained in General Imaging I. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality control procedures, evaluation and troubleshooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 3220.03, NUMT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology.

**NUMT 3230.03: Cardiac Imaging.**

Students will apply theory to clinical practice by performing procedures involving the cardiovascular system. Application and evaluation of acquisition and processing of nuclear cardiology procedures with a focus on stress imaging (treadmill and medication induced) and wall motion imaging will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

**NUMT 3240.03: Pediatric Imaging.**

Students will focus on nuclear medicine practice in the care of children and their families. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of children will be emphasized. Students will be able to assess, modify and apply instrumentation applications for each procedure performed. Quality Control procedures, evaluation and trouble-shooting techniques will be utilized to optimize efficiency and validate results.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

**NUMT 3500.03: Clinical Practicum In Nuclear Medicine Technology III.**

Clinical Practicum III is intended to consolidate nuclear medicine theory and practice covered by the end of year three. The students will be provided the opportunity to demonstrate competency in nuclear medicine practice, integrating aspects of all discipline and health science related course theory. This course allows students to expand their knowledge of the healthcare team by providing an opportunity for them to observe and experience healthcare services provided by other professionals.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 3200.03, 3222.03 3230.03, 3020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

**NUMT 4100.06: Specialty Practice I/Specialty Practice II.**

Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. Specialty Practice is arranged through consultation with the fourth year/ post diploma advisor.

PREREQUISITE: NUMT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology. Enrolment may be limited due to clinical site availability.

**NUMT 4210.03: Professional Practice in Nuclear Medicine Technology I.**

This clinical education course provides the student with the opportunity to assume clinical responsibility and develop leadership skills through two processes. Students will apply professional skills acquired through previous courses to function as a member of the diagnostic team and perform duties associated with a team leader role. Also, through a mentorship program, students will act as role models and support first year nuclear medicine students in an effort to further develop leadership skills.

NOTE: Students cannot be registered in NUMT 4210.03 and NUMT 4220.02 concurrently.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 4220.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

**NUMT 4220.03: Professional Practice in Nuclear Medicine Technology II.**

This clinical education course provides the student with the opportunity to assume clinical responsibility and to continue development of professional skills in nuclear medicine technology. Students will be scheduled to a variety of imaging areas where they will be responsible, with remote supervision, for functioning as

an integral member of the nuclear medicine team. This course also provides the opportunity for students to become actively involved in the education of patients, as well as the continuing education of both practicing nuclear medicine technologists and affiliate healthcare groups.

NOTE: Students cannot be registered in NUMT 4210.03 and 4220.03 concurrently.

FORMAT: Clinical Education Course

PREREQUISITE: NUMT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

**RADT 1000.03: Skeletal Radiography.**

This course provides the student with the knowledge required to perform basic skeletal radiography examinations. Aspects studied include: patient positioning, alignment of the radiation field, and radiation exposure factors. Radiographic images are analyzed with a focus on structures demonstrated, evaluation criteria, and modifications required to improve sub-optimal images. Students have the ability to develop radiographic skills for positioning and image analysis in lab/ tutorial sessions.

FORMAT: Lecture 3 hours, lab 3 hours, tutorial 2 hours

CO-REQUISITE: RADT 1010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 1010.03: Imaging Fundamentals.**

This course offers an introduction to the processes involved in the production of x-radiation and use of radiation for diagnostic imaging. The basic principles and equipment involved in radiography and fluoroscopy are studied as well as an introduction to the controlling parameters for image production. A major emphasis of the course is an analysis of the radiographic image and the factors that influence its quality. Students have the opportunity to use imaging equipment during lab sessions.

FORMAT: Lecture 3 hours, 5 lab sessions

CO-REQUISITE: RADT 1000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 1020.03: Skeletal and Systems Radiography.**

Skeletal and Systems Radiography provides the student with the knowledge required to perform radiological imaging procedures of the vertebral column, craniofacial structures, body organs and systems. Elements of the course include patient positioning, alignment of the radiation field, patient management, use of contrast media, and image analysis. Images are assessed with a focus on structures demonstrated, evaluation criteria, and modifications required to improve image quality. Students have the opportunity to practice and demonstrate the radiographic positions in a tutorial/simulation setting. Clinical lab sessions are included in this course to link theory to practice and to provide the student with an orientation to the Diagnostic Imaging Department as well as the operating room environment.

FORMAT: Lecture 3 hours, lab 3 hours, tutorial 2.5 hours

PREREQUISITE: RADT 1000.03, 1010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 1500.03: Clinical Practicum I in Radiological Technology.**

This clinical practicum introduces students to radiological technology and a Diagnostic Imaging department. Students will have the opportunity to experience a wide variety of procedures and interact with healthcare professionals and patients. Students will develop skills in skeletal/systems radiography, image evaluation, and patient management/care.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: RADT 1020.03, HSCE 1010.03, HSCE 1030.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

**RADT 2000.03: Advanced Skeletal & Systems Radiography.**

This course provides the students with the knowledge of advanced skeletal examinations, and imaging examinations of the gastrointestinal, genitourinary, biliary, reproductive, endocrine, cardiovascular, and central nervous systems. Learning labs in which the students reinforce their knowledge of anatomy, physiology, image quality, and radiographic criteria support this course. Clinical labs and tutorial sessions prepare the students to challenge advanced patient examinations.

FORMAT: Lecture 3 hours, lab 4 hours, tutorial 4 hours

PREREQUISITE: RADT 1500

RESTRICTION: Restricted to the Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 2010.03: Imaging Equipment.**

This course covers the structure, operating principles, and quality control of the equipment involved in radiological technology. It includes a comprehensive study of x-ray generators, tubes, fluoroscopic, and processing equipment with a focus on technical parameters and clinical applications. This course also covers quality control concepts, equipment used for quality control testing and testing procedures for the imaging equipment in radiological technology.

FORMAT: Lecture 3 hours lab 2 hours

PREREQUISITE: RADT 1500.03, HSCE 2020.03, HSCE 2010.03

CO-REQUISITE: RADT 2020.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 2020.03: Adaption Radiography.**

The Adaption Radiography course provides the student with the knowledge required to adapt imaging procedures for unique clinical situations including trauma, mobile, and operating room examinations, and for patients with special needs (pediatric, geriatric, and disabled). Selected radiographic projections and procedures related to the topics are also studied and pertinent radiographic images are analyzed. Students will have the opportunity to develop radiographic adaption skills in clinical/learning lab sessions and clinical simulation sessions.

FORMAT: Lecture 3 hours, lab 4 hours, tutorial 1 hour

PREREQUISITE: RADT 2000.03

CO-REQUISITE: RADT 2010.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 2500.03: Clinical Practicum II in Radiological Technology.**

This practicum provides students with the opportunity to continue skill development in the clinical examinations/procedures introduced in RADT 1500. In addition, an introduction to specialized clinical procedures is provided, including operating room imaging, computed tomography, and pediatric radiography.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: RADT 2010.03, 2020.03, HSCE 2030.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3000.03: Applied Pathology in Radiological Technology.**

This course provides the student with the fundamental knowledge to recognize the radiographic appearances of specific pathologies. This knowledge is directly applicable to the clinical component of the program. The course is presented by lecture and through clinical lab sessions and learning labs where the student studies a variety of images related to pathologic processes. Studies from related diagnostic modalities are reviewed when appropriate.

FORMAT: Lecture 3 hours, lab 3.5 hours

PREREQUISITE: RADT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3010.03: Specialty Practice Concepts.**

This course provides the foundation for RADT 3210 and RADT 4000 as it focuses on concepts for specialty practice in computed tomography (CT), vascular/interventional imaging, mammography, bone densitometry and magnetic resonance imaging (MRI). Specific topics include: clinical application/procedures, sectional anatomy, radiological image review, patient management, and specialized imaging apparatus. Knowledge obtained in previous courses and clinical practica is also related as applicable. Students will have the opportunity to relate theory to practice during scheduled clinical lab sessions.

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: RADT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3210.03: Introduction to Specialty Practice.**

This course provides the students with the opportunity to experience the clinical practice of computed tomography, angiography/interventional imaging and mammography. Under the direction of a preceptor, students will meet the

competencies required in these imaging areas. This class allows the students to apply the theory from the Specialty Practice Concepts course (RADT 3010) and promotes further development of professional skills and behaviors.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3010.03, RADT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3220.03: Gastrointestinal/Genitourinary/Operating Room Imaging.**

This clinical education course will prepare students for the clinical practice of radiological technology in the areas of gastrointestinal, genitourinary and operating room imaging. Under the direction of a preceptor, students will apply acquired knowledge and skills to radiological procedures. The students will develop their skills in providing a high standard of patient care, producing and evaluating images, problem solving and collaboration.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 2500.03, RADT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3240.06: General/Adaption Radiography.**

This course provides the student with the opportunity to further develop general radiography skills. Under appropriate direction from a preceptor, students will apply the knowledge and skills acquired in previous courses/practica and adapt routine imaging procedures for challenging clinical situations and patients with special needs. Students will be scheduled to a variety of imaging areas where radiographic adaption is typically required: emergency, and in-patient/mobile procedures. Clinical experience on evening, night, and weekend shifts is provided in this course.

FORMAT: Clinical education course

PREREQUISITE: RADT 2500.03, RADT 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 3500.03: Clinical Practicum III.**

Clinical Practicum III provides students with an opportunity to integrate skills and concepts from previous courses, clinical practica and the clinical education courses. Under appropriate levels of supervision, the student will assume the responsibilities of a radiological technologist and demonstrate competency in radiography and computed tomography. This practicum takes place in a Diagnostic Imaging Department outside the QEII Health Sciences Centre.

FORMAT: Full time rotations in clinical setting

PREREQUISITE: RADT 3210.03, 3220.03, 3240.06

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 4000.12/4100.06: Specialty Practice I/Specialty Practice II.**

Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.

PREREQUISITE: RADT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology. Enrolment may be limited due to clinical site availability.

### **RADT 4200.03: Pediatric Radiography.**

This course provides students with the opportunity to meet the competencies required in pediatric radiography. A wide variety of clinical experiences are scheduled at the IWK Health Centre, including mobile and operating room imaging, gastrointestinal and urinary system examinations, and general imaging. Under the direction of preceptors, students will apply theoretical principles and further develop professional skills and behaviours. Students will also have the opportunity to attend pediatric radiology rounds and observe related imaging procedures.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology



### **RADT 4210.03: Professional Skill Development in Radiological Technology.**

This clinical education course provides students with an opportunity to integrate skills/concepts from previous courses, clinical practica, and clinical education courses and continue development of professional skills in radiological technology. Through reflection and self-evaluation, students will develop learning contracts, and under appropriate levels of supervision will perform general radiologic imaging procedures. Various themes of professionalism will also be explored.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RADT 4220.03: Professional Practice in Radiological Technology.**

This clinical education course provides the student with the opportunity to strengthen radiological technology skills while increasing confidence and independence in clinical practice. Under appropriate direction from a preceptor, students will apply the knowledge and skills acquired in previous courses/practica to further develop clinical judgement and self-confidence. To demonstrate competence, students must successfully complete a summative clinical assessment and comprehensive competency based written examinations. Students will also plan, design, and deliver a professional development session/activity for students and/or radiological technologists.

FORMAT: Clinical Education Course

PREREQUISITE: RADT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Radiological Technology

### **RSPT 1000.03: Respiratory Therapy Instrumentation and Techniques.**

This course provides the student with the fundamental knowledge required to understand the physical principles and concepts necessary for the safe and efficient delivery of physician prescribed therapy. Clinical skills competency through lab simulation is required.

FORMAT: Lecture 3 hours, lab 3 hours

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 1020.03: Respiratory Therapy Clinical Assessment and Techniques.**

RSPT 1020.03 is designed as a continuation of the knowledge and concepts acquired in Term 1 and the skills competencies completed in RSPT 1000.03. Students will focus on the basic background information and psychomotor skills necessary for understanding the physical principles and concepts associated with the safe handling and efficient operation of respiratory therapy equipment. Limited clinical opportunities may be provided. Clinical skills competency testing through lab simulation is required.

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: RSPT 1000.03, HSCE 1000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 1030.03: Cardiopulmonary Physiology I.**

The course presents a modular approach to developing a thorough understanding of normal and abnormal cardiopulmonary function in the human body and is considered a foundation course for all RSPT specific courses in the program.

FORMAT: lecture 4.5 hours, individual and group work with case studies

PREREQUISITE: RSPT 1000.03, HSCE 1020.03, CHEM 1410.03

CO-REQUISITE: BIOC 1420.03

### **RSPT 1500.03: Clinical Practicum I.**

Clinical Practicum I introduces students to clinical practice in the patient care (hospital) environment. Students will have the opportunity to apply theory to skills practice at the defined competency level.

NOTE: Full-time rotations in clinical settings with assigned preceptors. Shift work and weekends may be required. Students will be required to travel to clinical sites outside the Halifax Regional Municipality. Students will be responsible for travel and accommodations

PREREQUISITE: RSPT 1020.03, RSPT 1030.03, HSCE 1010.03, HSCE 1030.03, BIOC 1420.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 2000.03: Principles of Mechanical Ventilation.**

This course will introduce the students to the delivery of mechanical ventilation by learning the terminology, physical principles and physiologic concepts associated with the application of mechanical ventilation. Equipment operation, function and troubleshooting will be investigated in the lab and clinical setting.

FORMAT: Lecture 3 hours, lab/clinical 3 hours

PREREQUISITE: RSPT 1500.03

CO-REQUISITE: RSPT 2070.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 2020.03: Application of Mechanical Ventilation.**

Students will be introduced to the background knowledge necessary for understanding the physical principles and concepts governing the operation of mechanical ventilators and adjunct respiratory therapy equipment to ensure the safe and effective delivery of therapy. Clinical skills testing is required.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: RSPT 2000.03, 2030.03, 2063.03, 2070.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 2030.03: Cardiopulmonary Physiology II.**

This course is a continuation of the physiological concepts introduced in RSPT 1030 and will examine the intricate chemical and physiological processes of fluid and electrolyte balance, pulmonary function testing, hemodynamics and the cardiopulmonary response to unusual and changing environments. Case study presentations and patient scenarios will complement the learning environment and assist the student in integrating previous knowledge.

FORMAT: Lecture 4.5 hours, individual and group work, presentations, case study scenarios

PREREQUISITE: RSPT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 2050.03: Health Practice for Respiratory Therapy.**

This course consists of classroom work, clinical skills testing, guest presentations, community project and an advanced cardiac life support course (ACLS). The learning environment will enhance the understanding of the role of the respiratory therapist in hospitals, healthcare facilities and the community. Basic competency level in the skills required for RSPT 2500 will be achieved through practicing the clinical skills in the lab. Students will be challenged to evaluate and integrate knowledge and skills.

FORMAT: Lecture 3 hours, lab 3 hours. One required weekend workshop in ACLS.

PREREQUISITE: RSPT 2000.03, 2030.03, 2070.03, 2063.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### **RSPT 2063.03: Respiratory Disease & Therapeutics I.**

The proper assessment, evaluation and treatment of clients with conditions and diseases affecting the cardio-respiratory system are vital to the role of a respiratory therapist. The purpose of this course is for students to gain knowledge and understanding of the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies treated by respiratory therapists in the acute, chronic and home care environments. While studying each individual disease, the evidence-based treatment and prevention strategies, including pharmacology, will be examined.

FORMAT: Lecture 4.5 hours

PREREQUISITE: RSPT 1500.03

### **RSPT 2065.03: Respiratory Disease & Therapeutics II.**

The proper assessment, evaluation and treatment of clients with conditions and diseases affecting the cardio-respiratory system are vital to the role of a respiratory therapist. The purpose of this course is for students to gain knowledge and understanding of the incidence, etiology, clinical manifestations, pathophysiology, and differential diagnosis of pathologies treated by respiratory therapists in the acute, chronic and home care environments. While studying each individual disease, the evidence-based treatment and prevention strategies, including pharmacology, will be examined.

FORMAT: Lecture and PBL 4.5 hours

PREREQUISITE: RSPT 2063.03

### RSPT 2070.03: Human Pregnancy and Fetal/Newborn Development.

This course contains background information and assessment skills necessary for the progression to more advanced assessment, skills and competency levels in respiratory care of the neonate and child. The integration of this and additional required courses will allow the student to learn and to challenge the competency component of the program as it relates to neonatal/pediatric therapeutics and instrumentation, pathophysiology, applications of mechanical ventilation, pharmacology, and Neonatal Resuscitation Program (NRP).

FORMAT: Lecture 3 hours, and NRP

PREREQUISITE: RSPT 1500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream of Respiratory Therapy

### RSPT 2500.03: Clinical Practicum II.

This clinical practicum provides students with the opportunity to continue clinical skill competency development and achieve defined skills by performing in a clinical patient environment. Students will have the opportunity to rotate through assigned clinical placements through 8 and 12 hour day and night shifts including weekends, depending upon the placement requirements.

FORMAT: Full-time rotations in clinical settings with assigned preceptors.

Students will be required to travel to clinical sites outside the Halifax Regional Municipality. Students will be responsible for travel and accommodation arrangements.

PREREQUISITE: RSPT 2020.03, 2050.03, 2065.03, 2070.03, HSCE 2000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

### RSPT 3000X/Y.06: Anesthesia Instrumentation and Clinical Techniques.

This course will consist of two modules; the first being a seminar/lecture series during the first few weeks of the Fall semester and the second being two weeks of full-time clinical application program in the operating room. Students will be precepted by an anesthetist with focus on airway management skills and patient monitoring. Students will also attend an intensive 2-day workshop in management of the difficult airway. Depending on availability of clinical sites, students may be expected to travel outside the metro area at their own expense.

NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

### RSPT 3010X/Y.06: Neonatal and Pediatric Therapeutics.

This course will consist of two modules; the first being a seminar/lecture series during the first few weeks of the Fall semester and the second being a five week full-time clinical application program. Students will integrate and apply theories and skills in the neonatal and pediatric environment under the guidance of skilled preceptors. Students will be assigned to diverse clinical areas including Neonatal Intensive Care I and II, Pediatric Intensive Care, Birth Unit, and General Wards. Students may be assigned to clinical experiences during twelve hour day or night shifts. Students may be required to travel outside the metro area at their own expense.

NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

### RSPT 3020X/Y.06: Cardiac and Pulmonary Diagnostics.

This course will consist of two modules; the first being a seminar/lab series during the first few weeks of the Fall semester and the second being a three week full-time clinical application program in the adult and pediatric pulmonary function, arterial blood gas analysis, electrocardiography and sleep laboratories. Students will integrate and apply theories and skills in specialized diagnostic environments. Students will be precepted and evaluated by certified technologists. This course will enable students to become proficient in performing cardio-pulmonary diagnostic testing including spirometry. Students will have exposure to bronchoprovocation testing and exercise stress testing. Students may be required to travel outside the metro area at their own expense.

NOTE: Students taking this course must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: RSPT 2500.03, STAT 1060.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

### RSPT 3230X/Y.06: Critical Care Instrumentation and Clinical Techniques.

This class will consist of two modules; the first being a seminar/lecture series during the first few weeks of the fall semester and the second being a five week full-time clinical application program in diverse critical care areas. Students will be presented with the concepts and theories relevant to the respiratory care of the critical patient. Students will recall and apply theories and concepts learned in previous courses in order to integrate this knowledge with new information presented. The clinical application program will provide the students with the opportunity to integrate theories and procedures learned in the seminar/lecture series. Students may be assigned to any of the following critical care areas: medical, surgical, neurosurgical, cardiovascular and coronary care. Depending on availability of clinical sites, students may be expected to travel outside the Metro area at their own expense.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: RSPT 2500.03

CO-REQUISITE: RSPT 3000X/Y.06

### RSPT 3250X/Y.06: Health Practice.

This course enables students to apply theories, practice clinical skills and integrate previous learning experiences acquired throughout the three years of the BHSc program. Students will be assigned to a rotating clinical schedule at various clinical sites. Clinical experiences in this course may occur on weekends or night shifts. Students will be evaluated by preceptors at the assigned clinical sites in consultation with faculty. Students may be required to travel outside the metro area at their own expense.

NOTE: Students taking this course must register in both X and Y terms; credit will be given only if both are completed consecutively.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

### RSPT 3500.03: Clinical Practicum III.

This course enables students to integrate theories and skills acquired throughout the previous three years of the program; including theory, clinical practicum and clinical education courses. Students will be evaluated on skills proficiency, time management, organizational skills, and decision-making at a high level of independence. Students will be assigned to diverse clinical areas and patient populations. Clinical experiences in this course will occur during twelve hour day and night shifts, including weekends.

FORMAT: May also include one weekend workshop in Pediatric Advanced Life Support.

PREREQUISITE: RSPT 3000.06, 3010.06, 3020.06, 3230.06, 3250.06

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

### RSPT 4000.12/4100.06: Specialty Practice I/Specialty Practice II.

Specialty practice affords students the opportunity to attain additional competence and knowledge in a specialty practice area. There are three components to specialty practice: clinical, contextual and theoretical. This course can be six or twelve credit hours depending on the nature of the specialty practice. Specialty practice is arranged through consultation with the fourth year/post diploma advisor.

PREREQUISITE: RSPT 3500.03 for entry level students; Post diploma students must consult with the post diploma advisor to ensure the necessary prerequisites have been met.

RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy. Enrolment may be limited due to clinical site availability

### RSPT 4010.03: Anaesthesia Technology and Related .

The course will provide advanced knowledge of the function, operation, set-up and quality assurance issues regarding anaesthesia and related equipment. The student will be provided with the knowledge necessary to work with anaesthesia equipment in operating room and related settings.

FORMAT: Online delivery via BLS

PREREQUISITE: RSPT 3500.03

RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy or by permission of instructor

**RSPT 4020.03: Anaesthesia Medication Delivery.**

This course will provide in depth knowledge of the modes of delivery and action and interaction of anesthesia pharmacology. The student will be provided with knowledge regarding common medications related to the delivery of anaesthesia and monitoring their effect in the operating room and related settings.

FORMAT: Online delivery via BLS

PREREQUISITE: RSPT 3500.03 or equivalent

RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy or by permission of instructor

**RSPT 4030.03: Clinical Anaesthesia.**

This course will provide in-depth knowledge of evaluation, monitoring and interventions for patients receiving anaesthesia under varying conditions. The student will be provided with the knowledge necessary to anticipate the needs of the patient and the assistance required by the anaesthetist during different aspects of the anaesthetic process.

FORMAT: Online delivery via BLS

PREREQUISITE: RSPT 3500.03 or equivalent

RESTRICTION: Restricted to Bachelor of Health Science students in Respiratory Therapy or by permission of instructor

## Interprofessional Health Education

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**IPHE 2201.03: Introduction to Aboriginal Peoples' Health and Healing.**

This course provides students the opportunity to learn about Aboriginal perspectives regarding health, as well as the multiple and complex challenges facing Aboriginal peoples with respect to key health issues, such as health and social inequities, the epidemiology of disease and culturally appropriate service provision.

INSTRUCTOR(S): D. Martin, TBA

RESTRICTION: Faculty of Health Professions students only

**IPHE 4900.00: Interprofessional Health Education Portfolio.**

This course is intended to prepare students to work in a collaborative and patient/client/community/family-centered work environments. Students in Health Professions undergraduate programs are required to maintain registration in this course for the duration of their studies. The student will be required to have completed, by the end of their program of study, a total number of different, meaningful and relevant interprofessional collaborative learning experiences (as determined and approved by the School/College) equal to two times the number of years or part of years of study in the program. At least one of these experiences will be in a practice setting (in the event there are no students from other professions in any of the student's practice settings, credit may be granted for interactions with non-student professionals which follow an approved structured format). The experiences will include interactions with undergraduate and/or graduate students from a total of at least 4 different related professions with which there are natural affinities or linkages in the professional environment, some professions of which are outside the student's home School/College. In accordance with the guidelines/requirements of the home School/College, students will prepare a portfolio (or comparable document/process) which maps their interprofessional collaborative learning experiences on to the specific requirements of the School/College. The portfolio will be graded by the School/College on a Pass/Fail basis. Successful completion of this course is a requirement for graduation in all programs, and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration to be presented by the Faculty of Health Professions.

FORMAT: Portfolio overseen by individual FHP School/College

RESTRICTION: Health Professions students only

# Nursing

## School of Nursing

Location: Forrest Building  
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### Dean

Webster, W. G., PhD

### Director

MacMillan, K., Diploma Nursing, BSc, MA, MSc, PhD (Toronto), RN

### Associate Director, Graduate Studies

MacDonald, M., BN (UNB), MSN (S. Maine), PhD (San Diego), RN

### Associate Director, Undergraduate Studies

Gilbert, C., BS, MBA (S. Illinois), MSN (Case Western Reserve), NP

### Associate Director, Research and International Affairs

Tomblin Murphy, G., BN, MN (Dalhousie), PhD (Toronto), RN

### Assistant Director, Graduate Studies

Tamlyn, D., BN (McGill), MEd (Ottawa), PhD (Dalhousie), RN

### Assistant Director, Undergraduate Studies

Houk, S., BScN (Sask), MN (Dalhousie), RN

### Senior Clinical Coordinator

Bleasdale, B., BN (Dalhousie), RN

### Clinical Coordinator, NP Program

Herbert, K., BN (MUN), MA (Dalhousie), NP

### Professor Emeritus

Keddy, B., BScN (MSVU), MA, PhD

### Coordinator, BScN (Arctic Nursing)

Edgecombe, N., BN (Lethbridge), MN, PhD (Alberta), RN

### Professors

Hughes, J. M., BN (Dalhousie), MS (Boston), PhD (McGill), RN  
Sullivan, P. L., BScN (MSV), MSc (Boston), PhD (Alberta), RN  
Tomblin Murphy, G., BN, MN (Dalhousie), PhD (U of T), RN

### Associate Professors

Aston, M., BNSc, MEd (Queen's), PhD (U of T), RN  
Latimer, M., BA (MAU), BScN, MN (Dalhousie), PhD (McGill), RN  
Martin-Misener, R., DOCHN, BScN, MN (Dalhousie), PhD (Calgary), NP  
Macdonald, M., BN (UNB), MSN (S. Maine), PhD (San Diego), RN  
Sabo, B., BA (Manitoba), MA, PhD (Dalhousie), RN  
Steenbeek, A., BScN (McMaster), MSN, PhD (UBC), RN  
Tamlyn, D., PhD (Dalhousie), MEd (Ottawa), BN (McGill)

### Assistant Professors

Campbell-Yeo, M., BScN, MN (Dalhousie, PhD (McGill), NP  
Chircop, A., BScN, MN, PhD (Dalhousie), RN  
Curran, J., BScN, MEd (MUN), PhD (Dalhousie), RN

Edgecombe, N., BN (Lethbridge), MN, PhD (Alberta), NP  
Fillmore Elbourne, H., Diploma (New Brunswick), BScN (Ryerson), MN (Dalhousie), PhD (Southampton), RN  
Foster, S., BN (MUN), MN (Dalhousie), RN  
Gilbert, C., BS, MBA (S. Illinois), MSN (Case Western), NP  
Goldberg, L., BA (UCCB), MA (Dalhousie), PhD (Alberta), RN  
Hayward, K., BScN, MN (Dalhousie), RN  
Halperin, B., MN (Dalhousie), BNcS (Queen's), RN  
Helpard, H., BN (UNB), MN (Dalhousie), RN  
Houk, S., BScN (Sask), MN (Dalhousie), RN  
Kiberd, C., BN, MN (Dalhousie), MEd (Queen's), RN  
McLeod, D., BN, MN (Dalhousie), PhD (Calgary), RN  
Murphy, N. J., BN (Dalhousie), MSN (UBC), RN  
Price, S., RN Diploma (VGH), BScN (Post-RN), MN (Dalhousie), PhD (Toronto), RN  
Richardson, H., BScN, MA (Dalhousie), RN  
Snelgrove-Clarke, E., BN (MUN), MN (Dalhousie), PhD (McGill), RN  
Vukic, A. R., BN, MN (Dalhousie), RN  
Waldron, I., BA (McGill), MA (London), PhD (Toronto)  
White, M., BN (UNB), MN (Dalhousie), RN  
Wight Moffatt, C. F., BN (MUN), MS (Boston), PhD (Toronto), RN

### Lecturers

Barkhouse-MacKeen, C., BN (Dalhousie), MSc (Texas-Austin), RN  
Duinker, E., BScN, MN (Dalhousie), RN  
Hebert, K., BN (MUN), MN, NP (Athabasca)  
MacIsaac, B., BScN (Alberta), MN (Dalhousie), RN  
Sheffer, C., BN, MN (Dalhousie), RN

### Senior Instructor - Skills Laboratory

Bethune, E., BScN (MSVU), RN

### Instructor - Skills Laboratory

Ritchie, C., BScN, RN

### Adjunct Appointments

Banfield, V., BScN (St. FX), MN (Dalhousie), RN  
Banoub-Baddour, S., BScN, MScN, DNSc (Egypt), RN  
Bayer, M. J., BN (Dalhousie), MEd (Acadia), PhD (Dalhousie)  
Bowes, D., BN, MN (Dalhousie), RN  
Braunstein, J., BScN (Cornell), MPH (Minn)  
Byrne-Surette, D., BScN (Dalhousie), MN (Athabasca), RN  
Campbell, M., BN, MSN (Yale), RN  
Campbell, T., BScN (UPEI), MN (Dalhousie), RN  
Carson, G., BN, MN (Dalhousie), RN  
Cobbett, S., BN, MN (Dalhousie), EdD (Australia), RN  
Cook, E., BScN (UWO), BSc (Iowa), MN (Athabasca)  
Cooper, E., BN, MN (Dalhousie), RN  
Coulter, L., BN, MN (Dalhousie), RN  
Deveau, M., BScN (Dalhousie), MN-ANP (Athabasca), NP  
Doucet, L., BN, MN (Athabasca), RN  
Edwards, N., BScN (Windsor), MSc (McMaster), PhD (McGill), RN  
Forgeron, P., BScN (St. FX), MN (Dalhousie), RN  
Frank, B., BEd, BA, MEd (Acadia), PhD (Dalhousie)  
Garden-Jayasinghe, J., BN, MN (Dalhousie), RN  
Gaudine, A., BSc, MScN (McGill), PhD (Concordia), RN  
Gillis, A., BScN, MAdEd (St. FX), PhD (Texas-Austin), RN  
Graham, K., BScN, MN (U of A), RN  
Gregory, D., BScN (Ottawa), MN (Man), PhD (U of Arizona), RN  
Hamilton, J., BN (Dalhousie), MSN (McGill), RN  
Hartigan-Rogers, J., BN, MN (Dalhousie), RN  
Hawley, P., BScN (St. FX), MN (Dalhousie), PhD (c) (Alberta), RN  
Hirsch, G., BN (Dalhousie), MSN (Yale), NP  
Knox, J., BN (UNB), MN (Dalhousie), MBA (SMU), RN  
Lackie, K., BScN, MN (Dalhousie), RN  
LeBlanc, A., BN, MN (Dalhousie), RN  
Luciani, A., BScN (Ryerson), MN (MUN), RN  
MacConnell, G., BScN (St. FX), MN (Dalhousie), RN  
MacDonald, R., BSc (Acadia), MHSN (Australia), RN  
McLaughlin, H., BN, MN (Dalhousie), RN  
McLean, L., BA (Mt. A), BScN (McMaster), MN (Dalhousie), RN  
Moffitt, P., BScN (UBC), MN (UNB), PhD (Calgary)

Muxlow, J., PostRN/BN (Dalhousie), MScN (Boston), RN  
 Naphan, S., MA, BA (Ontario), BN (Athabasca), RN  
 Newell, J., BN, MN (Dalhousie), RN  
 Nymark, P., BN (Dalhousie), NP, MN (Athabasca)  
 Redmond, S., BN, MN (Dalhousie), RN  
 Ritter, J. R., BSc, BEd, MEd (MUN)  
 Sakariassen, E., BN (UCalgary), MN (Athabasca)  
 Vandewater, D., BN, MN (Dalhousie), RN  
 Whelan, R., BN, MN (Dalhousie), RN  
 Yates, G., BN, MN (Dalhousie), SNP, RN

## Cross Appointments

Beagan, B., BA, MA (Dalhousie), PhD (UBC)  
 Brown, C., BA, MA (Manitoba), MSW (Carleton), PhD (Toronto)  
 Evans, J., BN, MN, PhD (Dalhousie), RN  
 Fenety, A., BSc (UNB), DipPT (Man), MscPT (Alberta), PhD (Dalhousie)  
 Gahagan, J., BA Honours (Carleton), MA (Windsor), PhD (Wayne State)  
 Harbison, J., BA, BSS (Trinity Coll), Grad DipSW (Edinburgh), PhD (U of T)  
 Jackson, L.A., BA, MA, PhD (Toronto)  
 Lauckner, H., BSc, MSc, PhD (Queen's)  
 Livingston, L., BA-BPHE, MSc (Queen), PhD (Calgary)  
 Lyons, R.F., BA (Dalhousie), MEd (St. FX), PhD (Oregon)  
 Merrit, B., BSc, MSc, PhD (Colorado)  
 Packer, T., BSc (Hons), MSc, PhD (Queen's)  
 Rathwell, T., BA (Hons) (York), MA, PhD (Durham)  
 Singleton, J., BA (Waterloo), MS (Penn State), PhD (Maryland), Associate Professor, School of Recreation, Physical & Health Education  
 Sketris, I., BscPhm (Toronto), MPA (Dalhousie), PharmD (Minnesota)  
 Thomas-Bernard, W., BA (MSVU), MSW (Dalhousie), PhD (Sheffield)  
 Townsend, E., BSc (Toronto), MadEd (St. FX), PhD (Dalhousie)  
 Versnel, J., BSc (Toronto), MSc (Ontario), PhD (Queen's)  
 Warner, G., BSc (Elmhurst), MSc, PhD (Case Western Reserve)

## Preceptors

Many nurses and persons in other disciplines, and settings, provide valuable assistance in the education of nursing students. Names can be obtained by contacting the School of Nursing.

## I. Introduction

The School of Nursing opened in 1949 and became a constituent part of the Faculty of Health Professions in 1961. Currently the School offers an undergraduate program for Basic and Post Diploma students, a Bachelor of Science (Arctic Nursing), a Master of Nursing Program and a PhD (Nursing) Program.

### A. School of Nursing Regulations

1. Students are required to observe the University Regulations and Academic Regulations as described in this calendar.
2. Students are assessed in each year on their aptitude and fitness for nursing. Students who, in the judgment of the faculty, fail to attain a satisfactory standard in this assessment may be required to withdraw from the School.
3. Students are responsible for ensuring that they are registered in appropriate classes throughout the program. Incorrect registration, at any time, could cause conflicts in a student's year-to-year progression and/or graduation.
4. Students in the Baccalaureate Program are responsible for (a) the purchase of uniforms including shoes and a watch with a sweep hand or a digital watch with seconds display, (b) cost of accommodation and travel while on clinical experiences. Additional expenses are incurred by students in the Basic Baccalaureate Program for field experience, books, first aid class, CPR class, graduation pin, equipment, and nurse registration examinations and recommended and/or required immunizations and/or testing. Each student must also purchase a name tag from the University.
5. Because of enrolment limits on class size, part-time students who wish to change to full-time status must present this request in writing to the Assistant Director, Admissions & Student Affairs by March 1.
6. Students are assigned to a faculty member from the Academic Advising Committee to help them plan their academic program and to discuss academic progress or difficulties.
7. Students are permitted to repeat a nursing class, exclusive of nursing electives, in the BScN program only once. A second failure will result in dismissal from the program.

8. Students wishing to appeal a decision based on faculty regulations or decisions should follow the School of Nursing Appeal Procedure outlined in the Nursing Student Guide.
9. Supplemental exams will not be available in clinical classes.
10. Because of the nature of the study and practice of Nursing which places Nursing students in a position of special trust, applicants will be asked to complete a screening question related to past criminal convictions which might affect the applicant's suitability for the practice of nursing. Students accepted into the nursing program who provide false information will be disciplined by the university. It is the student's responsibility to inform the Assistant Director (Undergraduate Student Affairs) of any new criminal conviction which could affect the student's suitability for practice.
11. Once enrolled in the Nursing Program it is the students' continuing responsibility to inform the Assistant Director Undergraduate Student Affairs of any criminal conviction or any significant personal circumstance which would adversely affect their ability to continue with their studies or which would make them ineligible for registration within CRNNS upon graduation.

## B. School of Nursing Appeal Procedure

An appeal is a request for alteration of a decision which is based on School or Faculty regulations (academic matters). Both students and faculty have rights and responsibilities and further, that as the University is a complex system, students may experience difficulty in determining how to express dissatisfaction. This document is provided as a guideline for students and faculty in solving dissatisfactions.

The University has established a system which allows students to appeal academic decisions made by faculty. Appeals can be heard at different levels within the University: At the School and at Senate. Appeals are heard in the School by the Student Appeals Committee and at Senate level by the Senate Academic Appeals Committee.

### C. Procedure for Undergraduate Appeals

Undergraduate appeals are heard by the Student Appeals Committee of the School of Nursing. Procedures for undergraduate appeal procedures are available from the School.

## D. Interprofessional Health Education

Students are required to maintain enrolment in IPHE 4900 (see calendar section on Health Professions, Interprofessional Health Education) for the duration of their studies. Successful completion of this class is a requirement for graduation, and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration to be presented by the Faculty of Health Professions. Students are asked to consult with their individual school/college to determine the specific guidelines and expectations regarding the required portfolio.

## II. Degree Options

### A. Bachelor of Science (Nursing) for Basic Students

#### 1. Degree Requirements

Throughout the undergraduate program students must: obtain a minimum cumulative GPA of 2.00; accumulate a minimum of 129 credit hours; successfully complete all compulsory classes, as well as the necessary number of elective classes; and, complete the degree within six years of commencing nursing classes. Credit will be given for non-nursing classes that are up to ten years old by the date the degree is completed.

#### 2. Grade Point Average Standards (GPA)

The grade point average system is described in the Academic Regulations.

#### 3. Grades

The following letter-grade system is used to evaluate performance. Pass in non-nursing classes: **A+**, **A**, **A-**, **B+**, **B**, **B-**, **C+**, **C**, **C-**, **D**, and **P**, except in nursing classes where students must attain a minimum of **C** in both theory and clinical/laboratory components. **FM**, **F**, and **INC** are failing grades. **ILL** and **W** are considered neutral.

#### 4. Requirements for Promotion

Besides meeting the GPA requirements students must meet the following for promotion:

Year I to Year II: A student must pass all 1000-level classes in order to advance to 2000-level nursing classes, including, ANAT 1010.03, PHYL 1010.06, and BIOC 1420.03.

Year II to Year III: A student must pass all second-year nursing classes, MICI 1100.03, and STAT 1060.03.

Year III to Year IV: A student must pass all 3000-level nursing classes.

#### 5. Normal Workload

The program consists of 129 credit hours (21.5 credits); Students can register for a maximum of 15 credit hours per term.

#### 6. Prerequisite for Class Admissions

There are a number of classes that require prerequisites (see class descriptions). Students must successfully complete the required prerequisites for each class or obtain approval from the Committee on Studies prior to registration.

#### 7. Advanced Placement

Incoming students with previous post-secondary work may qualify to complete an accelerated or fast-track BScN stream. *Two Calendar Year, Three Academic Year* and *Three Calendar Year* options are available. To qualify, students must have a GPA of at least 3.0 and specific prerequisites. Space is limited. For more information contact the Undergraduate Admissions Secretary.

### B. Bachelor of Science (Nursing) (Arctic Nursing)

The Arctic Nursing Program, developed collaboratively between Nunavut Arctic College and Dalhousie University, is a four-year program that focuses on nursing in Nunavut. This program is designed for Nunavut residents. The curriculum emphasizes awareness and respect for Inuit culture and will prepare Inuit nurses to be leaders in the health-care system of Nunavut.

To apply or learn more about the program contact the School of Nursing.

### C. Graduate Programs

For details of the Master of Nursing, the joint Master of Nursing/Master of Health Administration programs and the PhD (Nursing) program, please consult the Faculty of Graduate Studies calendar.

## III. Bachelor of Science (Nursing) Degree Program

In response to a health care system based on principles of primary health care, the Bachelor of Science (Nursing) Program prepares nurses to work in partnerships with individuals, families, groups and communities to promote, maintain and strengthen health. Graduates are prepared to respond to a range of health and illness needs in a variety of settings and organizational health care infrastructures. The curriculum is designed to enable graduates to meet the standards of nursing practice in Canada and be eligible for registration in Nova Scotia.

In addition to the Dalhousie Campus, students may complete a BScN degree on site in Yarmouth. Students interested in this option should contact the School for further information.

### Program Objectives

The Bachelor of Science (Nursing) graduate will:

1. Demonstrate application of nursing science through critical inquiry, commitment to life-long learning and evidence-based practice.
2. Practice competently by applying the principles of primary health care with diverse \*clients in a variety of health care contexts and by responding to emerging trends, technology and concepts in health.
3. Communicate, collaborate and partner with \*clients, and other members of the health care team to increase capacity and enhance health of populations.
4. Demonstrate ethical, legal and professional accountability in the practice of nursing and remain committed to professional competence through life-long learning.
5. Influence nursing and health care through a social and political analysis of current health care issues and application of leadership skills.

\*(individuals, family, groups, community and/or populations)

### A. Bachelor of Science (Nursing) for Basic Students

The Bachelor of Science in Nursing degree is a 129 credit hour program.

Graduates are eligible to write examinations for membership in the College of Registered Nurses of Nova Scotia.

#### 1. Immunization

Before commencing first year studies, students are responsible to have complete and current immunizations against diphtheria, polio, tetanus, pertussis, measles, mumps, rubella, Hepatitis B and a 2-step Mantoux. Access to clinical agencies will be denied if immunizations are not current and complete.

#### 2. CPR, (BCLS) & Standard First Aid Certification

Before commencing first year studies, students must have CPR (Health Care Provider Level) and Standard First Aid certification. CPR (Health Care Provider Level) must be recertified annually. A cardio-pulmonary resuscitation (CPR) class and standard first-aid class are the student's responsibilities in time and cost. Access to clinical settings will be denied if certification is not current.

#### 3. Class of Study

The Program is offered at both the Halifax and Yarmouth sites. The following is an outline of classes that are normally taken each year.

Program requirements may change with ongoing curricular revisions.

##### First Year

- ANAT 1010.03
- BIOC 1420.03
- PHYL 1010.06
- NURS 1000.03
- NURS 1030.03
- NURS 1220.03
- NURS 1240.03 (a five-week clinical/class starting in late April or early May with annual variations)
- nine credit hours at the 1000 level from Biology, Chemistry, Philosophy, Psychology and/or Sociology.

##### Second Year

- MICI 1100.03
- NURS 2000.03
- NURS 2035.03
- NURS 2050.03
- NURS 2080.03
- NURS 2090.03
- NURS 2200.03
- NURS 2280.03
- NURS 2220.06 (a six-week clinical nursing intersession taken in May/June or July/August)
- STAT 1060.03

##### Third Year

- NURS 3040.03
- NURS 3060.03
- NURS 3260.03
- NURS 3270.03
- NURS 3280.03
- NURS 3290.06 (a six-week clinical nursing intersession, usually starting in April or early May with annual variations)
- Six credit hours at the 2000 or 3000 level from Biology, Chemistry, Philosophy, Psychology, and/or Sociology
- Three credit hours of general electives may be taken from any class NOT listed as a nursing elective: however, the class must be at the 2000 level or above except in the case of a language (not English) which can be taken at the 1000 level.
- One Nursing elective (three credit hours)

##### Fourth Year

- NURS 4030.03
- NURS 4050.03
- NURS 4060.03
- NURS 4210.03
- NURS 4220.03
- NURS 4250.03
- NURS 4260.03

- One Nursing elective (three credit hours)
- NURS 4240.06 (minimum 280 hour internship beginning in March)

## B. Bachelor of Science (Nursing) for Registered Nurses

Admission to this program has been suspended.

The Bachelor of Science (Nursing) for registered nurses consists of 60 credit hours of study. Students may complete the program at either the Halifax or Yarmouth site through full- or part-time study. The program can be completed in two calendar years of full-time study provided Faculty resources allow required nursing classes to be offered during the summer session. Otherwise, students without transfer credits can complete the program in two full-time and one part-time academic year (September - April). Part-time students who wish to change their status to full-time must write their request to the Associate Director of Undergraduate Student Affairs by March 1.

A clinical major option in oncology nursing may be available as a class component of the BScN (RN) degree program.

The School of Nursing has made a commitment to offer accessible nursing education to registered nurses allowing them to obtain their education in the communities where they live and work.

Check with the Distance Advisor for Post RN students regarding class offerings.

### Course of Study

With the help of an academic advisor, an individual course of study is determined. Course of study may be affected by the actual classes offered in an academic year. Certain classes may have prerequisites as noted in the class descriptions. Part-time students are encouraged to complete most of the required non-nursing classes before starting nursing classes. The course of study varies considerably when the student applies transfer credits toward the degree. Transfer credit regulations are outlined under the Academic Regulations section of the University Calendar.

#### Required Classes

- STAT 1060.03
- NURS 2250.03
- NURS 3030.03
- NURS 4030.03
- NURS 4250.03
- NURS 4260.03
- Nursing Electives (six credit hours)
- The six credit hours of electives may be chosen from Nursing and Interdisciplinary classes. Class selections vary by year. Please consult the current years timetable for class offerings.

#### Optional classes (nine credit hours must be selected)

- NURS 2080.03
- NURS 2240.03
- NURS 3270.03
- NURS 4050.03

Eighteen credit hours must be chosen from at least two of the following non-nursing subjects areas: Anatomy, Biochemistry, Biology, Chemistry, Microbiology, Philosophy, Physiology, Psychology and Sociology

Six credit hours of general electives must be taken from any class NOT listed as a nursing elective; however, the class must be at the 2000 level or above except in the case of a language (not English) which can be taken at the 1000 level. An open elective (either nursing or general) is also required.

## C. Nursing Elective Classes

Basic students are required to complete six credit hours of nursing electives. Post RN students must complete six credit hours of nursing electives. NOT ALL NURSING ELECTIVES ARE OFFERED EVERY YEAR. Please consult the School to ascertain the current offerings. When resources allow, the following are offered:

- NURS 2360.03: The Phenomenon of Pain: Assessment and Management.
- NURS 2390.03: Emergency Preparedness: A Nursing Perspective
- NURS 3080.03: Culture Caring and Health Care.
- NURS 3310.03: Health Informatics.
- NURS 3320.03: Acute Care Specialty Nursing.
- NURS 3345.03: Fundamentals of Oncology Nursing

- NURS 3360.03: Alternative and Complementary Therapies: Implications for Nursing Practice.
- NURS 4091.03: Breast Feeding for Family and Community Health.
- NURS 4330.03: Self-Directed Learning.
- NURS 4351.03: Specialty Practice of Oncology Nursing.
- NURS 4360.03: Management - The Process in Health Care Agencies.
- NURS 4371.03: Addictions Nursing Practice.
- NURS 4380.03: Introduction to Epidemiology Methods in Nursing Practice.
- NURS 4390.03: Intermediate Pathophysiology and Nursing.

## D. Interdisciplinary Nursing Elective Classes

- NURS 4370.03: Women and Aging.
- NURS 4800.03: Interdisciplinary Class in Human Nutrition.

## IV. Class Descriptions

Section 01 is restricted to students registered in the Halifax program.

Section 03 is restricted to students registered in the Yarmouth program.

Section 06 is for students choosing the Distance option.

### ANAT 1010.03: Basic Human Anatomy.

See class description in the Anatomy/Neurobiology section of calendar.

### BIOC 1420.03: Introductory Biochemistry for Nursing Students.

See class description in the Biochemistry/Molecular Biology section of calendar.

### MICI 1100.03 Health Science Microbiology.

See class description in the Microbiology & Immunology section of calendar.

### NURS 1000.03: Introduction to the Foundations of Nursing.

Major concepts of health and professional nursing are introduced. Students begin to develop an awareness of the practice of nursing based on the determinants of health, primary healthcare and major nursing concepts. Emphasis is given to the helping role of nursing. A variety of experiences facilitate learning and students are introduced to the practice of nursing in clinical settings.

FORMAT: Lecture 2 hours, tutorial 1 hour

### NURS 1030.03: Human Development and Health I: Adults and Healthy Aging.

Guided by the principles of Primary Health Care and building on the concepts introduced earlier, students examine the developmental processes experienced by adults. Students focus on the psychosocial, cultural, cognitive, and spiritual health of adults and on nursing practices that promote health in adults at specific developmental stages. Issues of safety and nutrition are specifically addressed. Strategies to promote healthy aging at the individual, family, and community level are explored.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 1000.03

### NURS 1220.03: Knowledge and Process in Nursing Practice I.

Knowledge and Process in Nursing Practice I. Students develop beginning competence in the use of health assessment. Comprehensive health assessments are integrated as a basis for clinical interventions inherent in the caring role. In addition, students are introduced to the organizational and work role competencies required for clinical practice.

FORMAT: Lecture 2 hours, clinical/lab 4 hours

PREREQUISITE: NURS 1000.03

### NURS 1240.03: Introduction to Nursing Practice.

(Intersession) Students are introduced to healthcare settings where they interact with older adults at various levels of health. As a basis for these experiences the foundations of nursing addressed in NURS 1000.03, NURS 1030.03, and NURS 1060.03 are further developed. Learning experiences are designed to promote beginning knowledge and skills for the practice of nursing with an emphasis on helping relationships.

FORMAT: Lecture/lab and clinical 40 hours/week for 5 weeks

PREREQUISITE: NURS 1030.03, 1220.03

### **NURS 2000.03: Teaching and Learning and the Communication Process.**

Teaching and learning transactions among nurses and individuals, families, groups and communities are integral to health and well-being. The process of communication is central to the teaching-learning process and occurs within the nurse-patient relationship (a collaborative-partnership). The course is designed to assist students to critically analyze and integrate the teaching-coaching domain of nursing practice within the helping role of the nurse. Principles and theories of learning are used to identify strategies to help clients acquire knowledge, skills and attitudes that enable them to attain/maintain optimal levels of health. The course includes an introduction to the counseling role of the nurse with a focus on therapeutic communication strategies necessary to establish partnerships with clients. Students are given opportunities to expand their existing interviewing and communication skills and teaching abilities.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 1240.03, BIOC 1420.03, PHYL 1010.06, ANAT 1010.03

### **NURS 2035.03: Nursing Research.**

This course requires students to engage in a critical inquiry about how research processes influence the way knowledge is constructed. Students explore dimensions of knowing from multiple perspectives of acquired knowledge, experiential knowledge of nursing practice, conceptual meanings, collaborative practice partnerships and values and beliefs about the contributions of nursing knowledge as transformative in the healthcare system. Sharing new knowledge resulting from the synthesis and transfer of evidence across disciplines and healthcare sectors will be examined. The use of innovative and creative thinking supports students to design ways of communicating and translating research findings for application to practice.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 1240.03, ANAT 1010.03, PHYL 1010.06, BIOC 1420.03

CO-REQUISITE: STAT 1060.03/MATH 1060.03

### **NURS 2050.03: Pharmacology and Nursing.**

Students are introduced to the pharmacokinetics and pharmacodynamics of the major drug classes with an emphasis on application in the clinical setting. Interdisciplinary and collaborative aspects of the nurse's role in administering and monitoring medications and their effects are explored. Students demonstrate dosage calculation, preparation and administration of medications in the laboratory setting. Legal, ethical and professional principles of accountability are examined.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: NURS 1240.03, BIOC 1420.03, PHYL 1010.06, ANAT 1010.03

### **NURS 2080.03: Social and Cultural Determinants of Health.**

Social inequities often make it difficult for individuals, families, groups and communities to attain or maintain health. This class is designed to critically analyze the social and cultural determinants of health. Students explore their own attitudes and beliefs related to topics including racism, poverty, ageism, sexism and classism. Critical social theory, cross cultural nursing, communication, health promotion, health education and social action are included in this course to provide students with the knowledge and skills to influence the social determinants of health in the healthcare system.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 1240.03, BIOC 1420.03, PHYL 1010.06, ANAT 1010.03

### **NURS 2090.03: Pathophysiology and Nursing.**

This course provides a foundation for understanding human physiological responses to health alterations. An in-depth understanding of structural and functional changes from normal serves as the basis for nursing assessment, intervention, and care.

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 1420.03, ANAT 1010.03, PHYL 1010.06, NURS 1240.03

CO-REQUISITE: MICI 1100.03

### **NURS 2200.03: Knowledge and Process in Nursing Practice II.**

Students are introduced to theoretical bases of nursing to evaluate health behaviours and outcomes. Students build on health assessment skills, and monitor,

implement and evaluate nursing interventions. Students are introduced to nursing research to guide reflective nursing practice and the safe use of technology and caring approaches in laboratory settings.

FORMAT: Lecture 2 hours, lab 2 hours

PREREQUISITE: NURS 1240.03, ANAT 1010.03, PHYL 1010.06, BIOC 1420.03

### **NURS 2220.06: Nursing Practice II.**

(Intersession) This clinical practicum enables students to continue to integrate primary healthcare principles, nursing knowledge and theory, and nursing processes within nursing practice. Students consolidate concepts, theories and skills in caring for individuals in acute and chronic care settings. Emphasis is placed on collaborating with clients to identify health goals as well as perceptions and attitudes about their health. Students must be prepared to travel beyond the Halifax metropolitan area for part or all of this experience.

FORMAT: Clinical practicum 40 hours/week for 6 weeks

PREREQUISITE: NURS 2000.03, 2035.03, 2200.03, 2280.03, 2050.03, 2080.03, 2090.03, MICI 1100.03

### **NURS 2250.03: Theoretical Perspectives for Contemporary Nursing Practice.**

The purpose of this course is to provide students the opportunity to use theoretical perspectives in nursing to discover knowledge related to the process of nurse-client interaction. Students will examine the development and progress of relevant nursing theories and explore the relationships between nursing theory, nursing science, and nursing knowledge. Students will be introduced to selected methods of theory analysis. The concepts and assumptions of selected nursing theories will be used to describe and explain phenomena relevant to nurse-client interaction.

FORMAT: Lecture 2 hours, clinical 4 hours

RESTRICTION: For POST-RN students only

### **NURS 2280.03: Care of Adults I.**

Students learn to integrate nursing knowledge and processes in the care of adults coping with illnesses. Emphasis is placed on the integration of primary healthcare concepts as related to alterations in health status. Students further develop knowledge and skills during clinical experiences in adult medical and surgical settings.

FORMAT: Lecture 2 hours, 78 hours clinical total

PREREQUISITE: NURS 2050.03, 2090.03, 2200.03, MICI 1100.03

### **NURS 2360.03: The Phenomenon of Pain: Assessment and Management.**

This course challenges students to critically examine their current knowledge and skill in the nursing responsibilities associated with care of clients experiencing pain and to further develop students knowledge, attitudes, skills and competencies in providing effective pain management. Students will improve their ability to identify the client who has pain, perform comprehensive assessments of pain and its impact, initiate nursing interventions to alleviate the pain and evaluate the effectiveness of those interventions. Emphasis is placed on advancing the students ability to assess, analyze and manage this complex phenomenon in order to successfully provide effective pain relief. Critical thinking, interpersonal communication and assessment skills will be enhanced through a variety of learning activities including case studies and weekly online, asynchronous discussions.

FORMAT: Distance

CO-REQUISITE: NURS 2200.03, 2050.03, 2090.03

### **NURS 2390.03: Emergency Preparedness: A Nursing Perspective.**

This course focuses on preparation of future nurses for various hazards using an "all hazards" approach. Local, provincial and national disaster response systems, in the event of a mass casualty, are explored, and the ability to care for victims and responders of all types of hazards is emphasized.

FORMAT: Distance

PREREQUISITE: NURS 2090.03, NURS 2200.03

### **NURS 3030.03: Nursing Research.**

This course requires students to engage in a critical inquiry about how research processes influence the way knowledge is constructed. Students explore dimensions of knowing from multiple perspectives of acquired knowledge, experiential knowledge of nursing practice, conceptual meanings, collaborative partnerships and values and beliefs about the contributions of nursing knowledge as transformative in the healthcare system. Sharing new knowledge resulting from the synthesis and transfer of evidence across disciplines and healthcare sectors will be examined. The use of innovative and creative thinking supports students to



design ways of communicating and translating research findings for application to practice.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.06 and STAT 1060.03; STAT 1060.03 for Post-Diploma students (NURS 2020.03 strongly encouraged)

### **NURS 3040.03: Human Development and Health II: Children and Youth.**

This course examines concepts and theories of healthy growth and development across the life-span from conception to adolescence. Content is organized around health, nutrition, and the safety of individuals at specific stages in their physical, cognitive, and psychosocial development. Concepts of culture/ethnicity, environment, economic status and other life situations are introduced in terms of their relationship to optimal health.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.06, STAT 1060.03, MICI 1100.03

### **NURS 3060.03: Legal and Ethical Issues in Nursing Practice.**

Note: This course available starting 2014-2015. This course is designed to promote student understanding and application of ethical and legal concepts and theory within the dimensions of nursing practice. Students focus on decision-making processes and the impact of technology on nursing practice.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.03, STAT 1060.03/MATH 1060.03

### **NURS 3080.03: Culture Caring and Health.**

This nursing elective promotes students awareness of the international/global impact of culture on health beliefs and client access to healthcare systems. Students explore their own attitudes and approaches to international/global cultures. Through this exploration, students identify strategies for international/global healthcare practices.

PREREQUISITE: NURS 1240 or with instructor's permission.

### **NURS 3260.03: Nursing Practice: Mothers, Infants and Childbearing Families.**

Students focus on the integration of the domains of nursing practice in caring for mothers and newborn infants within the context of the childbearing family. The nature of the childbearing experience is critically analyzed from the perspective of the determinants of health as well as the theoretical bases of maternal-infant attachment and nurse caring. Clinical experience with clients during pregnancy, birthing and post birth in hospital and home settings enable students to focus on health promotion within the context of family-centred care.

FORMAT: Lecture 2 hours, 78 clinical hours total

PREREQUISITE: NURS 2220.06, STAT 1060.03, MICI 1100.03

### **NURS 3270.03: Nursing Practice: Caring for Families.**

Guided by the principles of primary healthcare, students focus on families and family health with an emphasis on a thorough understanding of family assessment and developing family therapeutic relationship skills. Students examine family health and health issues from a nursing, cultural, sociological, psychological and other theoretical perspectives as they relate to nursing practice that focuses on working with families in all settings. Upon completion of the course, students will have developed competencies required to use a systems approach when working with families. Laboratory and clinical experiences that include visiting families in their homes provide the students with opportunities to integrate, discuss and practice family nursing.

FORMAT: Lecture 2 hours, 78 clinical hours total

PREREQUISITE: STAT 1060.03, MICI 1100.03, NURS 2220.06; NURS 2250.03 for post diploma students

### **NURS 3280.03: Care of Adults II.**

This course focuses on family-centered nursing practice with adults who are managing complex health problems. Emphasis is placed on theoretically based nursing strategies incorporating principles of primary healthcare. Students are guided to incorporate theoretical bases into their clinical practice.

FORMAT: Lecture 2 hours, 78 clinical hours total

PREREQUISITE: NURS 2220.06, STAT 1060.03, MICI 1100.03

### **NURS 3290.06: Nursing Practice III.**

(Intersession) This is an opportunity to apply the principles of primary healthcare through reflective practice, the integration and application of theories and family nursing. Students enhance their ability to work with clients through a continuum of care approach. Students must be prepared to travel beyond the Halifax metropolitan area for part or all of this experience.

FORMAT: Clinical practicum 40 hours/week for 6 weeks

PREREQUISITE: NURS 3260.03, 3270.03, 3280.03, 3030.03, 3040.03

### **NURS 3310.03: Health Informatics.**

This nursing elective provides an overview of information technology and systems as they relate to practice, research, and education. Students are introduced to information technology and provided with opportunities to use critical thinking in analyzing the implications of information systems.

FORMAT: Distance

PREREQUISITE: NURS 2220.06; none for Post-RNs; open to students from other departments

### **NURS 3320.03: Acute Care Specialty Nursing.**

This course introduces students to acute care specialty nursing. Students will further develop, critically analyze and apply knowledge gained in previous courses with a focus on the management of critically ill adult clients in specialized settings. Emphasis will also be placed on interpersonal and interprofessional relationships within specialty practice.

FORMAT: Distance

PREREQUISITE: NURS 3280.03

### **NURS 3330.03: Fundamentals of Oncology Nursing.**

This nursing elective provides an introduction to oncology nursing. Beginning with a review of the physiology of the cancer cycle, the course considers cancer control related to: prevention, screening, early detection, diagnosis, treatment, supportive care/rehabilitation, palliative care. The focus of the course is to provide an opportunity for students to understand the cancer experience from the perspective of the patients and their families.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.06

EXCLUSION: NURS 2350.03

### **NURS 3350.03: Family Centered Supportive Care for Those Who are Living with Cancer.**

This course focuses on families connected to an oncology experience. A family assessment model frames the role of the nurse in family centered supportive care. Supportive care is the provision of the necessary services as defined by those living with or affected by cancer to meet their physical, social, emotional, nutritional, informational, psychological, spiritual and practical needs throughout the spectrum of the cancer experience. These needs may occur during the diagnostic, treatment, or follow-up phases and encompass issues of survivorship, recurrence, palliative care and bereavement.

NOTE: This course fulfills the requirement for NURS 3270.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.06

CO-REQUISITE: NURS 3345.03

### **NURS 3360.03: Alternative and Complementary Therapies: Implications for Nursing Practice.**

This elective course is designed to advance student knowledge and competencies in caring for clients and families who choose to use complementary and alternative therapies. The use of alternative and complementary therapies is prevalent and popular. Issues such as patient autonomy, freedom of choice, and the principle of non-maleficence are but a few of the ethical challenges faced by nurses and other healthcare practitioners. This course introduces students to alternative/complementary therapies and their associated nursing implications.

The primary therapies to be examined include mind-body interventions, manual healing therapies, botanical healing, diet therapy, native healing and spiritual therapies. Students will also have the opportunity to research non-conventional therapies in relation to cancer treatment and health promotion. This course fills a pressing need for graduating nurses to have a full understanding of these therapies so that they will be prepared to work with clients and families who have chosen to use complementary healthcare practices.

FORMAT: Distance

PREREQUISITE: NURS 2200.03, or completion of second year of study in any Health Professions program

### **NURS 4030.03: Collaborative Leadership for Nursing Practice.**

Based on the view that leadership is integral to the practice of every nurse, the focus of the class is on leadership theories and behaviours essential to nursing practice. Critical thinking, decision-making processes and other leadership behaviours are fostered through experiential and simulated learning methods.

FORMAT: Lecture 2 hours

PREREQUISITE: NURS 3290.06; Second and third year Nursing classes are strongly recommended for Post-Diploma; Post-RN NURS 2250.03

### **NURS 4050.03: Advanced Communication and Counselling.**

This course provides theory related to the counselling role of the nurse and addresses the dynamics of therapeutic communication in complex collaborative situations. Counselling occurs within the nurse-patient relationship viewed as a collaborative partnership which requires the active participation, involvement, and agreement of all partners.

The course is designed to assist students to facilitate and encourage individuals, families or client groups to effectively deal with change related to complex health situations. Application of course content in simulated nurse-client interviews in home, clinic or institutional settings enables the student to develop interactive skills in dealing with complex, collaborative health situations such as those requiring immediacy, confrontation, advocacy, conflict resolution and crisis intervention.

FORMAT: Lecture 2 hours, lab 2 hours

PREREQUISITE: NURS 3290.06; NURS 2250.03 for Post-RN Students

### **NURS 4060.03: Palliative Care Nursing.**

This course provides an overview of the significant issues facing individuals and their families related to life threatening illness, dying, and the promotion of quality of life. An exploration of one's own attitudes, beliefs, and values regarding death and dying provide a foundation for examination and discussion of course content. An analysis of the principles and standards of palliative care, principles of primary healthcare, methods of assessment, and means of pain and symptom management guide delivery of care. Emphasis on communication, collaboration within teams, ethical issues, spiritual and cultural influences, and grief and coping provide opportunities for reflection and discussion. Online resources offer opportunities for students to enhance their knowledge and understanding of course content.

FORMAT: Lecture 2 hours

PREREQUISITE: NURS 3290.06

CROSS-LISTING: NURS 5830.03

### **NURS 4091.03: Breast Feeding for Family and Community Health.**

This nursing elective is designed to promote student understanding of the process of human lactation. Developmental, sociocultural, physiological, psychological dimensions of breast feeding are used to describe and discuss the dynamics and effects of breast feeding on personal, family and community health.

Interprofessional issues and strategies for the protection, promotion and support of breast feeding are explored in the context of primary healthcare and the Canadian healthcare system.

FORMAT: Campus/distance offering, 3 hours

PREREQUISITE: NURS 2220.06 or permission of course instructor for non-nursing student

### **NURS 4210.03: Nursing Practice: Children and Families.**

Students focus on nursing practice in the care of children and families. The determinants of child and family healthcare are examined, as well as the role of nursing practice in health promotion and illness prevention for children. Clinical and family issues associated with childhood illness and hospitalization draw on knowledge of child and family development as well as the art and science of nursing knowledge. Students work in clinical settings where care is provided to children and families experiencing illness.

FORMAT: Lecture 2 hours, 78 clinical hours total

PREREQUISITE: NURS 3290.06

### **NURS 4220.03: Mental Health Nursing Practice.**

Integrating a holistic perspective within a primary healthcare philosophy, this class focuses on the promotion of individual and community mental well-being. Through reflective practice the use of nursing theories and effective communication, students assist clients through the challenges of mental health problems, crisis, and mental disorders. Students critique the social responsibility of the nursing profession through, not only direct care, but also client advocacy.

FORMAT: Lecture 2 hours, 78 clinical hours total

PREREQUISITE: NURS 3290.06

### **NURS 4240.06: Nursing Practice IV Internship.**

Nursing 4240, a clinical internship prior to graduation, provides students with the opportunity to consolidate and apply knowledge and processes within the domains of nursing practice. Students integrate leadership knowledge and behaviours

within social healthcare systems. Collaboration and advocacy with clients, other healthcare professionals and peers are emphasized. In this 8.5 week internship, students are precepted with a staff nurse and work the full-time hours of the preceptor. Students have input into their clinical placements, based on their learning needs and interests. Students must be prepared to travel beyond the Halifax metropolitan area for part or all of this experience.

FORMAT: Clinical internship consists of a minimum of 280 hours

PREREQUISITE: All other nursing and non-nursing requirements for the BScN Program must be completed.

### **NURS 4250.03: Community Health Assessment.**

Community health is a vital component of primary healthcare. The focus of this class is on the integration of community assessment theory and nursing practice in health promotion and illness prevention. Primary healthcare and population-focused health strategies are used as students collaborate with individuals, families, groups, communities and other healthcare professionals in working toward community health goals. Students apply critical thinking in assessing needs and strengths for community development in a variety of community settings.

FORMAT: Lecture 2 hours, clinical 6 hours, tutorial 1 hour

PREREQUISITE: NURS 3290.06; Post-Diploma students NURS 2250.03

### **NURS 4260.03: Community Development and Advocacy.**

This course builds on the content of NURS 4250.03. The focus is on critical thinking, interventions, and the evaluation of community health nursing strategies with client groups and communities. Community development is used as a strategy to put primary healthcare principles into nursing practice. Students are encouraged to work with communities using an empowerment and advocacy approach. Current local, national and international health issues are explored. Clinical experience in a variety of community settings allows students to practice nursing in a reflective manner to improve the health of the community as a whole.

FORMAT: Lecture 2 hours/week, clinical 6 hours/week, tutorial 1 hour

PREREQUISITE: NURS 4250.03

### **NURS 4330.03: Self-Directed Learning.**

Students may carry out independent studies or projects related to the theory or practice of nursing, under the direction of a faculty facilitator. Students are encouraged to systematically identify, plan, execute and evaluate a learning project that is relevant to nursing practice.

FORMAT: Flexible according to study/project

PREREQUISITE: NURS 2220.06

CROSS-LISTING: NURS 5950.03

### **NURS 4351.03: Specialty Practice of Oncology Nursing.**

This nursing elective challenges learners to consider the comprehensive care of a range of health and illness needs of individuals at risk or living with cancer within the existing infrastructure for cancer care. While the focus of this course is on the context of adults with cancer, the course reflects a critical analysis of the existing theoretical and evidence-based perspectives influencing health related behaviours of health promotion, illness prevention and decision-making that span from individual to organizational levels.

FORMAT: Lecture 2 hours

PREREQUISITE: NURS 3345.03 and 3350.03

### **NURS 4360.03: Management - The Process in Health Care Agencies.**

This nursing elective focuses on management of resources to achieve goals within healthcare agencies and institutions. The agency/institution is viewed as a system within which each manager uses a variety of theory and practice based techniques to establish goals, plan and utilize resources and evaluate outcomes. Emphasis is placed on the day-to-day use of management strategies, techniques and skills. Relevant theoretical constructs and research are explained and discussed while examining their implications for practice. Current management problems in nursing are explored through this introductory class in management.

FORMAT: Lecture/seminar

PREREQUISITE: NURS 4030.03, or instructor's permission

### **NURS 4370.03: Women and Aging.**

This interdisciplinary nursing elective explores the issues related to socio-economic factors that are major determinants of the well-being of aging women. Topics include; aging as a process; menopause, violence against older women, older women and housing; self-image and sexuality; health and the aging woman; and older women and poverty.

FORMAT: Lecture/discussion/seminar 2 hours

PREREQUISITE: NURS 2220.03; Non-nursing students should have completed 2 years of university study

CROSS-LISTING: SOSA 3245.03/5245.03, GWST 3810.03, NURS 5850.03

### **NURS 4371.03: Addictions Nursing Practice.**

This nursing elective introduces major concepts associated with addiction nursing practice. It provides a foundation for students pursuing careers in addiction-related care. Within a primary healthcare perspective, students critique models and theories of addiction, consider the interplay between social, gender, cultural environments and addictions and become knowledgeable of a variety of treatment approaches. Universal, selective, and prevention activities at an individual, family and community level are explored.

FORMAT: Distance

PREREQUISITE: NURS 2050.03, NURS 2250.03 strongly recommended for Post RNs

CROSS-LISTING: NURS 5871.03

### **NURS 4380.03: Introduction to Epidemiology Methods in Nursing Practice.**

This introductory course intended to provide students with a working knowledge and understanding of the basic concepts and methods of epidemiology. The focus of this course will be the analysis and interpretation of information about disease and other health related occurrences at a population level within a Public Health Nursing context. This course will also introduce students to concepts for development and evaluating public health programs.

FORMAT: Lecture 3 hours

PREREQUISITE: NURS 2220.03

CROSS-LISTING: NURS 5895.03

### **NURS 4390.03: Intermediate Pathophysiology and Nursing.**

This nursing elective is intended to provide a more in-depth examination of human physiological function in disease than the Introductory Pathophysiology and Nursing (N2090.03). Emphasis is placed on the study of pathophysiology of diseases prevalent in Canada. This class introduces students to up-to-date concepts involved in research on these diseases. In addition, it examines various therapeutic strategies used in treating these diseases and their implications for nursing care.

FORMAT: Lecture/discussion 3 hours per week

PREREQUISITE: Basic - PHYL 1010.06, ANAT 1010.03, MICI 1100.03, NURS 2050.03, and NURS 2090.03

### **NURS 4800.03: Interdisciplinary Class in Human Nutrition.**

The interdisciplinary nursing elective is an interdisciplinary study of the basic principles of nutrition needs throughout the life cycle. Physiological, psychological, socio-economic, physical, educational and cultural determinants are explored to explain why the nutritional status of Canadians can vary and how this variation affects the development of chronic disease. Special emphasis is given to community nutrition in the Atlantic Region.

FORMAT: Lecture 3 hours, week

PREREQUISITE: BIOL 1000.06 or by faculty permission

CROSS-LISTING: PHAR 4950.03, PHYT 3090.03, HPRO 2250.03, NURS 5990.03

### **PHYL 1010X\Y.06: Human Physiology.**

See class description in the Physiology section of calendar.

### **STAT 1060.03: Introductory Statistics for Science and Health Sciences.**

See class description in the Statistics section of calendar.

**NOTE:** A "strong recommendation" to complete one class before another means that some of the content of the new class draws directly on knowledge, skills and experience gained in a previous class. Students should realize that they may have to do some supplementary work in order to meet the expectations of the new class.

## **Occupational Therapy**

### **School of Occupational Therapy**

Location: (Atlantic) School of Occupational Therapy  
Forrest Building, Room 215  
5869 University Avenue,  
PO Box 15000  
Halifax, NS B3H 4R2

Telephone: (902) 494-8804

Fax: (902) 494-1229

Email: occupational.therapy@dal.ca

Websites: <http://www.occupationaltherapy.dal.ca>

#### **Dean**

Webster, W. G., PhD

#### **Director**

Packer, T., BSc (OT) (Western), MSc, PhD (Queen's)

#### **MSc (Occupational Therapy) Graduate Coordinator**

Merritt, B., BS (Psychology), MS (OT), PhD (Colorado State)

#### **MSc (Occupational Therapy - Post-Professional) Graduate Coordinator**

Stadnyk, R., BA (Alberta), BSc (OT), MSc (Queen's), PhD (Toronto)

#### **Professors Emeriti**

O'Shea, B., DipP & OT (Toronto), BSc (Queen's), MS (Colorado State), LLD (Dalhousie)

Townsend, E., DipP & OT (Toronto), BSc (OT) (Toronto) MAdEd (St. FX), PhD (Dalhousie)

#### **Professor**

Packer, T. BSc (OT) (Western), MSc, PhD (Queen's)

#### **Associate Professors**

Beagan, B., BA, MA (Dalhousie), PhD (UBC)

Doble, S., BSc (OT) (Western), MS (Boston), PhD (Dalhousie)

Merritt, B., BS (Psychology), MS (OT), PhD (Colorado State)

Warner, G., PhD (Epidemiology) (Case West Reserve University)

#### **Assistant Professors**

Brown, J., BSc (OT) (Toronto), MSc (OT) (Dalhousie)

Dieleman, C., BSc (OT) (Western), MSc, PhD (Queen's)

Lauckner, H., BSc (OT), MSc, PhD (Queen's)

MacKenzie, D.E., BSc Physical Education (Saskatchewan), BSc (OT) (Alberta), MA (Ed) (MSVU)

Saunders, J. BSc (OT) (Dalhousie), MBA (St. Mary's)

Stadnyk, R., BA (Alberta), BSc (OT), MSc (Queen's), PhD (Toronto)

Versnel, J., BSc (OT) (Toronto), MSc (OT) (Western), PhD (Queen's)

#### **Lecturer**

Landry, K., BSc (OT) (Dalhousie), MSc (Rehabilitation Research-Physiotherapy), (Dalhousie)

#### **Instructor**

O'Keefe, C., BSc (OT) (Dalhousie), MSc (OT-Post-Professional) Candidate (Dalhousie)

#### **School Fieldwork Education Coordinator**

Saunders, J., BSc (OT) (Dalhousie), MBA (St. Mary's)

#### **International Fieldwork Education Coordinator**

Lauckner, H., BSc (OT), MSc (OT), PhD (Queen's)

## Provincial Fieldwork Education Coordinators

New Brunswick: Roussel, M., DipHS (S-L Maillet), BSc, MA (Montreal)

Newfoundland: TBA

Nova Scotia: Saunders, J., BSc (OT) (Dalhousie), MBA (St. Mary's)

Prince Edward Island: Cutcliffe, H., Dip (OT) (Man)

## Adjunct Appointments

### Academic

Basiletti, M., MSc (OT-Post-Professional) (Dalhousie)

Craik, J., BSc (OT) (Queen's), MSc (Toronto)

Edem, D., BSc (OT), MHSA (Dalhousie)

Egan, M., BSc(OT) (Western), MSc (OT) (Alberta), PhD (McGill)

Kirsh, B., BSc (OT), MEd, PhD (Toronto)

Laliberte Rudman, D., BSc (OT) (Toronto), MSc (OT) (Western), PhD (Toronto)

Mitcham, M., Dip (OT) (Northampton), BSc (OT), MHE, PhD (Georgia)

Palmadottir, G., Dip (OT) (Aarhus, Denmark), MSc (OT) (Colorado)

Pranger, T., BSc (OT), MEd, PhD (Toronto)

Taylor, S., Dip (OT) (Queen's), MA (SMU)

VanBruggen, H. Honorary Doctor of Science degree, Univ. of Brighton

Wicks, A., BAS (OT) (Curtin), MHS (OT) (South Australia), PhD (Charles Sturt)

### Professional

Cutcliffe, H., Dip (OT) (Manitoba)

Head, B., BSc (OT) Alberta, MSc (OT - Post-Professional) (Dalhousie)

Roussel, M., DipHS (S-L Maillet), BSc (Montreal), MA (Montreal)

### Cross Appointments

Gahagan, J., BA, BA (Hons) (Carleton), MA (Windsor), PhD (Wayne State)

Hutchinson, S., BA (UVic), MA (Dalhousie), PhD (Georgia)

Manuel, P., BA (Carleton), MSc (McGill), PhD (Dalhousie)

Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dalhousie)

Waldron, I., BA (McGill), MA (U of London), PhD (Toronto)

## I. Introduction

The Atlantic School of Occupational Therapy was established in 1982 as the only occupational therapy education program in Atlantic Canada. The School exists in response to strong regional advocacy, particularly since 1958 when a School was approved in principle by the University Senate. The regional orientation of the School fosters collaborative teaching, research and professional activities linking those at the university with occupational therapy and other service providers, government workers, and citizens in the four Atlantic Provinces. This regional mandate is combined with an international perspective linking Dalhousie with universities and communities for fieldwork and research.

Occupational Therapy is a health profession concerned with social inclusion. Practitioners enhance the occupational performance engagement, health and well-being of individuals, groups, and organizations, particularly where inequities or injustice limit opportunities for meaningful participation in daily life occupations.

Occupation is viewed broadly to include everything we do to "occupy" ourselves in enjoying life, looking after ourselves and others, and contributing to the social and economic productivity of our communities.

Health is viewed broadly as having the ability, opportunity and resources, for quality of life with meaningful occupations in supportive environments.

Occupational therapists use their understanding of occupation, enabling processes, justice and systems to enable individuals, groups and organizations to overcome obstacles that limit their ability to do things they need and want to do. Obstacles addressed by occupational therapists may include illness, injury, physical or mental disability, developmental delay, social disadvantage, old age, cultural, and physical barriers in the home, community and workplace. Using a "partnership" approach, occupational therapists work with individual families, groups, communities, organizations, populations, businesses or governments. The focus can be either on enabling individual change, or enabling change in physical and social environments, policies or legislature to enhance occupational performance and engagement in society. Practice may enable change in skills, attitudes, routines, design of buildings, use of assistive technology, policies, etc.

The role of an occupational therapist is varied and challenging. Occupational issues are never the same because no two people or environments are ever exactly the same. The challenge for occupational therapists is to plan and implement the

"just right" program or strategy for each and every client so that everyone can achieve just opportunities to participate in society.

## II. Degrees Offered

In concert with national standards and requirements for occupational therapy education, the School of Occupational Therapy at Dalhousie University only offers graduate level degree programs. For further information on our occupational therapy degree programs, please refer to the Graduate Calendar.

### 1. Master of Science (Occupational Therapy) - MSc (OT): Master's Program to Enter the Profession

a. MSc (OT) First class accepted into the program in September 2006.

### 2. Master of Science (Occupational Therapy-Post-Professional): Post Professional Master's program for qualified occupational therapists.

a. Research Thesis Stream

b. Practice Leaders Stream

c. Single graduate classes (with instructor's permission)

### 3. PhD

Faculty in the School of Occupational Therapy welcome applications for PhD studies focused on occupational therapy or occupational science. Interested persons should contact individual faculty at the School. Applications will be submitted either to the Faculty of Graduate Studies Interdisciplinary PhD program or the Faculty of Engineering Biomedical Engineering PhD program. Prospective students may be eligible for funding through scholarship programs at NSERC, SSHRC, CIHR, or from the Nova Scotia Health Research Foundation (NSHRF). Within Dalhousie funding possibilities include Killam scholarships.

## III. Class Descriptions

### The School does not currently offer an undergraduate degree.

We will continue to offer undergraduate classes for continuing professional development, refresher education and/or to advance one's knowledge of occupational science. Not all classes are offered each year. Please contact the School for the current class offerings and enrollment in single classes.

### OCCU 2000.03: Occupation and Daily Life.

This introductory course for students in arts, social sciences, science and other fields is designed to explore the meaning of occupation in everyday life. Typically, the term "occupation" refers to categories of paid work. This course will explore a broader meaning of occupation; namely purposeful activity. This concept of occupation will include everything we do to look after and develop ourselves, be involved in meaningful endeavours, contribute to our communities, promote health, advocate for opportunities, generate income and more. Students will be exposed to a broad range of literature on occupation; the motivation, organization and performance of occupation; the environment as a context for occupational performance; and the promotion of health through occupation. Students will gain an appreciation of occupation as the foundation of everyday life through sociological, anthropological and narrative analysis, and experiential activities.

INSTRUCTOR(S): G. Warner

FORMAT: 3 lecture hours/discussion

PREREQUISITE: Instructor permission

RESTRICTION: None. This course is OPEN to non-Occupational Therapy students

### OCCU 2207.03: Occupational Development Across the Life Span.

Theories and processes that explain the complexity and dynamics of occupational development across the lifespan are introduced. The course explores typical patterns of physical, cognitive, and psychosocial development and their occupational implications, as well as contexts for occupational development including roles and environments.

PREREQUISITE: Instructor permission

### OCCU 4402.03: Program Design and Evaluation for Enabling Occupation.

This course enables students to critically assess, plan and design an evaluation for occupational therapy programs in a variety of settings. Students will be provided with the basic knowledge and skills of: strategic planning; program development;

resource management; and program evaluation. As part of this course, students will complete a novice consulting project. This project will provide students with the opportunity to explore the provision of occupational therapy in a non-traditional setting.

PREREQUISITE: Instructor permission

### **OCCU 4420.00: Fieldwork III.**

This eight week fieldwork placement introduces students to occupational therapy practice outside the Atlantic region. There are a limited number of opportunities for International options outside Canada and expanded fieldwork with an off-site occupational therapist preceptor within Atlantic Canada. Students develop competence and increased independence in integrating theoretical knowledge and skills through the full process of Occupational Therapy practice. Under supervision, students assume responsibility for a case load of approximately 40-60% of that of an entry level therapist. All expenses are the responsibility of the student including a placement fee, travel, accommodations, etc.

PREREQUISITE: Instructor permission

### **OCCU 4422.00: Fieldwork Level III (Continued).**

During this six week fieldwork experience students focus on refining professional competencies and seeking new challenges with minimum guidance from a preceptor. Students are expected to develop the capacity to carry 75% or more of the responsibilities of an entry-level occupational therapist by the completion of this fieldwork education placement.

PREREQUISITE: Instructor permission

## **Pharmacy**

### **College of Pharmacy**

Location: George A. Burbidge Building  
5968 College Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2378  
Fax: (902) 494-1396  
Website: <http://www.pharmacy.dal.ca>

#### **Dean**

Webster, William G., PhD

### **Academic Staff, 2013/2014**

#### **Director**

Caldwell, R. K., BSc (Pharm), MHSA (Dalhousie)

#### **Associate Directors**

Program Evaluation: Whelan, A. M., BSc (Pharm) (Dalhousie), PharmD (MUSC)  
Research: Sketris, I. S., BSc (Pharm) (Toronto), PharmD (Minn), MPA (HSA) (Dalhousie)

Undergraduate Education: Mansour, S. A., BSc (Pharm), MBA (Dalhousie), PhC

#### **Professors Emeriti**

Duff, J. G., BSP, MSc (Sask), PhD (Fla)

Yung, D. K., BA, BSP, MSc (Sask), PhD (Alta)

#### **Professors**

Jakeman, D. L., BSc, PhD (Sheffield)

Sketris, I. S., BSc (Pharm) (Toronto), PharmD (Minn), MPA (HSA) (Dalhousie)

Whelan, A. M., BSc (Pharm) (Dalhousie), PharmD (MUSC)

Yeung, P. K. F., BSc (Pharm), MSc (Man), PhD (Sask)

#### **Associate Professors**

Agu, R., BPharm, MPharm (Pharmacology) (U Nigeria), MPharm

(Pharmaceutics), PhD (Biopharmaceutics) (Katholieke Universiteit, Belgium)

Bowles, S. K., BScPhm (Toronto), PharmD (SUNY)

Caldwell, R. K., BSc (Pharm), MHSA (Dalhousie)

Doucette, Doug, BSc (Pharm) (Dalhousie), PharmD (U of T)

Gardner, D., BSc (Pharm), PharmD (UBC)

Goralski, K., BSc Hon (Biochem/Micro), PhD (Pharmacology and Therapeutics) (U Manitoba)

Jurgens, T., BSc (Pharm), MSc (Dalhousie), PhD (Miss)

Murphy, Andrea, BSc (Pharm) (Dalhousie), PharmD (UBC)

#### **Assistant Professors**

Iseñor, J. E., BSc (Pharm) (Dalhousie), PharmD (UBC)

Mansour, S. A., BSc (Pharm), MBA (Dalhousie), PhC

Wilson, J., BSc (Pharm) (ACPR) (Dalhousie), PharmD (SC)

#### **Lecturers**

Deal, H., BSc (Chem) (Acadia), BSc (Pharm) (Dalhousie)

Rodrigues, G., BSc (Chem/Biochem), BSc (Pharm) (Dalhousie)

Sponagle, K., Diploma Engineering (Saint Mary's), BSc (Pharm) (Dalhousie)

Walker, L., BSc (Pharm) (Dalhousie)

### **Coordinator of Clinical Education/Regional Residency Coordinator**

Davies, H., BSc (Hons) (Biology) (Acadia), BSc (Pharm) (Dalhousie), MEd (Curriculum Studies) (Acadia), CDE

## Coordinator, Community Experience Program

Harris, N., BSc (Pharm) (Dalhousie)

## Adjunct Appointments

Boyd, T., BIS (St. FX), MMS, PhD (Carleton)

Broadfield, L., BSc (Pharm) (U of T), MHSc (MacMaster)

Lummis, Heather, BSc (Pharm), MSc (CH&E) (Dalhousie)

MacDonald, T., BSc (Biology), BSc (Honours) (Marine Biology), BSc (Pharm) (Memorial), PharmD (Florida)

MacKinnon, N. J., BSc (Pharm), MS (U of Wisconsin), PhD (U of Florida)

Ryan, Jennifer, BA (HonEng) (UNB), BSc (Pharm) (Dalhousie), PharmD (U of Florida)

## PEP Associates

Throughout the Maritime provinces pharmacist preceptors in community and hospital pharmacies participate in structured practice experience programs (PEP). The College of Pharmacy would like to acknowledge the valuable and essential contribution that preceptors make to the education process. Sincere thanks and appreciation is extended to all preceptors for the time and energy they devote to students.

The PEP is administered by the College with the support of the provincial pharmacy regulatory authorities in the Maritimes. Second, third, and fourth year students demonstrate their knowledge and professional competency in practice rotations in community and hospital pharmacy sites.

## I. History

Formal pharmacy education in the Maritime provinces began in 1908, with evening classes in pharmacy and chemistry conducted in the Nova Scotia Technical College. Success of these classes encouraged the Nova Scotia Pharmaceutical Society to establish the Nova Scotia College of Pharmacy in 1911. The College was affiliated with Dalhousie University in 1912.

The New Brunswick Pharmaceutical Society and the Prince Edward Island Pharmaceutical Association were admitted to affiliation with the College in 1917 and 1950, respectively. With the affiliation of the former society, the College was renamed the Maritime College of Pharmacy.

In 1961, the Maritime College of Pharmacy was admitted into Dalhousie University as the College of Pharmacy, a constituent part of the new Faculty of Health Professions. A four-year baccalaureate program was introduced.

In 1966, a Master's program was established, followed by a Doctor of Philosophy program in 1977.

In 1972, a twelve month pharmacy residency program was initiated by Camp Hill Hospital in cooperation with the College of Pharmacy. Programs were initiated at the Halifax Infirmary in 1974, at the Victoria General Hospital in 1981 and at the Saint John Regional Hospital in 1982.

In the fall of 1968, the College of Pharmacy moved into the George A. Burbidge Pharmacy Building. This building, the former Medical Sciences Building was renamed in honour of the first Dean of the College, in recognition of his contribution to pharmacy education in the Maritimes. Present facilities accommodate approximately 360 undergraduate students.

## II. College of Pharmacy Mission Statement

### Mission

Enhancing health through pharmaceutical education, community service and research.

### Vision

The College of Pharmacy is a leader in practice-based pharmacy education and is respected for pharmacy research. The College is also a major enabler in advancing the practice of pharmacy.

We are highly responsive to patient-needs and changes in the health care environment. Our graduates are well prepared to become effective practitioners, researchers and future leaders.

## Accreditation

The Bachelor of Science in Pharmacy Program of the College of Pharmacy, Dalhousie University, has been granted Full Accreditation Status by the Canadian Council for Accreditation of Pharmacy Programs for a six year term, 2010-2016.

## III. College of Pharmacy Regulations

All students are required to observe the University Regulations and Academic Regulations as described in this Calendar. The academic performance of each student in the College is assessed by the Student Promotions Committee.

### A. Academic Requirements

#### Workload

The curriculum is composed of problem-based learning (PBL) and other classes, which may include tutorials, lectures, labs, practice experience and other components. (See IV. Programs offered). To satisfy the requirements for the degree of Bachelor of Science in Pharmacy, a student must achieve a grade of Pass in each prescribed component. PBL classes vary in length from three to seven weeks, and are weighted as either 1.5, 3, or 6 credit hours. Each academic year totals 27, 31.5, or 33 credit hours, with the program total being 123 credit hours.

Students are required to successfully complete all practice experience rotations. These placements may be outside the Halifax/Dartmouth area. Students are responsible for any travel, accommodation and any other costs associated with practice experience rotations.

### B. Academic Recognition

#### 1. Awards

The College of Pharmacy Awards Committee administers a number of awards, each with defined criteria. Selection of award recipients described as the "student who excels" is based on a combination of performance in knowledge assessments and in tutorials. Eligibility for In-class Scholarships is determined on the basis of knowledge assessments alone.

#### 2. Dean's List

Students will be assessed for Dean's List based on their knowledge assessments and class standing in the annual "Progress Exam." No student who has obtained a failing grade (FM or F) will be eligible for the Dean's List in the year in question.

#### 3. Distinction

Students who have been on the Dean's List for three of the four years of the Pharmacy Program and a cumulative GPA of 3.70 or higher will graduate with Distinction.

### C. Assessment

1. Grading is on a Pass/Fail basis, and grades recorded on the official University transcript are "Pass", "Marginal Fail" or "Fail" (P, FM, F). Students must pass all components of the year in which they are registered to proceed to the next year. The passing grade for knowledge assessments is 60% unless otherwise indicated.
2. Student performance will be assessed during and at the end of each PBL class. Assessment will be of both the learning process and the knowledge/skills achieved. Tutors will provide informal assessment of the student's learning process throughout a PBL class and a formal assessment (student tutorial performance assessment) at the completion of a class. Knowledge/skills will be assessed as described in the syllabus provided for each class.
3. To pass a PBL class, a student must pass both the student tutorial performance assessment and the class knowledge assessment.
4. A student who fails no more than one academic class will be assigned a grade of marginal failure (FM) in that class. The student must meet with the Associate Director, Undergraduate Education to discuss remediation and/or support. More than one failure will result in all failed classes being assigned the grade of Fail (F).
5. The Student Promotions Committee of the College of Pharmacy is responsible for monitoring the academic progress of students and providing recommendations to faculty regarding promotion and graduation of students. Students who seek redress for the application of the regulations of the College of Pharmacy should refer to the appeals process described in Appeals section below.

- Attendance at the tutorials, skills laboratory and practice experience program (PEP) is mandatory. Absence must be supported with a valid reason, such as illness with a medical certificate or other reason approved by the Undergraduate Education Committee. Other absences will be reported to the Student Promotions Committee and may be reason for failure.

#### D. Reassessment of a Grade

See Academic Regulation 16.7. In all cases of reassessment, the calculations used to arrive at the final grade will be checked. In those classes where the student has had ample time to consider marks obtained for all work done, except for the final examination, reassessment in such classes shall be done on the final examination only. For other classes, a reassessment shall include the results from all work not previously available to the student during the term.

#### E. Supplemental Assessment

- A student who receives a grade of FM is eligible for remedial work and supplemental assessment.
- A student who fails one PBL student tutorial performance assessment must undertake remedial work during the following class, organized by the Associate Director, Undergraduate Education. If the failure occurs in the final class of the year, remediation will occur during the summer. The student must successfully complete the remedial work and supplemental assessment to achieve a Pass.
- A student who fails the knowledge assessment or other requirement outlined in the syllabus of a PBL or non-PBL class will be required to do remedial work and must pass a supplemental assessment, which will be scheduled by the class coordinator in consultation with the Associate Director, Undergraduate Education and the students involved.
- If a student fails one PBL or non-PBL class, the grade will be recorded as "FM" on the student's transcript. Failure to pass the remedial work and supplemental assessment will lead to conversion of the grade to "F". If the student successfully completes the remedial work and supplemental assessment, the passing grade will then be added to the transcript and recorded as "P" with a notation that the grade was earned by supplemental assessment.
- Failure in a second class (either a PBL or non-PBL class) will negate a pass that may have been achieved by supplemental assessment in the first failed class. (See F.1.a below.)

#### F. Repeating the Year

- Subject to eligibility, a student will be required to repeat the year if:
  - the student has failed any two classes (PBL or non-PBL classes) or
  - the student has failed one class and has not successfully completed the prescribed remedial work and supplemental assessment.
- To be eligible to repeat a year, a student who has failed two classes must satisfactorily complete all other year requirements except the Practice Experience Program. However, a student with two failures will not be eligible to register in the Practice Experience Program.
- Application to repeat the year must be made in writing to the Associate Director, Undergraduate Education by a predetermined date.
- Any student who withdraws voluntarily, due to illness or other personal circumstances, and is allowed to repeat the year, will be considered a student in a repeat year unless the student withdraws before the last day of the first PBL class of the academic year, or the student tutorial performance assessment, if the two do not coincide.
- No student will be allowed more than one repeat year during the undergraduate program. All students who repeat the year will be assessed on performance in the repeated year.

#### G. Leave of Absence

A student who needs to take leave from the pharmacy program must apply to the Director to do so. A leave of absence must be approved in advance by the Director of the College of Pharmacy. Normally, a student who absents himself/herself from the College of Pharmacy without prior permission for an extended period (four weeks or greater) will be presumed to have withdrawn and will have to re-apply for admission to the College of Pharmacy. A leave of absence will be limited to one leave period and will not normally exceed one academic year. A leave of absence will not count towards time in the Pharmacy program.

#### H. Dismissal from the Study of Pharmacy

- Any student who fails more than two classes (PBL or non-PBL classes) of the curriculum in one year will be dismissed from the study of pharmacy.

- A student in a repeat year who does not meet the criteria for promotion will be dismissed. The normal regulation allowing remedial work and supplemental assessment in one class will apply.
- Students are also referred to University Regulations: Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability - Faculty of Health Professions.

#### I. Appeals

Students who wish to raise questions or to register complaints in matters of academic appeal are advised to communicate informally with their instructor within 10 working days of the alleged unfairness or irregularity. If no resolution arises from this (these) meeting(s), the student may initiate a formal appeal.

Students wishing to initiate a formal appeal should follow the appeals procedures as set out by the College of Pharmacy, Undergraduate Student Appeals Committee, Faculty of Health Professions. These procedures are available within the General Office, College of Pharmacy. Application for a formal appeal should be made to the College of Pharmacy Chair, Undergraduate Student Appeals Committee within 20 working days of the matter giving rise to the appeal.

### IV. General Information

#### A. Immunization

Students must show proof\* of current immunization against tetanus, diphtheria, polio, measles, mumps, rubella, Hepatitis B, varicella (if non-immune) and a negative two-step Mantoux (TB) test prior to admission to the College.

Evidence of a negative two-step tuberculin testing (Mantoux) is required before all hospital rotations. Students are responsible for the cost of all tests and immunizations.

\*Students must complete the Faculty of Health Professions' infectious disease and immunization checklist.

Each student is required to maintain their personal immunization record, and submit a copy by a set deadline for their student file. Individual sites may require students to present immunization records prior to acceptance at a practice site. Individual clinical practice sites may have additional immunization requirements. Failure to provide this information may result in a student being denied access to a placement site.

#### B. Career Opportunities

Pharmacy is a health profession in which pharmacists provide care for their patients as one member of the health care team. This care focuses on the patient from the perspective of drug therapy. The pharmacist is responsible to identify, prevent and resolve patient drug therapy problems. Specific activities include: taking medication histories, identifying goals for drug therapy, providing recommendations and education to patients regarding self-medication, providing recommendations to other health care providers on drug therapy, working with patients to maximize benefits and minimize adverse effects of drug therapy, maintaining patient drug profiles, counseling patients on prescribed medication, monitoring drug interactions, adverse drug reactions and patient compliance with their drug treatment. Other activities include the provision of information on drugs to patients and other health professionals, the preparation of suitable materials for use as medicines from natural and synthetic sources, the compounding of drugs and the dispensing of suitable medication.

Pharmacy graduates have a wide range of career opportunities. The majority enter community pharmacy practice. Hospital pharmacy also provides an interesting challenge for pharmacists, particularly in view of their expanding role within the clinical setting. The pharmaceutical industry provides opportunities for pharmacists in the fields of sales and marketing, production, research and quality control.

The increased role of federal and provincial governments in public health provides opportunities for pharmacists in analytical laboratories and in administrative position as consultants, government inspectors and health officers. Opportunities may also be available in universities as teachers and researchers.

A Bachelor of Science in Pharmacy is necessary for those who wish to practice as licensed pharmacists. For those who wish to enter research or teaching, a Master of Science degree or further postgraduate study is usually required.

## C. Practice Requirements

### 1. Licence in Pharmacy

The College of Pharmacy, being purely educational, has no jurisdiction in matters related to licensing or to registration as a Pharmacist. These functions are entirely under the control of the provincial regulatory authority concerned; a period of practical training or apprenticeship is required by the provincial regulatory authority before a graduate in pharmacy is licensed as a pharmacist. Information regarding licensing or registration in each province may be obtained from the respective provincial regulatory authority: New Brunswick Pharmaceutical Society, Unit #8, 1224 Mountain Road, Moncton, NB E1C 2T6; Prince Edward Island Pharmacy Board, PO Box 89, Crapaud, PE C0A 1J0; Nova Scotia College of Pharmacists, Suite 200, 1559 Brunswick Street, Halifax, NS B3J 2G1.

### 2. Pharmacy Examining Board of Canada (PEBC)

The Pharmacy Examining Board of Canada was created by Federal Statute on December 21, 1963, to establish qualifications for pharmacists acceptable to participating pharmacy provincial regulatory authorities. The Board provides for annual examinations and issues a certificate to the successful candidate, which may be filed with a Canadian provincial regulatory authority in connection with an application for license to practice pharmacy under the laws of that province. Baccalaureate graduates from Faculties of Pharmacy accredited by the Canadian Council for Accreditation of Pharmacy Programs are eligible to write these examinations. Successful completion of these examinations is a prerequisite to licensure in Canada. Information relative to the dates of examinations, application forms, etc., may be obtained through the Director's Office, College of Pharmacy.

Individuals who are not graduates of an accredited Canadian Faculty of Pharmacy must first complete the PEBC Qualifying Exam.

The Pharmacy Examining Board of Canada requires proof of language proficiency for all candidates for the Qualifying Examination. All applicants must be proficient in either English or French, both written and spoken. Additional information on language requirements is available in the current PEBC Qualifying Examination Information booklet.

### D. Student Pharmacy Society

The basic aims of the Student Pharmacy Society are to promote a closer liaison with the other societies on campus, to give the pharmacy students a strong position with regard to Student Council activities, to provide a means of communications between students and their respective provincial regulatory authorities in the Maritimes, and to provide an organizational body which plans and finances the various unique Pharmacy Society activities.

Membership in the Pharmacy Society includes membership in the Canadian Association of Pharmacy Students and Interns and membership in the Canadian Pharmacists Association.

## V. Programs Offered

The College of Pharmacy offers a four-year program, following at least one year of general science, leading to the degree of Bachelor of Science (Pharmacy) - BSc (Pharm).

The undergraduate program has a patient-oriented curriculum integrating clinical pharmacy with the pharmaceutical sciences. The curriculum utilizes an integrated problem-based learning format.

Year 1 includes pharmacy law and health care ethics, biomedical and physical sciences (anatomy, biochemistry, microbiology, pharmacology and physiology) in discrete three-to seven-week classes. The pharmaceutical sciences (biopharmaceutics and pharmacokinetics, medicinal chemistry, drug metabolism, toxicology, pharmaceutics and physical pharmacy) with necessary reviews of biomedical content, are integrated in Years 2 through 4, with therapeutics, pharmacoepidemiology, pharmacoconomics, pharmaceutical care, communications, interprofessional relations, law and ethics, social and administrative pharmacy issues, and the role of pharmacy in the health care system.

The College participates with the Queen Elizabeth II Health Science Centre, Halifax, NS, and the Horizon Health Network, NB in providing a Canadian Hospital Pharmacy Residency Board accredited twelve-month post graduate hospital pharmacy residency program.

Through structured rotations in various areas of pharmacy practice, the program aims to prepare pharmacists for exemplary pharmacy practice. Areas of rotation include patient care, drug information, drug distribution, pharmacy administration, a research project and in-service and education. The emphasis is on providing exemplary patient care. Practitioner role models/preceptors are utilized throughout the program to mentor the necessary skills, knowledge and values required to be a pharmacist for application by the resident. A stipend is provided and a certificate is presented to candidates successfully completing the program.

## Undergraduate Curriculum Structure

The PBL curriculum, within the College of Pharmacy, may be scheduled past the posted exam periods. Students are responsible for all costs associated with expenses during this time (i.e., meal plan expiration, residence closure, etc.).

### A. Tutorials

The principal feature of the curriculum is problem-based learning (PBL). Students learn together in tutorial groups of seven to ten.

Each group is facilitated by a trained non (content)-expert tutor who may be faculty, sessional tutors, practitioners or graduate students.

Two-hour tutorials are held three times a week. In tutorial sessions students are presented with a situation for which they must identify their own prior knowledge and set specific learning objectives. Students use the time between tutorial sessions for self-directed learning of the objectives that they have set. They then are responsible for ensuring that other group members learn these objectives.

### B. Classes

A minimal number of classes explain difficult concepts and summarize learning modules. Science laboratory sessions are limited to experiments and demonstrations that enhance student learning of concepts.

### C. Skills Laboratory

The skills laboratory focuses on practical skill development and application of knowledge acquired in the PBL curriculum and critical appraisal series. Activities required for successful completion of the practical experience program are introduced and practiced. Content includes but is not limited to: extemporaneous compounding, sterile technique, prescription filling and assessment, written and verbal communication skills, patient education, device training, and jurisprudence.

A cardiopulmonary resuscitation (CPR) level HCP and standard first aid class are the students' responsibility in cost.

### D. Practice Experience Program (PEP)

A progressive professional field experience complements the PBL curriculum as follows:

#### Year 1 - Community Experience Program (CEP)

- the equivalent of a half day per week in a goal-related service learning in a non-pharmacy health-oriented community site.

#### Year 2 - Practice Experience Program (PEP)

- PHAR 2081.03 - Hospital Rotation (two consecutive weeks)
- PHAR 2082.03 - Community Rotation (two consecutive weeks)

Second year rotations are completed during the months of May - August, after successful completion of all other second year classes. Each rotation is two weeks in length, at a minimum of 35 hours/week. Second year rotations provide students with an opportunity to see pharmacists practice patient focused care in both community and hospital practice settings. Time is also spent on the distributive, legislative and administrative components of pharmacy practice.

#### Year 3 - Practice Experience Program (PEP)

- PHAR 3080.03 - Community Rotation (four consecutive weeks)

This rotation is completed during the months of May - August, after successful completion of all other third year classes. This rotation is four weeks in length at a minimum of 35 hours/week and introduces students to the practical application of the pharmacist's patient care process in a community pharmacy. Rotation objectives address drug information, prescription and non-prescription medications, patient education, and health promotion presentations to community



groups. This rotation is intended to provide an introductory experience to clinical activities including: monitoring patients, identifying drug-related problems, and defining and measuring patient goals and outcomes.

### Year 4 - Practice Experience Program (PEP)

- PHAR 4080.045 – Hospital Rotation (six consecutive weeks)
- PHAR 4085.045 – Community Rotation (six consecutive weeks)

These six-week rotations are the culmination of the student's study. Experiential rotations in hospital and community practice sites allow students the opportunity to apply all the knowledge, skills and values they have developed to the provision of total pharmacy care. The focus of these rotations is patient-based and primarily clinical. Each rotation is six-weeks, at a minimum of 40 hours/week.

For each rotation, from year 2 through to year 4, students are required to travel to sites outside of the Halifax area and will be responsible for any costs incurred as a result of the program.

Students should note that there are very limited PEP rotation sites outside the Maritime Provinces. All PEP rotations must take place within Canada. Students must be prepared to complete all PEP rotations within the Maritimes.

## E. Prescribed Classes

### Year 1

- ANAT 1040.03
- BIOC 1040.06
- CHEM 2442.03
- MICR 1050.03
- PHAC 1470.06
- PHAR 1060.015
- PHAR 1070.03
- PHAR 1080.00
- PHYL 1400.06

### Year 2

- PHAR 2010.03
- PHAR 2015.03
- PHAR 2020.03
- PHAR 2035.06
- PHAR 2040.03
- PHAR 2045.015
- PHAR 2055.015
- PHAR 2060.015
- PHAR 2070.03
- PHAR 2081.03
- PHAR 2082.03

### Year 3

- PHAR 3010.03
- PHAR 3020.03
- PHAR 3030.03
- PHAR 3040.06
- PHAR 3050.03
- PHAR 3055.06
- PHAR 3060.03
- PHAR 3070.03
- PHAR 3080.03

### Year 4

- PHAR 4010.015
- PHAR 4025.06
- PHAR 4035.06
- PHAR 4060.03
- PHAR 4070.015
- PHAR 4080.045
- PHAR 4085.045

## F. Interprofessional Health Education

Students are required to maintain enrolment in IPHE 4900 (see calendar section on Health Professions, Interprofessional Health Education) for the duration of their studies. Successful completion of this class is a requirement for graduation, and will be recognized further with the awarding of a special Certificate in

Interprofessional Collaboration to be presented by the Faculty of Health Professions. Students are asked to consult with their individual school/college to determine the specific guidelines and expectations regarding the required portfolio.

## VI. Class Descriptions

### ANAT 1040.03: Basic Human Anatomy for Pharmacy Students.

This class is offered by the Department of Anatomy and Neurobiology to students in the College of Pharmacy. Upon successful completion of the class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. There are no formal laboratory sessions.

INSTRUCTOR(S): D. Marsh

FORMAT: Lecture 3 hours, tutorial 6 hours. 4 weeks

RESTRICTION: Restricted to Pharmacy students

### BIOC 1040.06: Biological Chemistry and Metabolism for Students of Pharmacy.

The structures, significance, and metabolism of the main biologically important compounds are outlined in lectures, with some topics of particular interest studied further in the laboratory. Tutorials aim to develop students' ability to learn biochemistry on their own and in small groups.

INSTRUCTOR(S): D. Byers, P. Briggs

FORMAT: Lecture 4 hours, lab 3 hours, tutorial 6 hours, 7 weeks

CO-REQUISITE: CHEM 2442.03

RESTRICTION: This class is restricted to students in the BSc (Pharm) program.

### CHEM 2442.03: Organic Chemistry for Pharmacy Students.

Aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy are presented. This class does not serve as a prerequisite for any other chemistry class.

INSTRUCTOR(S): N. P. Schepp

FORMAT: Lecture 4 hours

RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

### MICR 1050.03: Basic Microbiology and Immunology for Pharmacy.

This course is only for pharmacy students and involves problem based learning tutorials, lectures and laboratory sessions (demonstrations and exercises). Topics include: concepts of antibiotics and immunity, basic principles of microbial structure, physiology, and genetics in relation to microbial pathogenesis.

INSTRUCTOR(S): L. Murray

FORMAT: Lecture 3 hours, tutorial 6 hours. 3 weeks

PREREQUISITE: BIOL 1000X/Y.06 or (BIOL 1010 or BIOL 1020 and BIOL 1011 or BIOL 1021) or instructor's consent

### PHAC 1470.06: Pharmacology for Pharmacy.

This class will provide an introduction to pharmacology, emphasizing basic mechanisms of drug action and principles of drug-receptor interactions, pharmacokinetics, and drug metabolism.

COORDINATOR: TBA

FORMAT: Lecture 3 hours, tutorial 6 hours. 6 weeks

PREREQUISITE: BIOC 1040.06, MICR 1050.03, PHYL 1400.06

### PHAR 1060.015: Pharmacy Law and Health Care Ethics.

This problem-based learning class focuses on the provincial and federal laws that regulate the practice and profession of pharmacy, and key ethical principles and considerations for the pharmacist. Students will learn through a series of mini-cases based on real-life practice scenarios, with integrated ethical components. Students will be introduced to professionalism and the associated responsibilities of a pharmacist. This class introduces students to the legal and professional framework on which all pharmacists practice. Integrated courses in future classes will build on the law and ethics introduced in this course.

COORDINATOR: C. Connolly

FORMAT: Lecture 3 hours, tutorial 6 hours

### PHAR 1070.03: Pharmacy Skills Lab I.

First year skills labs provide an introduction to skills required by a practicing pharmacist. These include communication skills, pharmacy computer skills,

prescription processing and compounding of select dosage forms.

COORDINATOR: L. Walker

FORMAT: Lecture 1 hour, tutorial and/or lab 3 hours

### **PHAR 1080.00: Community Experience Program.**

This program consists of service learning at a health-related but non-pharmacy site such as the Canadian Cancer Society, CNIB, Special Olympics etc. The purpose is to augment developing communication skills, interpersonal skills, basic work ethics including the importance of teamwork, introduction to client needs and the professional helping ethic. An inter-professional health mentor experience is also part of this course.

COORDINATOR: N. Harris

FORMAT: 3 hours per week

### **PHAR 2010.03: Critical Appraisal Series I.**

Students are introduced to a variety of drug/health information resources including specific websites, texts, journals, bibliographic databases, and the Regional Drug Information Service. They gain experience in evaluating and using these resources efficiently and effectively through assignments and labs. Second term focuses on the fundamentals of clinical research methodology, evaluating research papers and biostatistics.

COORDINATOR: J. Isenor

FORMAT: Lecture/computer training lab

### **PHAR 2015.03: Topical Products (Dermatologicals).**

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceuticals and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy 2015 deals with common dermatological problems seen by pharmacists and the management of these problems.

COORDINATOR: S. Mansour

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2020.03: Topical Products (Eye and Ear).**

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceuticals and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy 2020 is devoted to common problems of the eye and ear, and include those of an infectious and non-infectious nature.

COORDINATOR: S. Mansour

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2035.06: Respiratory Tract Complaints.**

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceuticals and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. Pharmacy 2035 deals with common infectious and non-infectious respiratory complaints, treated with non-prescription and prescription medications.

COORDINATOR: S. Mansour

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2040.03: Gastrointestinal Disorders.**

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceuticals and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy 2040 focuses on gastrointestinal ailments, and their management. Topics include acid-pepsin disease, diarrhea, constipation, and inflammatory bowel disease and anemia.

COORDINATOR: S. Mansour

FORMAT: Lecture 3 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2045.015: Nutrition.**

Students will learn about nutritional needs of healthy clients and special populations. The roles, the daily requirements and sources of various vitamins, and pathological consequences of dietary deficiencies will be addressed. Special nutritional challenges in pregnancy, infancy, elderly, and grave illness will be examined.

COORDINATOR: S. Mansour

FORMAT: Lecture 5 hours, tutorial 2 hours, self-directed learning.

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2055.015: Drug Disposition.**

The objective of this course is to provide students with an overview of the determinants of drug disposition, including a qualitative and quantitative assessment of drug absorption, distribution, metabolism and excretion. Major topics include hepatic and renal clearance, and factors which alter pharmacokinetics such as protein binding, disease states, age, enzyme induction/inhibition, drug interactions, and obesity, gender, and genetics.

COORDINATOR: K. Gorski

FORMAT: Lecture 27 hours. 3 weeks

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2060.015: Medication Use Management.**

This course introduces the pharmacy student to the "big picture" issues of the medication-use system. The three parts of the course are as follows: (1) an overview of the medication-use system, (2) discussion of the problems with the medication-use system and (3) exploration of potential solutions to these problems.

COORDINATOR: a. Murphy

FORMAT: Lecture Approx 27 hrs, 3 weeks

PREREQUISITE: Successful completion of all first year pharmacy.

### **PHAR 2070.03: Pharmacy Skills Lab II.**

Pharmacy 2070 expands upon the skills learned in first year. Emphasis is on application of material from the PBL curriculum and Critical Appraisal Series. Students develop communication, assessment and drug information skills that facilitate identifying drug therapy problems and developing therapeutic plans. Students examine social, ethical and professional practice issues. Successful completion of a cardiopulmonary resuscitation (CPR) level HCP and standard first aid class is a requirement for a passing grade.

COORDINATOR: G. Rodrigues

FORMAT: Lecture/lab - 4 hours

PREREQUISITE: Successful completion of all first year classes

### **PHAR 2081.03: Practice Experience Program (PEP) I.**

This rotation provides students with an opportunity to see patient centered pharmacy care in a hospital practice setting. Specific units focus on drug information, hospital pharmacy services provided as part of the healthcare team, sterile procedures and IV admixtures, medication safety, and interprofessional education opportunities. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies

FORMAT: Minimum 35 hours/week x 2 consecutive weeks (May-Aug)

PREREQUISITE: Successful completion of second year classes (see College of Pharmacy Regulation F2)

### **PHAR 2082.03: Practice Experience Program (PEP) II.**

This rotation provides students with an opportunity to participate in patient care in a community pharmacy setting. Pharmacy law, narcotics and controlled drugs, third party insurers, processing prescriptions, provincial formularies, drug information and systems management are key areas of this rotation. This rotation provides students with an opportunity to participate in patient care in a community pharmacy setting. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies

FORMAT: Minimum 35 hours/week x 2 consecutive weeks (May-Aug)

PREREQUISITE: Successful completion of second year classes (see College of Pharmacy Regulation F2)

### **PHAR 3010.03: Critical Appraisal Series II.**

This course advances and reinforces the topics learned in PHAR 2010.03. The first term focuses on research methods and biostatistics seen in various trial designs. Students learn to critically evaluate the medical literature and write a term paper reviewing the evidence behind a clinical decision. The second term will focus on applying the tenets of evidence-based clinical practice. Through a journal club setting, students will evaluate the strengths and weaknesses seen in the literature as they relate to a clinical situation. Students are expected to use these skills in their problem-based learning classes.

COORDINATOR: TBA

FORMAT: Lecture and small group work – 2 hours

PREREQUISITE: PHAR 2010.03 or consent of instructor

### **PHAR 3020.03: Women's Health Issues.**

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceuticals and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products

discussed. PHAR 3020.03 deals with common women's health issues such as contraception, osteoporosis and menopause and the management of these problems.

COORDINATOR: H. Deal

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3030.03: Infectious Diseases.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3030.03 is devoted to miscellaneous infectious diseases.

COORDINATOR: H. Deal

FORMAT: Lecture 5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3040.06: Cardiovascular Diseases.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3040.06 addresses cardiovascular diseases such as hypertension, ischemic heart disease, congestive heart failure and thromboembolism, and the pharmacologic management of these conditions.

COORDINATOR: H. Deal

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3050.03: Pain and Rheumatology.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3050.03 deals with the understanding and management of acute and chronic pain of various origins.

COORDINATOR: H. Deal

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3055.06: CNS and Behavioral Disorders.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. PHAR 3055.06 involves the study of an array of conditions ranging from depression to seizure disorders.

COORDINATOR: H. Deal

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3060.03: Endocrine Disorders.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Disorder included in PHAR 3060.03 are diabetes and thyroid conditions.

COORDINATOR: H. Deal

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3070.03: Pharmacy Skills Lab III.

Third year skills lab expands on the concepts learned in skills lab I and II. An added emphasis will be placed on written communication skills and prescription therapeutics as covered in the PBL curriculum. Students are expected to use materials learned in CAS for the purposes of therapeutic-decision making and patient education. Lectures and device training will complement the PBL curriculum. Standardized patients will be used for teaching purposes as well as for the final objective structured clinical exam. COORDINATOR: K. Sponagle

FORMAT: Lecture/lab/seminar/4 hours

PREREQUISITE: Successful completion of all second year classes

### PHAR 3080.03: Practice Experience Program (PEP) III.

This rotation focuses on the practical implementation of patient centered pharmacy care in community practice. Students will complete a variety of patient care work-ups. Provision of drug information, prescription and non-prescription medications, patient education and health promotion are integral components of this rotation. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies

FORMAT: Minimum 35 hours/week x consecutive 4 weeks (May-Aug)

PREREQUISITE: Successful completion of third year classes (see College of Pharmacy Regulations F2)

### PHAR 4010.015: Critical Appraisal Series III.

This is a continuation of PHAR 3010.03. Students will combine their skills from the previous courses in this series as well as knowledge and skills derived from their problem-based learning curriculum and skills lab courses in a variety of tasks over the term. The ability to follow an evidence-based approach for supporting clinical decisions will be emphasized.

COORDINATOR: D. Gardner

FORMAT: Lecture/small group – 2 hours

PREREQUISITE: Successful completion of all third year classes

### PHAR 4025.06: Pathocytologic Disorders.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. This class deals with the pharmacotherapy of common cancers and includes issues such as pain control.

COORDINATOR: TBA

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all third year classes

### PHAR 4035.06: Disorder of the Liver and Genitourinary Systems.

Students learn the medicinal chemistry, pharmaceuticals, biopharmaceutics and pharmacokinetics, and pharmacology, as well as the pathophysiology and pharmacotherapeutic principles pertaining to the problems and products discussed. Pharmacy administration is also integrated. This class deals with hepatitis, various other liver disorders, renal disease and men's health issues related to the genitourinary tract.

COORDINATOR: TBA

FORMAT: Lecture 3-5 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all third year classes

### PHAR 4060.03: Advanced Patient Health Management.

Three major areas of patient health management will be discussed in this class: (1) the Canadian healthcare system and pharmacy benefit management; (2) pharmacoeconomics and formulary decision making; and (3) human resource management and leadership principles and practices in pharmacy.

COORDINATOR: A. Murphy

FORMAT: Lecture 6 hours, tutorial 3 hours.

PREREQUISITE: Successful completion of third year pharmacy.

### PHAR 4070.015: Pharmacy Skills Lab IV.

Skill Lab IV expands upon the skills learned in Skills Lab I, II and III. Students must apply the knowledge learned in other components of the curriculum and specific activities include but are not limited to: patient interviewing, assessment and education. Standardized patients will be used for teaching purposes as well as for the final objective structured clinical exam.

COORDINATOR: H. Deal

FORMAT: Lecture/lab/seminar/3 hours

PREREQUISITE: Successful completion of all third year classes

### PHAR 4080.045: Practice Experience Program (PEP) IV.

This clinical rotation focuses primarily on the provision of patient focused pharmacy care in hospital or long-term care practice. The student will apply the knowledge, skills and values that have been learned in their academic study and previous PEP rotations, using a patient-centered approach. Students will serve as a member of the healthcare team incorporating professionalism, ethical principles, drug information, patient education and health promotion in the application of patient focused pharmacy care. Students will be required to complete a full patient care work-up on several patients and present the cases to a health professional audience. Students will expand their educational role by preparing and presenting an in-service on a relevant topic to a health professional audience. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies

FORMAT: Minimum 40 hours/week x 6 consecutive weeks (first or second rotation, 4th year, second term)

PREREQUISITE: successful completion of fourth year classes (see College of Pharmacy Regulation F2)

## PHAR 4085.045: Practice Experience Program (PEP) V.

This clinical rotation focuses primarily on the practical provision of patient centered pharmacy care in community practice. As with the hospital rotation, students will apply the knowledge, skills and values that have been acquired throughout academic study and previous PEP rotations using a patient-centered approach. Interaction with family physicians and other healthcare professionals in the community is a key component of this rotation. Students should have the opportunity to interact with patients in the physician's office, pharmacy and/or home environment. Students will serve as a member of the healthcare team and incorporate professionalism, ethical principles, drug information, patient education and health promotion in the application of patient focused pharmacy care. Students will be required to complete full patient care work-ups on several patients and present the cases to a health professional audience. Students will expand their educational role by preparing and presenting a relevant health promotion/disease prevention topic to a community audience. Students are required to travel to sites outside the Halifax area and are responsible for all associated costs.

COORDINATOR: H. Davies

FORMAT: Minimum 40 hours/week x 6 consecutive weeks (first or second rotation in 4th year, second term)

PREREQUISITE: Successful completion of fourth year classes (see College of Pharmacy Regulation F2)

## PHYL 1400.06: Human Physiology.

This course is designed to give Pharmacy students a broad understanding of normal human physiology using pathophysiologic scenarios. Selected topics in physiology and biophysics will be presented in tutorials as case studies and in lectures. The central themes include: respiratory, endocrine/reproductive, gastrointestinal, neuromuscular, nervous system, renal and cardiovascular. Students will be provided with means for self-evaluation throughout the unit. Evaluation will be based on tutorial performance as well as mid- and end-of-unit examinations. This class is only for Pharmacy students.

DIRECTOR: M. Murphy and other staff members

FORMAT: A 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week

PREREQUISITE: ANAT 1040.03

# Social Work

## The School of Social Work

Location: Mona Campbell Building, Suite 3201  
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Halifax, NS B3H 4R2  
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Website: <http://www.socialwork.dal.ca>

## Dean

Webster, William G., PhD

## Academic Staff

### Director of the School

Fook, J.

### Associate Director

Richard, B. K.

### Undergraduate Coordinator

Brown, M.

### Professor Emeritus

Wein, F. C., BA (Queen's), MA, PhD (Cornell)

### Professors

Fook, J., BSW (SNSW), MSWC (Sydney), PhD (S'ton)  
Karabanow, J., BA, MA (McGill), PhD (Wilfrid Laurier)  
Thomas Bernard, W., BA (MSVU), MSW (Dalhousie), PhD (Sheffield)  
Ungar, M., BA, BSW, MSW (McGill), PhD (Wilfrid Laurier)

### Associate Professors

Brown, C., BA, MA (Manitoba), MSW (Carleton), PhD (U of T)  
Brown, M., BA, BSW, MSW (Dalhousie), PhD (MUN)  
MacDonald, J., BSW (St. Thomas), MSW (Carleton), PhD (MUN)  
Richard, B. K., BA (M.A.), MSW (Dalhousie)

### Assistant Professors

Baikie, G., BSW, MSW, PhD candidate (MUN)  
Campbell, C., BSc (King's), BEd, (Acadia), MSW (Carleton), PhD (MUN)  
Hanrahan, C., BA (McGill), MS, PhD (U of Toronto)  
MacDonald, N., BA, BSW, MSW (Dalhousie), PhD Candidate (Dal)  
Weinberg, M., BA (U of T), MSW (Smith College), PhD (U of T)

### Adjunct Professors

Briggs, T., BA (Waterloo), MSW (U of T)  
Cromwell, G., BA (SMU), MSW, MPA, BEd (Dalhousie)  
Gilroy, J., BS (Dalhousie), MSW (King's), MA (U of T)  
Harbison, J., BA, BSS (Dublin, Trinity College), Grad Dip SW (Edinburgh), PhD (Toronto)  
Marsman, V., BA, BSW, MSW (Dalhousie)  
O'Hara, P., BA (St. Thomas), MSW (Dalhousie)  
Wilson, L., BA (UCCB), BSW, MSW (Dalhousie)

### Agency Field Instructors

Many individuals throughout the municipality, province, and country contribute to the education of Social Work students through offering and supervising student placements. They represent a wide range of agencies and organizations including:

community based, non-profit, government, physical/mental health and addiction prevention and treatment services. Their invaluable assistance is gratefully acknowledged and appreciated.

## I. Introduction

The School of Social Work's vision is a commitment to building a socially just society, defined as one that upholds and validates the values of equality, diversity, inclusiveness, democracy and concern for human welfare. We manifest and advance curricula, scholarship and school culture that are congruent with those values.

The BSW degree program is accredited by the Canadian Association for Social Work Education. It embraces a critical and anti-oppressive approach to social work practice that includes an emphasis on social policy, research skills and critical analysis, professional values, theoretical perspectives and practice methods. While the program has evolved within the context of the people, communities and service network of the Maritime Provinces, graduates are qualified to practice social work throughout Canada and beyond.

### A. BSW Delivery Options

The BSW is a 20 credit degree program and is offered on campus and by distance delivery online. Both delivery methods include field placement experience. The application deadline is February 15th of each year.

### B. Relationship to the MSW Program

The School of Social Work offers a Master of Social Work degree for advanced specialized study in social work practice. The academic prerequisite for the MSW degree is a BSW or a Master's degree in a related field of study.

### C. Continuing Education

The School offers a Continuing Education Program (non-credit) of thematic workshops.

### D. Nova Scotia Association of Social Workers

Provincial legislation requires that only persons who are registered with the Nova Scotia Association of Social Workers (NSASW) can practice as social workers within Nova Scotia. To become fully registered and use the title of Social Worker after award of the BSW degree, at least 3,858 hours of paid supervised social work experience is necessary.

## II. Bachelor of Social Work Degree Program Admission

Information on academic preparation, admission and application procedures is contained in the Admission Requirements section of the calendar. Enrolment is limited to a specified number of places that are offered once a year to the best qualified candidates, selected by the School's Admissions Committee. Equal consideration is given to part-time and full-time applications.

### Prior Criminal Conviction

BSW applicants should be aware that a prior criminal conviction may render them unable to obtain a license in their field of study upon graduation, or unable to participate in some clinical field work experiences throughout their class of study.

### A. Affirmative Action

The School of Social Work has an affirmative action policy for applicants who are Acadian, Aboriginal, African Canadian, members of other racially visible groups, and persons with (dis)Abilities. The school is committed to admitting and graduating the highest possible number of students who qualify under this policy. Members of these groups who have five general (non social work) university credits that average B- are encouraged to apply under this policy. Applicants may self identify in a place provided on the Social Work Statement cover sheet, which is part of the BSW application package. Each candidate is considered individually on the basis of her/his qualifications, rather than in relation to other applicants. The admissions prerequisites and selection criteria are otherwise the same for all candidates.

### B. Program Objectives

Upon successful completion of the BSW program, students will:

1. Have an understanding of equity and justice through critical analysis.

2. Develop intellectual skills, scholarly attributes, and professional characteristics and values, including but not limited to, curiosity, open-mindedness, effective communications, judgment, rigor, respect, humility, embracing of difference, acceptance, integrity, compassion, self-care and ethical action.
3. Develop insight into the complex, contextual, and sometimes contradictory nature of social work theory, practice, policy, ethics and research.
4. The development of practice theory and skills "required to analyze situations, establish accountable relationships, intervene appropriately with clients and related systems and evaluate one's social work interventions" (CASWE, 2007) This includes an understanding of a range of life events and processes that may impact peoples' development, personalities and potentials.
5. Develop a critical understanding of the personal and professional "use of self."

## C. Program Requirements

The five admission credits that form the basic BSW academic prerequisite reduces the 20 degree requirement to 15 credits for all students.

### Required Classes

- SLWK 2010.03: Introduction to Community Social Work
- SLWK 2111.06: Development of Canadian Social Work and Social Welfare
- SLWK 2222.03: Advancing Social Justice
- SLWK 2333.06: Beginning Social Work Practice
- SLWK 2444.03: Life Processes: Conceptualizations and Practices for Critical Social Work
- SLWK 3030.06: Theoretical Foundations of Social Work Practice
- SLWK 3012.03: Perspectives on Social Welfare Policy
- SLWK 3083.03: Introduction to Research Methods and Statistics
- SLWK 3084.03: Understanding Research Methods in Social Work
- SLWK 3220.03: Cross-Cultural Issues in Social Work Practice
- SLWK 4010.06: Advanced Social Work Practice
- SLWK 4033.09: Field Practicum and Seminar
- Social Work Elective
- Social Work Elective

Distance students are required to take SLWK 2333, Beginning Social Work Practice onsite at Dalhousie University. The class is a combination of online study with a two week onsite residency component. This class is scheduled in the Spring session, normally in early May. Students complete this requirement in their first year of study.

### Interprofessional Health Education

Students are required to maintain enrolment in IPHE 4900 (see calendar section on Health Professions, Interprofessional Health Education) for the duration of their studies. Successful completion of this class is a requirement for graduation, and will be recognized further with the awarding of a special Certificate in Interprofessional Collaboration to be presented by the Faculty of Health Professions. Students are asked to consult with their individual school/college to determine the specific guidelines and expectations regarding the required portfolio.

Because of the nature of this class, registration in IPHE 4900 does not constitute a class overload.

### Transfer Credit Policy

The 15 credits may be further reduced by the amount of transfer credits for which a student is eligible. Suitable university credits that have been completed with a cumulative average of 2.7 (or B-) are eligible for transfer credit consideration. The following procedures guide the assignment of transfer credit:

- a. A maximum of five transfer credits (30 credit hours) can be awarded.
- b. As a general rule, transfer credit is assigned first to Elective Classes and then to Required Classes within the BSW curriculum.
- c. Transfer credit for university Social Work classes taken prior to a student's admission to the SSW may be assigned to required classes within the BSW curriculum. For this to occur students are required to submit the class outlines for these classes (calendar descriptions are not sufficient).
- d. No matter where transfer credit is assigned, all students must complete at least 10 credits offered by the SSW to complete the BSW degree.
- e. The only exception to the above will be students transferring from other BSW programs. Transfer credits for these students will be assigned following an individual file review of the student's previous class outlines to determine equivalency of content and credit value within the SSW curriculum. Transfer credit is assigned as fairly and appropriately as possible, although some loss of

credit usually occurs. Students who transfer from other BSW degree programs are governed by the regulation that any student with a previous degree is required to complete a minimum of six credits (36 credit hours) under Dalhousie instruction, and that any student without a degree is required to complete a minimum of 7.5 credits (45 credit hours) under Dalhousie instruction.

## D. Class Load and Sequencing

### 1. Length of Program

Most students accepted to the BSW program have a degree on entry with the required cumulative grade point average. Such students normally require 10 credits (60 credit hours) to complete the BSW degree. Students studying on campus may register on a full-time basis for two years of study, or on a part-time basis (to a maximum of ten years). Distance students may register for a two-year (24 month) full-time program of study, or a three-year part-time program of study (to a maximum of 10 years).

Students registered who have only five credits on entry (usually persons with related work experience) are required to complete three full-time years of study (90 credit hours) or the part-time equivalent.

Students registered with six credits or more on entry but less than 15 credits, (36-90 credit hours), complete a two-to-three year program as determined by the number of prior credits in relation to the School's transfer credit policy.

Class load and sequencing may vary from student to student depending upon the number of transfer credits and full or part-time status.

### 2. On-Campus Delivery

- For full-time students the usual load is 15 credit hours (i.e., five .03 credit classes) in the Fall and Winter terms.
- For part-time study the class load may be as minimal as one .03 credit class per term.
- The only Social Work classes offered in the Spring semester consist of one Social Work elective and Field Practicum and Seminar.
- It is important to pay close attention to the pre or co-requisites for each class. These are indicated in the class descriptions.

### 3. Distance Delivery

Distance Students are strongly encouraged to maintain their class sequencing schedule. Any changes must be in accordance with pre- and co-requisites as outlined in the calendar and are dependent upon availability of class offerings, especially electives. Students studying by distance will be assessed distance delivery fees in addition to tuition.

## E. Registration

Registration is completed online for all students regardless of delivery method. For more information, go to <http://www.dal.ca/registration> and <http://www.dal.ca/online>.

The academic timetable is available online each year. On-campus Social Work classes have section numbers of 01 or 02. Online Distance Social Work classes have section numbers of 07 or 08, and a notation of "DR".

**IMPORTANT:** Please note that it is not possible to transfer between onsite and the online delivery or to register for classes other than those which apply to the delivery method for which the student has been accepted.

## F. Field Education

The Field Practicum and Seminar class consists of a 700 hour placement at a community agency plus participation in a concurrent integrated seminar. For a full explanation of the placement process, roles and responsibilities please download the Field Manual at <http://socialwork.dal.ca/Prospective%20Students/>

Field Placements are organized by the Field Education Coordinator at the School of Social Work.

## G. Advising Sessions for New Students

New on campus students are expected to attend Orientation which is scheduled prior to the commencement of classes. Students can meet individually with the Student Services Coordinator to review the curriculum advising forms and ask questions pertaining to the BSW program. Distance students are provided with an

online orientation and information site and should contact the Distance Coordinator regarding their program schedule and questions.

## III. School of Social Work Regulations: BSW Degree Program

All Bachelor of Social Work students are required to observe the University and Academic Regulations of Dalhousie University and the Faculty of Health Professions set forth in the annual Undergraduate Calendar. The website location is <http://www.registrar.dal.ca> - Undergraduate Calendar - Academic Regulations, University Regulations.

### 1. Grade Point Average Requirements

Faculty of Health Professions' academic regulations applies to the BSW degree requirements. Students require a cumulative GPA of 2.0 to graduate. In addition, the School's grade requirements specified in Items 2 & 3 below apply to components of the Social Work curriculum.

### 2. Grade Requirements for Social Work Classes

The minimum grade requirement for satisfactory completion of a Social Work class is C-. A student who earns a grade of less than C- but is otherwise still eligible to continue in the program must repeat the class until a grade of at least C- is attained. Social Work classes are all classes taken under BSW study other than those designated as general admission credits.

### 3. Required Withdrawal: Academic Dismissal

A student who fails to meet sessional GPA standards as defined in the Academic Regulations - Faculty of Health Professions must withdraw from the School for at least 12 months. (Please refer to Academic Regulations - Good Standing, Probation and Academic Dismissal, Dalhousie Undergraduate Calendar).

- A student who fails a repeated academic class must normally withdraw from the BSW Program.
- A student who fails SLWK 4033, Field Practicum and Seminar is required to withdraw from the BSW Program.

### 4. Required Withdrawal on Grounds of Unsuitability

See University Regulations: Suspension or Dismissal from a Program on the Grounds of Professional Unsuitability - Faculty of Health Professions.

### 5. Consideration of Readmission

Students are normally required to complete their undergraduate studies within ten years of their first registration and comply with the program requirements at the time of first registration. If a student is readmitted and cannot complete the program within 10 years they may be required to comply with the new program requirements.

#### 5.a Request for Readmission After Dismissal

Students who have been required to withdraw from the School of Social Work on the basis of academic dismissal may apply for readmission by the annual February 15 admissions deadline date that follows a minimum of 12 month's absence from the School. Due to the competitive nature of the enrolment process, readmission of students is not guaranteed.

#### 5.b Request for Readmission After Voluntary Withdrawal

Students in good standing who have not registered in the program for 36 months or less and who wish to be reinstated are required to submit a new application form to be returned with a letter to the Undergraduate Program Coordinator requesting re-admission to resume their BSW degree studies. Students in good standing who have not registered in the program for 37 months or more and who wish to be reinstated are required to reapply by the February 15 admission deadline date. The application and all supporting documentation must be accompanied by a letter explaining the reasons for the interruption in the student's studies and the decision to request readmission to the BSW degree program.

## 6. Appeals

A student wishing to appeal a decision based on School regulations, should consult with the Chair of the Committee on Undergraduate Studies for advice on appeal procedures.

## 7. Duration of Undergraduate Study

Students are normally required to complete the BSW degree within 10 years of their first registration (see Academic Regulation—Duration of Undergraduate Studies).

## 8. Workload Regular Academic Year

Five full-credit (i.e., 30 credit hours) per academic year shall be regarded as constituting a normal workload for a full-time student. Permission of the Undergraduate Program Coordinator is required if this workload is to be exceeded, or if the planned workload in any one term (Fall or Winter) would amount to more than five half-credits (i.e., 15 credit hours per term).

On-campus, part-time students may register for a minimum of one .03 credit (three credit hours) per term. Part-time status applies to students registered for no more than a total of 2.5 credits (15 credit hours) in the Fall and/or Winter terms. All new students are required to register in the first Fall term following their acceptance in order to maintain their place in the program.

## 9. Workload Summer Session (includes May-June and July-August)

Dalhousie regulations permit students to take one full credit (a total of six credit hours) in each of the May-June and July-August parts of Summer term. Social Work students may, following consultation with the Field Coordinator, register for the Field Practicum and Seminar class during this session.

The School usually offers one .03 credit Social work class in the May/June period for BSW campus students, provided that minimum enrollment requirements are met. Students in distance delivery take their elective classes in the summer sessions. Consult the timetable for current class offerings.

Permission of the Undergraduate Program coordinator is required to exceed the two-credit limit for the two summer terms.

## 10. Students in Other Degree Programs (applicable for on-campus students only)

Students enrolled in degree programs at Dalhousie may, in conformance with their program regulations, choose their degree electives from Social Work Field of Practice electives. Permission from the instructor is required; class prerequisites and class size limitations apply. Students are able to enroll in Social Work electives only to the maximum credit value allowable for open electives by their degree requirements. Any additional Social Work classes would be considered on the same basis as "No Degree."

## 11. Special Students "Non-Degree" (applicable for on-campus students only)

Social Work classes are not available to persons on a "no degree" basis, with the exception of agency field instructors and other qualified Social Work professionals who are able to satisfy normal admission requirements. Permission of the Undergraduate Coordinator is also required.

Students enrolled in other Social Work degree programs may be permitted to enroll in specific classes, by application for admission as a visiting student with letter(s) of permission from the home university. Class prerequisites and size limitations apply. Further information may be obtained from the Student Services Coordinator.

## 12. Deferral Policy

Newly accepted applicants who, for reasons beyond their control, are unable to take up their position on the date from which they were accepted, may request a deferral of one, two, or three terms. No student may receive more than one deferral.

Requests for a deferral of admission should be sent in writing to the Admissions Coordinator of the School of Social Work by August 15th for the year in which they were offered admission. When submitting a request for deferral, an applicant should clearly state the reason for their deferral and, where relevant or appropriate, provide additional documentation to support the request (for example, medical certificates). All deferrals are subject to the approval of the Undergraduate Program Coordinator.

## 13. Audit by Agency Field Instructors

The School of Social Work permits Agency Field Instructors to audit Social Work classes. Prior permission of the instructor concerned is required. In order for the audit to show on a University transcript, the agency field instructor must abide by the audit and fee regulations as outlined in Academic Regulation—Audit of Classes.

## 14. Tuition Fees

Detailed information concerning tuition and fees is available in the Fees section of this calendar as well as <http://www.dal.ca/studentaccounts>.

## IV. Class Descriptions

The following classes are restricted to Social Work students.

### SLWK 2010.03: Introduction to Community Social Work.

Community Development within social work is the facilitation of meaningful change within communities to improve the quality of life for members of those communities. This course considers various conceptions of community, elements of change processes, and specific change strategies.

### SLWK 211X/Y.06: Development of Canadian Social Work and Social Welfare.

This is an introductory survey course, offering a beginning examination of topics and issues that will be examined in greater depth in other classes during the BSW program. By reviewing the historical development of the politics, principles, policies, practices, values, and ethics of Canadian social work and social welfare students appreciate the contextual, complex, and sometimes contradictory nature of the social work profession.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. This course is delivered online for campus students.

### SLWK 2222.03: Advancing Social Justice.

This course introduces students to the central concepts of a social justice perspective including historical and current manifestations of inequity and injustice. It considers how the profession of social work has both advanced and impeded social justice. Particular attention is given to exploring the role of individuals in the promotion of equitable social relationships. This is a Pass/Fail course that attends to cognitive, affective, and spiritual learning processes.

### SLWK 233X/Y.06: Beginning Social Work Practice.

This course introduces students to the processes and practices of the social work profession including a range of beginning practice skills, social work values and ethics, the varied contexts of social work practice, and the roles and responsibilities of professional social workers. This multi-faceted course may include classroom instruction, simulations, seminars, workshops, contact with practicing social workers, visits to various social service agencies, and exposure to "first voice" experiences. This class requires 40 hours of self-directed learning activity time to be completed outside regularly scheduled class time.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: /Co-requisite: SLWK 2111, SLWK 2222

### SLWK 2444.03: Life Processes: Conceptualizations and practices for Critical Social Work.

This course critically explores a range of life events and processes that may impact peoples' development, personalities and potentials. Attention is given to how ethnicity, race, social class, ability, gender, sexual orientation, age, religion, and other social variables intersect with the individual development. The need for differential reactions from workers in response to clients varied life experiences will also be considered.

PREREQUISITE: /Co-requisite: SLWK 2111, SLWK 2222

### SLWK 3012.03: Perspectives on Social Welfare Policy.

As an introduction to social policy analysis, this course surveys a variety of perspectives on social problems and social policy issues, with a focus on contemporary debates. The impact of policy on service users is a central theme of the course.

PREREQUISITE: /Co-requisite: SLWK 2111, SLWK 2222

### SLWK 3030.06: Theoretical Foundations of Social Work Practice.

The central theme of this course is the integration of theory and practice, recognizing that theory guides practice and practice informs theory. The first term consists of the theoretical foundations of social work, understanding their relation to social work practice from social, political, economic and historical positions. The second term offers an in depth examination of the theoretical foundations of a

variety of critical perspectives. Case applications are explored from a variety of practice situations and problem definitions.

PREREQUISITE: /Co-requisite: SLWK 2111, SLWK 2222

### **SLWK 3083.03: Introduction to Research Methods and Statistics in Social Work.**

This class provides an introduction to both quantitative and qualitative research methods, with particular attention to examples from social work research. Students become familiar with the whole of the research process from the identification of the problem to the presentation of results, including the application of statistics. Students will be exposed to the full range of alternative research designs, including both quantitative and qualitative research methods.

### **SLWK 3084.03: Understanding Research and Research Methods in Social Work.**

This course provides students with the research methods required to evaluate social work practice at the case and program level. Students will learn how to evaluate organizations, casework, plan evaluations, and analyze quantitative and qualitative approaches to evaluations. Emphasis will be placed on evaluating benefits and outcomes of interventions for clients.

PREREQUISITE: SLWK 3083.03 is required

### **SLWK 3220.03: Cross-Cultural Issues and Social Work Practice.**

This course provides an opportunity to critically examine theoretical frameworks for viewing marginalized racial, ethnic and cultural groups in society, to examine personal values as they relate to the above groups, to develop skills in working effectively with these groups, and to understand related social policies.

PREREQUISITE: SLWK 2222, SLWK 2111, SLWK 2333, SLWK 3012

### **SLWK 4010.06: Advanced Social Work Practice.**

Building on a number of preceding courses this course considers numerous advanced practice theories and skills including a critical analysis of ethics. Student will become proficient in applying a critical social work practice framework at the beginning practitioners' level.

PREREQUISITE: SLWK 2111, SLWK 2222, SLWK 2333, SLWK 2444

CO-REQUISITE: SLWK 3030

### **SLWK 4033.09: Field Practicum and Seminar.**

This course includes a 700 hour agency based practice placement, integrated seminars and the opportunity to develop a broad range of practice knowledge and skills sufficient to meet the requirements of an entry level professional position. The field practicum is done at the end of a student's program. Students are responsible to stay in touch with the Field Coordinator during the coordination process and comply with various requirements of placement sites (for example: immunizations, CRC, Child Abuse Registry). Some sites may require separate disability insurance in lieu of eligibility for Worker Compensation Coverage. Such costs are the responsibility of the student.

PREREQUISITE: SLWK 2111.03, SLWK 2222.03, SLWK 2333.03, SLWK 2444.03

CO-REQUISITE: SLWK 3030.03, SLWK 4010.03

## **V. Electives**

In keeping with the overall program goals of the BSW program of SSW, all elective classes are designed to help students develop a critical analysis of the major themes and current issues related to the class topic. In addition, all electives explore the differential impact of social constructs such as race, gender, class, age, sexual orientation, and ability on the particular issue or practice field.

There are no pre or co-requisites for Social Work Field of Practice Electives. The format is generally a combination of lecture, discussions and small group activities. Participation of non-social work students is dependent upon approval of their home School/Department, class enrollment and the permission of the instructor. Not all electives are offered every year; check the timetable for each year's offerings.

### **Possible Elective Offerings**

- SLWK 3110.03: Africentric Perspectives in Social Work
- SLWK 3120.03: International Social Work
- SLWK 3130.03: Women and Violence
- SLWK 3135.03: Social Work and Mental Health
- SLWK 3140.03: Crisis Counseling
- SLWK 3150.03: Poverty and Inequality

- SLWK 3160.03: Social Work with Aboriginal Populations
- SLWK 3170.03: Feminist Counselling (Cross Listed with GWST)
- SLWK 3200.03: Law and Social Work
- SLWK 3230.03: Women and Social Change
- SLWK 3245.03: Queer-Centred Social Work Practice
- SLWK 3250.03: Social Work in Corrections
- SLWK 3270.03: Social Work in Addictions
- SLWK 3290.03: Advanced Counseling in Social Work Practice
- SLWK 3320.03: Social Work and Aging
- SLWK 3330.03: Independent Study
- SLWK 3350.03: Social Work with Groups
- SLWK 3360.03: Social Work and Adolescents
- SLWK 3370.03: Child Welfare
- SLWK 3375.03: Child Welfare with Aboriginal Populations
- SLWK 4380.03: Disability Policy and Service



## Faculty of Management

Location: 6100 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2582  
Fax: (902) 494-1195  
Website: <http://management.dal.ca>

### Dean

Cunningham, P., BA (Queen's), MBA (Calgary), PhD (Texas A&M)  
Suite 3050  
Telephone: (902) 494-7487

### Directors

#### Rowe School of Business

Hebb, G., BA (McGill), MBA (Queen's), PhD (Texas A&M)  
Suite 4004  
Telephone: (902) 494-7080

#### School of Information Management

Spiteri, L., BA, MA (York), BEd (Toronto), MLIS (Western), PhD (Toronto)  
Suite 4010  
Telephone: (902) 494-3656

#### School of Public Administration

Quigley, K., BA (Queen's), MSc (London School of Economics), PhD (Queen's University Belfast)  
Suite 3010  
Telephone: (902) 494-3782

#### School for Resource and Environmental Studies

Tyedmers, P. H., BSc (Waterloo), LLB, PhD (UBC)  
Suite 5010  
Telephone: (902) 494-6517

The Faculty of Management includes four schools - Rowe School of Business, School of Information Management, School of Public Administration, and School for Resource and Environmental Studies, as well as the Marine Affairs Program. The Faculty has two undergraduate program options - BComm in the Rowe School of Business and BMgmt offered jointly by the four schools. The commerce degree has a mandatory co-operative education format.

Students wishing to enrol in programs offered by the Faculty should address themselves directly to the Schools concerned for further information or for help in planning classes of study; for the Bachelor of Management program, contact the Undergraduate Academic Advising Office at (902) 494-3710.

## Commerce

### Rowe School of Business

Location: 6100 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-7080  
Fax: (902) 494-1107

The Rowe School of Business provides quality programs at both the undergraduate and master's levels that prepare students to contribute to and take leading positions in business and society. Graduates of the programs are competitive in the global, diverse and continually changing workplace. Teaching, scholarship and service link theory and practice to benefit students, the University and the business community in Canada and abroad.

#### Specific objectives are to:

- Attract, retain and educate students of high calibre from Nova Scotia, elsewhere in Canada and internationally.
- Develop students' knowledge of key concepts and issues in business operations, as well as in-depth knowledge within specialized business disciplines.
- Develop students' analytical and decision-making skills through a mix of theoretical and applied approaches including lectures, discussion groups, individual research projects, team projects and casework, as well as comprehensive field projects.
- Enhance students' team and communication skills, which are needed to succeed in careers and management.
- Develop knowledge through research and association with the academic and professional communities.
- Maintain strong ties with both the private and public sectors.

The undergraduate commerce program includes studies in the humanities and social sciences as well as in the functional areas of business. It is offered on a co-operative education (work/study) basis.

### Administrative Staff

#### Director, Commerce Program

Shaw, D.

#### Commerce Program Manager

Hunter, C.

#### Commerce Program Academic Advisors

Laffin, D.  
Tarry, J.

#### Director, Centre for International Trade and Transportation

Lynch, D.

#### Coordinator, International Student Exchange Program

Richard, T.

#### Director, Management Career Services

Cranston, A.

#### Management Career Services Professional Staff

Alexander, A.  
Bauld, L.  
Dai-Gammon, A.  
Jones, M.

Kelly, S.  
LaMorre, S.  
Mackenzie, J.  
McLellan, A.  
Perry, J.  
Richard, D.  
Wooden, R.

## Academic Staff

### Professors Emeriti

Duffy, J. F., BS, NS, PhD (Iowa State)  
George, R. E., BSc (London), MA (Bristol), PhD (London)  
MacLean, L. C., BA, BEd (St. FX), MA, PhD (Dalhousie) Chairholder - Herbert S. Lam Chair in Business Education  
McNiven, J. D., BA, MA, PhD (Mich)  
Rosson, P. J. DipNS (Sandford), MA (Lancaster), PhD (Bath)

### Professors

Barker, J., B.A. (UCA), M.A. (Purdue), PhD (Colorado) Chairholder-Herbert S. Lamb Chair in Business Education  
Brooks, M. R., BOT (McGill), MBA (Dalhousie), PhD (Wales) Chairholder - William A. Black Chair of Commerce  
Chowdhury, S., BComm, MComm (Dhaka), MBA, PhD (Kentucky)  
Conrod, J. E. D., BComm (Dalhousie), MBA (Toronto), FCA  
Cunningham, P., BA (Queen's), MBA (Calgary), PhD (Texas A & M) Chairholder - R. A. Jodrey Chair in Commerce  
Fooladi, I., BSc (Iran), MA (Tehran), MS, PhD (Oregon) Chairholder - Douglas C. MacKay Chair in Finance  
Gassmann, H. I., Vordiplom (Stuttgart), MS (Oregon State), PhD (UBC)  
Hebb, G., BA (McGill), MBA (Queen's), MA (Dalhousie), PhD (Texas A&M)  
McLarney, C., BComm, MBA (Windsor), PhD (York)  
Schellinck, D. A., BSc, MBA (Dalhousie), PhD (Ill) Chairholder - F.C. Manning Chair in Economics and Business  
Zhao, Y., BSc (Anhui), MSc (Kentucky), PhD (UBC)

### Associate Professors

Ahmad, A. R., BSc (NED), MS (KFUPM), MS, PhD (Waterloo)  
Bliemel, M., BSc (Queen's), MMS (Carleton), PhD (McMaster)  
Blunden, R. G., BComm (Dalhousie), MM (Northwestern), PhD (Western)  
Kelley, E., BA MBA (St. Mary's), MLS (Toronto), PhD (St. Mary's)  
Klapstein, R. E., BSc (Calg), BA (Alta), MBA, LLB (Dalhousie), LLM (Osgoode Hall), CMA  
Lynch, D., B.S. (Fairleigh Dickinson Uni), MP.A. (Colorado), PhD (Arkansas)  
Nason, R., CFA, BSc, (McMurray), MSc (Pittsburgh), PhD (Richard Ivey School of Business, Western)  
Ng, E., BComm (UBC), MBA (SFU), PhD (McMaster)  
Pacurar, M., BA (Babes - Bolyai, Romania), MBA (Univ. of Nantes) IFAG, (France)  
Rumsey, J., BA (Berkeley), MSc (Vic), BEd (Toronto), MBA, PhD (York)  
Sagebien, J., BA (Hampshire Coll), MA (Naropa Inst), MBA (Simmon's Coll), PhD (London School of Economics)  
Sawicki, J., BS (UIC), MM (UCL), MBA (Chicago), PhD (UQ), CPA  
Sheehan, L., BSc (Alberta), MEDS, MBA, PhD (Calgary)  
Sy, O., DUESI - DUESII (UCAD), BAA (HEC - Montreal), MSc (HECMontreal), PhD (McGill)  
Trifts, V., BBA (UPEI), MBA (St. Mary's), PhD (Univ. of Alberta)

### Assistant Professors

Comber, S., BEDS (TUNS), MBA (Florida), MA, PhD (Fielding, California)  
Deval, H., MA (ESC), MBA, PhD (Cincinnati)  
Foster, M., BA, PhD (Dalhousie)  
Hossam, A. H., BE (AUB), MBA (McGill), PhD (York)  
Huang, L., BSc (Fudan), MBA (SUFU), PhD (McGill)  
Jiang, F., BComm, B.S. (China), MBA, PhD (UWO)  
Leach, E., BComm (Dalhousie), CMA (NS), MBA (Western)  
Lin, S., BComm, MSc, PhD (Queen's)  
Manderson, J., BA (PEI), MA (Dalhousie), PhD (Alberta)  
Roach, D., BEng, MBA (Dalhousie)  
Song, K., BBA (DUFE), MBA (SMU), PhD (York), CFA  
Sundararajan, B., BEng (Mangalore, India), M.S. Eng (Rensselaer Polytechnic Inst., NY), PhD (Rensselaer Polytechnic Inst., NY)

Sur, S., BSc (Jawaharlal Nehru, India), MBA, PhD (Concordia)  
Tadj, L., MSc (Carnegie-Mellon), PhD (Florida Institute of Technology)  
Zhang, J., BComm, PhD (Alberta)  
Zhou, J., BA, BBA, MA (XJTU), MA (McGill), PhD (Toronto)

### Lecturers

Baechler, J., BSc (Dalhousie), MA (Austria), PhD (In Progress)  
Clory, N., BBA (St. FX), MBA (Dalhousie and Toronto)  
Crowell, T., BComm, MBA (St. Mary's), CA  
Cumming, L., BComm (Dalhousie), BLArts (Maine), CA (NS)  
Cunningham, P., MMgt Science (Texas Central), BA (Hons) Economics and Commerce  
Laing, S., BComm, DMA (SMU), CMA (N.S.), Cert. AEd (Dalhousie), CHRP (N.S.)  
Power, J., BComm (Concordia), CA (Toronto)  
Shaw, D., BA (Queen's), MBA (Edinburgh)  
Tetreault, B., BA (Corneil), MA (Chicago)

## I. Bachelor of Commerce Program

The Rowe School of Business offers a four-year, Bachelor of Commerce (Co-operative Education) Program that is accredited by both the Association to Advance Collegiate Schools of Business (AACSB) and the Canadian Association for Co-operative Education (CAFCE). It is one of the few mandatory co-op business degree programs in Canada. Cooperative education is an academic strategy that integrates on-campus study with off-campus work experience. The schedule for the Bachelor of Commerce Co-op Program includes seven academic terms (AT) and three work terms (WT), as follows:

	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	WT1	AT4
Year 3	WT2	AT5	WT3
Year 4	AT6	AT7	

The co-op program in Commerce requires a broad and general range of studies, including required and elective classes provided by the Faculty of Arts and Science. The program also allows students to choose a major in a variety of special areas. The Commerce program does not offer Minors or Double Majors.

The three work-terms each receive credit, but constitute a full work load. (See the Regulations section of this calendar for "overload" limits and conditions.)

### A. Degree Requirements

- Four-year program - seven academic terms and three work-terms
- Total credits required - 20 full credits
- Required GPA for graduation 2.00
- Required core area classes - 10 1/2 credits.

**Note:** A suitable replacements for MATH 1115.03 is MATH 1000.03

- Commerce electives - four credits;
- Work-terms - 1 ½ credits
- COMM 1010.03
- COMM 1101.03
- COMM 1502.03
- COMM 1710.03
- COMM 1720.03
- COMM 2102.03
- COMM 2202.03
- COMM 2203.03
- COMM 2303.03
- COMM 2401.03
- COMM 2501.03
- COMM 2502.03
- COMM 2603.03
- COMM 3501.03
- COMM 3511.03
- COMM 4351.03
- COMM 4352.03
- ECON 1101.03
- ECON 1102.03
- MATH 1115.03
- PHIL 2081.03
- Non-commerce electives - three full credits (of which 1½ credits must be at or above the 2000 level) selected from all classes offered in the University other than commerce, management and business.
- Free electives - one full credit (can be commerce, at or above the 2000 level, or non-commerce at any level)

NOTE: Students readmitted to the Commerce program will be subject to the Academic Regulations as stated in the Calendar for the year of readmission. For further information, contact the Rowe School of Business, Undergraduate

Advising Office, 6100 University Avenue, Suite 2086, (902) 494-3710. Email: [bcomadvising@dal.ca](mailto:bcomadvising@dal.ca)

## B. Program Guide

Students normally follow a fixed program of study, as outlined below:

### Academic Term One

- COMM 1010.03: Business in a Global Context
- COMM 1101.03: Financial Accounting
- COMM 1502.03: Core Business Applications
- ECON 1101.03: Principles of Microeconomics
- One non-Commerce elective

### Academic Term Two

- COMM 1710.03: Business Communications I
- COMM 2102.03: Managerial Accounting
- ECON 1102.03: Principles of Macroeconomics
- MATH 1115.03: Mathematics for Commerce
- One non-Commerce elective

### Academic Term Three

- COMM 1720.03: Business Communications II
- COMM 2202.03: Managerial Finance
- COMM 2401.03: Intro to Marketing
- COMM 2501.03: Statistics I
- One non-Commerce elective

### Work Term I - COMM 2801.03

#### Academic Term Four

- COMM 2203.03: Intermediate Finance
- COMM 2303.03: Organizational Behaviour
- COMM 2502.03: Statistics II
- COMM 2603.03: Legal Aspects of Business
- PHIL 2081.03: Business Ethics

### Work Term II - COMM 3801.03

#### Academic Term Five

- COMM 3501.03: Operations Management
- COMM 3511.03: Management Information Systems
- Three commerce electives
- One non-commerce elective

### Work Term III - COMM 3802.03

#### Academic Terms Six and Seven

- COMM 4351.03 and 4352.03
- Five commerce electives
- Two non-commerce electives
- Two free electives

During their fifth, sixth and seventh academic terms, students can either pursue a customized program of study, by choosing electives from a wide range of the functional areas of business, or they can follow a more specialized program, taking their elective classes towards a major.

### Major in Accounting

Students **must** complete the following six classes:

- COMM 3105.03
- COMM 3111.03
- COMM 3114.03
- COMM 3116.03
- COMM 4101.03
- COMM 4120.03

**Plus** two of:

- COMM 3203.03
- COMM 3207.03
- COMM 4102.03
- COMM 4103.03
- COMM 4112.03
- COMM 4121.03
- COMM 4511.03

The professional accounting bodies allow certain exemptions in respect of classes taken in the Rowe School of Business. These differ from province to province. Particulars can be obtained from the provincial offices of the Association of Certified General Accountants, the Institute of Chartered Accountants, the Society of Management Accountants, and the Chartered Institute of Secretaries.

Students must obtain COMM 1101 and 2102 with an average of at least B-.

### Major in Managing People and Organizations

Students **must** complete the following:

- SOSA 1002.03 and SOSA 1003.03 or SOSA 1100.06 or SOSA 1200.06 or PSYO 1011.03 and PSYO 1012.03
- COMM 3303.03
- COMM 3309.03
- COMM 3310.03
- COMM 4315.03
- COMM 4510.03
- COMM 4306.03 or COMM 4340.03

Note: Classes outside of commerce, such as SOSA and PSYO, are counted as non-commerce electives or free electives

### Major in Entrepreneurship

Students **must** complete the following six classes:

- COMM 3307.03
- COMM 3308.03
- COMM 3309.03
- COMM 3203.03 or COMM 3409.03
- COMM 3401.03 or COMM 3404.03
- COMM 4301.03

Note: Students must also complete either an entrepreneurial work term, as defined by the Norman Newman Centre for Entrepreneurship and Management Career Services; or an approved work term in an entrepreneurial setting.

### Major in Finance

Students **must** complete the following three classes:

- COMM 3203.03
- COMM 3206.03
- COMM 4240.03

**Plus** three of:

- COMM 3207.03
- COMM 4201.03
- COMM 4202.03
- COMM 4250.03
- COMM 3100.03 or COMM 3105.03 or ECON 2200.03 or ECON 2201.03

Note: Classes outside of commerce, such as economics, are counted as non-commerce electives or free electives

### Major in International Business

Students **must** complete the following:

- Language Requirement; six credit hours (at a level appropriate to knowledge, as determined by department concerned)

**Plus** the following:

- COMM 3405.03
- COMM 4201.03
- COMM 4315.03
- COMM 4701.03

**Plus** one of the following:

- ECON 2213.03
- ECON 2219.03
- ECON 2334.03

Students must also complete one academic term or one work term in a country that is not their primary residence.

Note: Classes outside of commerce, such as economics, are counted as non-commerce electives or free electives.

### Major in Marketing Logistics

Students **must** complete the following five classes:

- COMM 3404.03
- COMM 3407.03
- COMM 3408.03
- COMM 3405.03
- COMM 4401.03

Plus one of:

- COMM 3401.03
- COMM 3409.03
- COMM 3410.03

Students must obtain COMM 2401, COMM 3404 and COMM 3407 with an average of at least B-.

### Major in Marketing Management

Students **must** complete the following five classes:

- COMM 3401.03
- COMM 3402.03
- COMM 3404.03
- COMM 3407.03
- COMM 4401.03

Plus one of:

- COMM 3405.03
- COMM 3408.03
- COMM 3409.03
- COMM 3410.03

Students must obtain COMM 2401, COMM 3401 and COMM 3404 with an average of at least B-.

Students interested in majoring should consult the School's website for further details before beginning their fifth academic term.

## C. Co-op Work Terms

(For more information visit: <http://www.dal.ca/mcs>)

A work term is a period of time when a student gains practical experience in a business-related work environment. Each passed work term is an academic half credit and must meet the requirements listed below. Three passed work terms are required to graduate.

During a work term a student is considered an employee of their work term employer with reference to the conditions of their employment and is a student with respect to academic evaluation only. The university does not accept liability for the student's work environment.

Students are remunerated according to employer policy and the labour laws of the jurisdiction in which they work.

Career and Recruitment Specialists conduct mid-term reviews with both the employers and students to ensure the work term objectives are being met.

### Work Term Requirements

Students receive academic credit upon completion of the following for each work term:

1. Students must register for each work term (Comm 2801, Comm 3801 and Comm 3802) via Dal on-line.
2. Students must also register electronically on Management Career Services' job posting database for each work term.
3. A work term must total no less than 12 weeks with a cumulative total of 42 weeks over three work terms. A work term must be a minimum of 35 hours per week.
4. All jobs, including self-developed jobs must be approved by a Career and Recruitment Specialist within Management Career Services (MCS).
5. Students are responsible for finding suitable employment and students sign a Co-op Education Program Agreement prior to the first work term accepting this responsibility. (Aid in the job search is provided by Management Career

Services and some job opportunities are posted through Management Career Services' job posting database.)

6. Employers commit to completing and submitting an evaluation detailing the student's performance level.
7. Work Term One only: Students must complete and submit a career portfolio.
8. Work Term Two only: Students must submit an acceptable analytical work term report pertaining to a student's area of study or employment.
9. Work Term Three only: Students must submit an acceptable Reflective Report and Career Action Plan.
10. Work term report guidelines and policies are available online at [http://bcomm.management.dal.ca/Co-op\\_Work\\_Terms/](http://bcomm.management.dal.ca/Co-op_Work_Terms/).

### Work Term Eligibility

Only students who meet the prerequisites (see **Section II: Classes Offered** of this calendar) are eligible to go out on a work term. Students whose grades drop below a 1.70 GPA overall will be **required to withdraw** from the program. Also refer to the university regulation regarding probation.

### Co-operative Education Fee

Students are charged a Co-operative Education Fee. In an effort to balance the cost, the fees are charged on each academic term until completion of the degree. While no fee is charged for the actual work term, any student taking an academic class during the work term will be charged an additional pro-rated fee. Co-op fees are prorated for part-time students.

These fees are non-refundable after the deadline dates listed in the University Calendar. Students who transfer into the program from another department or another institution are responsible for back payments.

Students taking a full academic term on a Letter of Permission are also responsible for the payment of co-op fees. Before the Letter of Permission can be granted, students must sign a form available from the Undergraduate Advising Office, which states they will pay the full co-op fees for terms done at another university.

Payment of all instalments is required to obtain a Bachelor of Commerce Degree. Consult the Fees section of the Dalhousie University Calendar for details.

#### The Co-op fee covers:

- Administration of the co-op work term including, but not limited to;
  - Job search assistance (cover letters and resume building, interview preparation and debrief, coaching for self-developed job search strategies)
- Orientation workshops and other training
- Networking opportunities with employers (including special events, competitions, information sessions, corporate tours, mentoring etc)
- Work term monitoring and mediation of unsatisfactory situations
- Post work term debrief
- Development of job opportunities
- Access to on-line job posting site and job posting administration
- Interview space and co-ordination
- Facilitation of job offers
- Tracking of eligibility and job search activity

## D. Management Information Systems

All faculty members and staff have their own personal computers and students have access to a computer lab with 63 personal computers. All personal computers in the School are based on the Intel family of processors (currently Pentium IV, 1.6 GHz). They are fully networked and run Windows software and the latest Windows-based applications. All machines have full access to the Internet and students have a choice of web browsers. Students have a choice of printing on black-and-white or colour laser printers. There is also a full-sized color scanner available free of charge.

## E. Exchange Programs

Dalhousie offers Commerce students the opportunity to study abroad in a variety of countries all over the world, including Denmark, France, Sweden, Norway, Korea and Germany (a complete list of partnerships can be found at [citt.management.dal.ca](http://citt.management.dal.ca)). While participating in this extremely popular program, students develop international contacts, immerse themselves in a different culture, and gain valuable international experience. For more information, please contact Tim Richard, Student Exchange Coordinator, by email at [tim.richard@dal.ca](mailto:tim.richard@dal.ca) or by telephone at (902) 494-2224.

## II. Class Descriptions

NOTE: Consult the current timetable to determine in which term(s) each class is offered. It may not be possible to offer all the electives listed below every year. Students should bear this in mind when planning their program.

### COMM 1010.03: Business in a Global Context.

This class provides an introduction to the national and international context of Canadian political, economic and business activity. It presents a sampling of the most relevant issues facing managers in business, labour and public sector organizations. Emphasis is placed on developing an understanding of Canada's competitive position today, and of the historical background and current influences on this position. The focus of the class will be on lectures, the text, guest speakers, and more specifically what is said in class by your instructor as well as in tutorials by your tutorial leader and your colleagues. Leading edge ideas and concepts - many of which are not confined exclusively to any one particular text or article - will be introduced by your instructor during the lectures, and may be reinforced through hand-outs from time to time.

NOTE: Students in BComm Program can not receive credit for MGMT 1000.03 or MGMT 1001.03

FORMAT: Lecture 3 hours.

EXCLUSION: COMM 1000.03

### COMM 1101.03: Introductory Accounting I. (Financial).

An introduction to the principles and practices used by accountants in processing and communicating data, both within and outside the organization. Emphasis is on financial accounting and reporting, with the following objectives:

To introduce the theoretical framework upon which financial statements are based, and examine the major underlying concepts and principles;

To demonstrate basic financial accounting methodologies, and develop the analytical and procedural skills related thereto;

To understand the information content of conventional financial statements, and the inherent limitations of accounting data.

FORMAT: Lecture 3 hours. Plus tutorials, as required. Written and computer-based assignments.

EXCLUSION: MGMT 2101.03

### COMM 1502.03: Core Business Applications: Introduction to Computers.

The class focuses on how business applications, notably word processors, spreadsheets and data visualization applications, contribute to the management and analysis of data with respect to business processes. This class begins with an over view of Management Information Systems, before proceeding through several modules that involve data-to-document transformations, along with application integration between word processing, spreadsheets and data visualization applications. We use spreadsheets to perform, to automate routine business calculations, visualize the data using business digital dashboards. The analyses are then collated and summarized using features of word processors to produce a final report for each business case that is analyzed. Each successive module increases the complexity of the analyses and reports. As the class progresses, business simulations will be used in assignments to provide experiential and immersive learning opportunities. The class is taught with both in-class lectures and self-paced laboratory exercises.

NOTE: ASSC 1000 or CSCI 1200 will not be counted in the Commerce program.

EXCLUSION: COMM 1501.03, INFO 1601.03, ASSC 1000.03, CSCI 1200.03

### COMM 1710.03: Business Communications I.

Students will learn how to be effective speakers and presenters. The primary goal of this class is to introduce the first-year students to the types of oral communication used in today's workplace. The course will start with introducing a philosophy for lean, effective, and ethical communication, how to construct analyses, develop arguments and lead to self reflection and individual value proposition. The class will cover a variety of topics such as networking, creating effective job application cover letters and resumes, interviewing, formal and informal presentations, job search skills, listening, team dynamics and conducting meetings, while doing research on potential employers. Students will have the opportunity to practice their skills and evaluate the skills of others.

FORMAT: Lecture 3 hours

EXCLUSION: COMM 2701.03, INFO 1002.03, ENGL 2100.03, ENGL 2110.03, CSCI 2100.03 Students taking COMM 1710 cannot receive credit for these classes.

### COMM 1720.03: Communications II.

This class follows COMM 1710.03. While the primary goal of this class is to teach students how to properly prepare written business correspondence, second-year students will also learn about academic writing (the concept of intellectual property, library resources, essay writing, and critical thinking). The course will again start with introducing a philosophy for lean, effective and ethical communication, how to construct analyses, develop arguments, make strategic choices on sentence structure, choice of channel, type of message, gain an understanding of the audience, the context and present culturally sensitive and ethically correct messages in the appropriate channel and form. Additionally, they will learn about communication theory and the importance of communication in the workplace so that they will learn about critical listening, critical reading, and how to be strategic writers. By the end of the course, students will be able to understand business contexts and know how to make choices of medium, channel, form and also how to write business memos, e-mail messages, letters, reports, and proposals, analytical reports, participate and learn about group work.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1710.03

EXCLUSION: INFO 1003.03, ENGL 2100.03, CSCI 2100.03

Students taking COMM 1720 cannot receive credit for these classes.

### COMM 2102.03: Introductory Accounting II. (Managerial).

An introduction to the use of accounting information by managers, within the organization. Emphasis is on management accounting and analysis, with the following objectives

- To develop an understanding of the kinds of accounting information managers need;
- To examine managerial accounting methodologies and develop the analytical and procedural skills related thereto;
- To prepare accounting reports which are useful for management planning, control and decision-making;
- To develop an awareness of the limitations of managerial accounting information.

FORMAT: Lecture 3 hours. Plus tutorials as required. Written and computer-based assignments.

PREREQUISITE: COMM 1101.03 or MGMT 2101.03

EXCLUSION: MGMT 2102.03

### COMM 2202.03: Finance I.

An introduction to the problems faced by business managers in the acquisition and effective use of the firm's resources, and analytical concepts for evaluating financial decisions. Topics covered are: financial planning, time value of money, working capital management, risk and return, and valuation of debt and equity instruments.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1010.03 and COMM 2102.03; ECON 1101.03 and ECON 1102.03; MATH 1115.03 or MATH 1000.03

EXCLUSION: MGMT 3201.03

### COMM 2203.03: Finance II.

This class provides students with an overview of the theory of corporate finance and its application to the problems faced by financial managers. This class covers an in-depth study of capital budgeting and long term investment decisions in national and international contexts, capital structure, dividend policy, lease financing, and the fundamentals of options and futures.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2202.03

EXCLUSION: MGMT 3201.03

### COMM 2303.03: Introduction to Organizational Behaviour.

This class will provide an overview of organizational behaviour theory, as well as an introduction to the practical application of that theory, within the context of the external and organizational forces that impact management. Through mini lectures, cases and discussion, students will be introduced to the theoretical basis of managing people in organizations. Key topics will include individual factors, such as personality and perception; organizational processes, such as appraisal and performance management; and contextual issues, such as organizational culture and change. Experiential exercises will be incorporated to link theory with practice.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 1010.03

EXCLUSION: COMM 2301.03, MGMT 2303.03 and MGMT 2304.03

### COMM 2401.03: Introduction to Marketing.

The objective of this class is to familiarize you with marketing's mode of inquiry—the way marketers look at the world. As a marketer you should be able to: 1) ask the right questions about markets; 2) organize data into relevant information; 3) discover market opportunities; 4) set goals; 5) create a marketing plan that includes clear target markets, as well as product, price, distribution and communication strategies; and 6) implement and control a marketing program. Students work in groups and run a business in an online marketing simulation. This provides students with hands-on group decision making and data analysis skills, and they are specifically responsible for making product, pricing, promotion and placement strategies for a brand or group of brands. The class will also train you in a number of skills that are necessary for higher level classes and career advancement (i.e., case analysis and analytical report writing).

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1010.03, COMM 1502.03, ECON 1101.03 and ECON 1102.03, or permission of the instructor.

CROSS-LISTING: MGMT 2401.03

### COMM 2501.03: Statistics for Business I.

An introduction to the principles and applications of statistics relevant to commerce students, with emphasis on making inferences based on observed data. Topics covered include descriptive statistics, probability, random variables, estimation, hypothesis testing, statistical software.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1010.03 and COMM 1502.03; ECON 1101.03 and ECON 1102.03; MATH 1115.03 or MATH 1000.03

CROSS-LISTING: MGMT 2501.03

EXCLUSION: MGMT 1501.03 and MGMT 2502.03; MATH 1060.03 or MATH 2060.03; STAT 1060.03 or STAT 2060.03; ECON 2260.03; ENGM 2032.03

### COMM 2502.03: Statistics for Business II.

This class is a follow-up to COMM 2501.03. It concerns mostly the relationship of two or more measurements. Topics covered in detail are analysis of variance, simple and multiple regression, and time series. Statistical software is featured prominently throughout the class for statistical computations.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2501.03 or MATH 1060.03 or STAT 1060.03 or ECON 2260.03

CROSS-LISTING: MGMT 2502.03

EXCLUSION: MGMT 1501.03 and MGMT 2502.03, MATH 2080.03, STAT 2080.03, ECON 2280.03

### COMM 2603.03: Legal Aspects of Business.

This class provides an appreciation of some of the legal problems that might be faced by the business community. It examines the meaning and sources of law, the machinery of justice, the law of torts, various aspects of the law of contracts and application of principles from equity, the law of agency, the law relating to the sale of goods, bailment, contracts of employment, negotiable instruments, real property, mortgages, partnerships, international transactions, corporations and secured transactions. Students must make extensive use of the law library in writing reports on a series of cases.

FORMAT: Lecture 3 hours

PREREQUISITE: At least second-year standing.

### COMM 2801.03: Work-Term One, Bachelor of Commerce Co-op.

Unless written permission is obtained, in advance, from the Commerce Program Manager, this must be done in the Winter term of the second year.

PREREQUISITE: At least 6 1/2 full credits, which must include COMM 1502.03, COMM 1710.03 and COMM 1720.03 plus at least 4 other full credits which must be in the Core Area (COMM, ECON 1101.03 and ECON 1102.03 and MATH 1115.03 or MATH 1000.03)

### COMM 3100.03: Financial Reporting and Statement Analysis.

This course is intended for non-accounting students. The approach is analytical rather than procedural, with an emphasis on a user perspective. Topics include analysis of financing, investing and operating activities, profitability, and credit risk. Accounting topics include pensions, inter-corporate investments, leases, earnings per share, and cash flow.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1101.03 and 2102.03 or permission of instructor

EXCLUSION: COMM 3105.03 and COMM 3111.03

### COMM 3105.03: Intermediate Financial Accounting I.

This course and its follow-up, COMM 3111.03: Intermediate Financial Accounting II, are meant to provide a solid understanding of the corporate financial reporting model and related conceptual issues. The class develops expertise in financial reporting issues related to revenue and expense recognition and a wide range of asset accounting issues, including receivables, inventories, and capital assets.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2101.03 and 2102.03 with an average of at least B-  
EXCLUSION: COMM 3100.03

### COMM 3111.03: Intermediate Financial Accounting II.

In conjunction with its prerequisite, Commerce 3105.03: Intermediate Financial Accounting I, this course is intended to provide an understanding of the corporate financial reporting model and related conceptual issues. The class will develop expertise in accounting and reporting issues related to liabilities and shareholders' equity, including complex debt and equity instruments, corporate income taxes, leases, pensions and other post-retirement obligations, earnings per share, and restatements.

FORMAT: Lecture/3 hours

PREREQUISITE: COMM 3105.03 with a minimum grade of C-

CROSS-LISTING: BUSI 6108.03

EXCLUSION: COMM 3100.03

### COMM 3114.03: External Auditing.

This course covers the theory and practice of public auditing according to generally accepted auditing standards (GAAS). The class emphasizes the recent harmonization with International Auditing Standards (IAS) and considers the forces impacting on the setting of standards and the current level of standards. This includes pronouncements of the accounting profession, reporting standards, professional ethics, statute laws, legal liability and responsibilities, audit planning, risk assessment, standards for examination of internal control in both manual and computerized environments, standards for the quality of evidence, statistical sampling and the sufficiency of evidence, documentation and working papers. The course considers typical audit programs for examination of financial statement elements and fraud awareness.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 or COMM 3100.03 or permission of the instructor.

CROSS-LISTING: BUSI 6101.03

### COMM 3116.03: Cost Management.

The major objective of this course is to develop a deeper understanding of the key topics in cost/managerial accounting and their management control implications. The selected topics to be covered include costing systems, cost-volume-profit analysis, cost and profit variance analysis, control and performance evaluation in decentralized organizations. This class is intended primarily for students who plan to major in the accounting area.

FORMAT: Lectures/case discussions 3 hours

PREREQUISITE: COMM 1101.03 and 2102.03, with at least a B- average

### COMM 3203.03: Financial Institutions.

This class is designed to introduce students to the structure and operations of financial institutions and the role they play in the growth and operation of capital markets. The class content includes reviewing the operation and functioning of various types of financial institutions and their roles in the economy. An emphasis will be put on measuring different types of risks and methods for managing these risks for financial institutions, particularly the banks. The topics include (but are not limited to) interest rate risk management, credit risk management, liquidity risk management, market risk management, and so forth. The role of derivative securities in various hedging strategies will also be reviewed.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2202.03 and COMM 2203.03

### COMM 3206.03: Investment and Money Management.

This class is designed to provide the students with an overview of current investment theories and their application to the real world. In particular, a considerable effort will be made to compare and contrast the activities of money managers with the ones that are suggested in various theoretical models. The intention is to provide our students with the needed skills to successfully face the challenging world of portfolio and money management.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: COMM 2202.03 and COMM 2203.03

### COMM 3207.03: Canadian Securities.

The topics covered in this class include an overview of capital markets and the financial services industry; financial statement analysis; an overview of the Canadian economy; fixed income securities; equity securities; investment funds; derivatives; security analysis; financing, listing and regulation; financial planning and taxation issues; and, portfolio management. Upon meeting the CSI's requirements, the student will earn the Canadian Securities Course designation.

NOTE: This course is offered via Distance Education. Students will have to register with the Canadian Securities Institute and will incur an additional fee.

PREREQUISITE: COMM 2202.03 or permission of instructor

EXCLUSION: COMM 3202.03

### COMM 3303.03: Introduction to Human Resource Management.

The role of human resource management and administration of the personnel function are analyzed, along with the major aspects of the personnel function: job analysis, human resource planning, recruitment and selection, training, performance appraisal, compensation, employment relations, and occupational safety and health. Knowledge and the processes is supplemented by the development of analytical skill in coping with various human resource problems and in the integration of the processes with the many other functions required in the organization. This "system and process" analysis builds upon the skill and knowledge acquired in COMM 2303.03.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2303.03; or (MGMT 2303.03 and MGMT 2304.03)

### COMM 3307.03: New Venture Creation.

This class is about venturing - the process of creating new ventures in both the for-profit and not-for-profit environment. The target audience is students, in any discipline, who have the desire to venture. The class is designed to expose students to the issues, problems and challenges of creating new ventures and to provide students with the opportunity, within the framework of a formal class, to explore and develop venture ideas as they have been considering or wish to investigate. Experiential exercises enable the student to better understand themselves, their venture potential and the merits of their new venture ideas. A major field project requires the development of a detailed plan for the new venture.

FORMAT: Lecture

PREREQUISITE: COMM 1010.03 and COMM 2401.03, or permission from instructor

CROSS-LISTING: MGMT 3907.03

### COMM 3308.03: Managing the Family Enterprise.

Managing the Family Enterprise is about the special problems and issues that confront family businesses. It explores the family system, the business system, the ownership system and their interactions - functional and dysfunctional. Specific topics, examined from the family business perspective, include: the decision to join a family firm, management succession, ownership succession, the role of key non-family employees, strategic planning and other issues especially relevant for family firms. The class also addresses conflict and communication in the family and the business.

The class has two purposes. First, it provides an organized framework for students to understand the dynamics and special issues of family firms. Second, it is designed to allow students to explore their interest in joining a family firm.

Therefore, it is especially intended for students who come from families which are in business or for students considering joining a family business. Others who wish to explore a key segment of Canadian business are also welcome.

The class relies on field projects, guest speakers, case studies, videos, research papers and extensive class discussion to explore the territory of managing family businesses.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 1101.03 and COMM 3801.03, or permission of the instructor.

CROSS-LISTING: BUSI 6006.03

### COMM 3309.03: Management Skills Development.

This class will expose students to key knowledge, skills, and attitudes (KSAs) considered critical to managerial success. Such an exposure is designed to provide the students with behaviours to help ensure that, when managing human resources, staff will perform at or near peak capabilities. Topic areas include: understanding what the successful manager needs to know, understanding the personal self, communications, interpersonal negotiations, goal setting, managing innovation and change, handling conflict and anger, performance evaluation, counselling and feedback, and management attitudes needed for success.

Significant amounts of classroom time will be devoted to behaviour modelling exercises, role plays, case studies, and group discussions.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 2303.03, or permission of the instructor

EXCLUSION: MGMT 3309.03

### COMM 3310.03: Reflections on Leadership.

Course focuses on the study of leadership as a process of influencing people, rather than dealing with leadership at the organizational level. The class covers a study of existing and emerging theories of leadership and will offer students an opportunity to observe effective and ineffective leadership through case studies, films, and various exercises and readings. The parameters of ethical leadership will be emphasized.

PREREQUISITE: COMM 1010.03 and COMM 2303.03 or (MGMT 2303.03 and MGMT 2304.03)

### COMM 3401.03: Consumer Behaviour.

In view of the very competitive situation in modern business, the firm that is successful designs and sells products that meet the desires of specific consumer segments. Thus, analysis and prediction of consumer behaviour are increasing in importance and sophistication. An extensive body of research evidence from marketing and the behavioral sciences is explored and evaluated to assess the marketing implications of elements of consumer behaviour. Emphasis in class will be focused on how to incorporate an understanding of consumer behaviour into strategic marketing plans.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 2401.03

### COMM 3402.03: Marketing Communications.

This class is designed to provide students with an understanding of how the major types of marketing communication messages are created and delivered. This means students should come away knowing the strengths and weakness of the major marketing communication functions (e.g. advertising, public relations, direct response, sales promotion, social marketing, packaging, etc.) and the major media used by them. By the end of the course, the student will have the ability to:

(1) establish a knowledge base of researching and evaluating a company's marketing and promotional situations; (2) gain hands-on experiences in the creation of an integrated marketing communication campaign that impact customer relationships and brands; and (3) develop effective communication strategies and programs for real company situations. For those students who are not marketing majors, this class will also provide a basic understanding of persuasive skills which can be used no matter what vocation they choose in the future.

FORMAT: Lecture/case method/applied project work 3 hours

PREREQUISITE: COMM 2401.03

### COMM 3404.03: Marketing Research.

Students learn the scientific method in solving marketing problems and creating marketing intelligence from data. Emphasis is on planning and formulating research problems, research design, application of sampling methods, and analysis of data collected. The class uses cases and a real world project to hone skills needed for a wide range of marketing positions in industry.

FORMAT: Lecture/discussion 3 hours and three or four 1.5 hour tutorials early in the semester.

PREREQUISITE: COMM 2401.03 and COMM 2502.03

### COMM 3405.03: Export Marketing.

The class will discuss reasons why Canadian companies get involved in exporting, and will focus on the development of marketing plans for the export of Canadian goods and services. Also discussed will be barriers faced by companies engaging in international trade, and government agencies providing support services to facilitate international transactions. Students will be responsible for completing an export marketing plan for a local company.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 2102.03 and COMM 2401.03

### COMM 3407.03: Logistics & Supply Chain Management.

An examination of the decisions faced by managers within the supply chain: the channels of distribution, the transportation and storage of products/services, and the communications and data processing systems, in order to minimize the total cost of these activities and satisfy the marketing requirements of the firm and its customers. Topics include: the integrated logistics & supply chain management concept, customer service, transportation, distribution centres, inventory management, materials management, packaging, purchasing, order processing and

information systems, financial control, logistics organization, international logistics, reverse distribution and recycling, and the strategic logistics supply chain plan.

PREREQUISITE: COMM 3801.03

### **COMM 3408.03: Transportation Modes and Policy.**

This class will introduce the student to the business of managing a transport enterprise. It will focus on understanding the regulatory (policy) environment and customer requirements prior to exploring operational considerations across a number of transport modes. The intent will be to explore the impacts of policy and modal structure on marketing the transportation company and structuring it for growth. The class is suitable for students wishing to work in the transport industry, in the supply chain activities of a transport customer or, tangentially, in the strategic management of any service business.

FORMAT: Lecture/case method 3 hours

PREREQUISITE: COMM 2401.03

### **COMM 3409.03: Personal Selling and Sales Management.**

This class is designed to provide an understanding of the tasks and problems facing today's sales professionals and sales managers and to familiarize one with current personal selling and sales force management practices. Specifically, this class provides an exposure to personal selling concepts, techniques and procedures used in buyer-seller relations such as prospecting, sales call planning, negotiation skills, overcoming obstacles, persuasion and closing skills. It also covers sales management topics including the organization of the sales force, personnel management, selection, sales training, motivation, compensation, evaluation and supervision, budgets, quotas, territories and sales control. Sales role-plays, mock sales presentations, case studies and classroom discussion are used to extend the basic text material and examine other points of view.

FORMAT: Lecture/case method/field work 3 hours

PREREQUISITE: COMM 2401.03

### **COMM 3410.03: Services Marketing.**

Intangible services play an increasingly important role in the global economy, and most especially in the economies of developed countries. Yet, business school curriculae have customarily emphasized the marketing of tangible products in consumer and industrial markets. A basic premise of the elective class is that services (versus tangible goods) share a number of attributes that present unique challenges for marketing.

The class seeks to prepare students to face those challenges. It is ideal for students who wish to work in a service industry (e.g., banking, insurance, travel, hospitality, consulting) or in a service capacity in the manufacturing sector (e.g., sales, customer relations).

Emphasis will be placed on understanding the distinctive characteristics of services, the implications of these distinctions for marketing, the role of service quality as a determinant of customer satisfaction, and the measurement of these phenomena. Examples will be drawn from North American and European service industries.

PREREQUISITE: COMM 2401.03

### **COMM 3411.03: Direct Marketing.**

The focus of marketing has shifted from the use of advertising, promotion and long distribution channels to more direct forms of communication and distribution. These changes have been a result of the traditional power struggle among channel members and the manufacturers of products and services, where manufacturers have sought to maintain direct contact with their customer. The move toward direct marketing is fueled today largely by technological developments in database storage and mining, the development of relationship marketing, and the introduction of new media such as the Internet.

The skills required in direct marketing are in strong demand within the Canadian economy. This class focuses on the development of a direct marketing strategy that requires an understanding of the tools of direct marketing, the creative process, and how direct marketing fits into the total marketing strategy.

This is a very applied class that will have guest speakers and industry projects. It is designed to complement the Marketing Informatics class that focuses more on the total information needs, acquisition and usage within a firm for purposes of marketing.

PREREQUISITE: COMM 2401.03 and COMM 3801.03

### **COMM 3412.03: Internet Marketing.**

As more business is conducted online, it is important that marketers understand technology developments and their impact. That is the goal of this course. It begins by developing a framework so that the forces driving use of the Internet in marketing and business are understood. With this foundation in place, a series of

online marketing themes are explored, including such topics as customer support and online quality; personalization; and traffic and brand building. Finally, a series of problem areas will be explored such as distribution channel conflicts and legal problems.

FORMAT: Lectures/discussions/group projects

PREREQUISITE: COMM 2401.03

### **COMM 3501.03: Production/Operations Management.**

"Production" is one of the basic functions of any organization, whether it provides goods or services. Consequently, all managers, whatever their specialist interests, should have an understanding of some of the key concerns in managing operations, particularly if they aspire towards senior/general management positions. The purpose of this class is to provide such an understanding. It begins at a basic level by examining various types of production processes and continues by considering key aspects of inventory, supply chains and quality assurance. It concludes by examining production planning and strategy.

NOTE: MGMT 3501.03 will not be counted in the Commerce program

FORMAT: Two 1.5 hour lectures (or case discussions)

PREREQUISITE: COMM 2203.03, COMM 2303.03, COMM 2401.03, and COMM 2501.03

EXCLUSION: MGMT 3501.03 (MGMT 3501.03 will not be counted in the Commerce program)

### **COMM 3511.03: Management Information Systems.**

Information is a key resource for businesses, other organizations, and professionals in both the contemporary and emerging worlds. Innovative uses of information are often keys to survival in an increasingly competitive economy. In addition, information systems account for an increasing larger share of assets in most organization. The ability to harness and manage information resources and information technologies demands a sound understanding of a broad range of concepts, terms, and challenging issues in a constantly evolving context. This class is designed to help students acquire the essential skills and conceptual background to become an effective client, user, and planner of Management Information Systems. It will help students develop a broad understanding of how information systems are used in organizations, the technologies that influence their use, how they need to be managed, and the impact that they can have on organizations' and professionals' competitive positions.

PREREQUISITE: COMM 1010.03, COMM 1502.03

### **COMM 3801.03: Work-Term Two, Bachelor of Commerce Co-op.**

Unless written permission is obtained, in advance, from the Commerce Program Manager, this must be done in the Fall term of the third year.

PREREQUISITE: At least 9 full credits earned, including COMM 2801.03 and at least 7 ½ other credits in the Core Area (Commerce, ECON 1101.03 and ECON 1102.03, MATH 1115.03 or MATH 1000.03, PHIL 2081.03)

### **COMM 3802.03: Work-Term Three, Bachelor of Commerce Co-op.**

Unless written permission is obtained, in advance, from the Commerce Program Manager, this must be done in the Summer term of the Third year.

PREREQUISITE: At least 11.5 full credits earned, including COMM 3801.03 and at least 10 other credits in the Core Area (Commerce, ECON 1101.03 and ECON 1102.03, MATH 1115.03 or MATH 1000.03, PHIL 2081.03)

### **COMM 4000.03: Directed Reading and Research.**

This class offers the student the opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Curriculum Committee for approval. Guidelines are available from the Undergraduate Advising Office, Suite 2086, Rowe Building.

### **COMM 4101.03: Advanced Topics in Accounting I.**

This course provides a theoretical framework for the study of accounting policy. Case analysis is an integral part of the course. Topics covered include accounting policy choice in a dynamic framework, partnerships, standard setting, not-for-profit accounting and fund accounting. As well, the class may consider various practical and theoretical topics, and current topics, as appropriate.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and COMM 3111.03, or permission of the instructor

CROSS-LISTING: BUSI 6110.03

EXCLUSION: COMM 3113.03



**COMM 4102.03: Advanced Topics in Accounting II.**

This course provides an in-depth study of the interrelated topics of intercorporate investments, business combinations, consolidated financial statements, foreign currency transactions and foreign operations. The class also covers segmented reporting and bankruptcy.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and COMM 3111.03, or permission of the instructor

CROSS-LISTING: BUSI 6109.03

**COMM 4103.03: Management Accounting Seminar.**

Topics in this class are of interest to students who are planning to pursue a career in managerial accounting. The class will explore ethics in the management accounting profession, governance and risk assessment. A major focus is internal audit, along with various product and process design and management issues, combined with quantitative techniques to assess risk and uncertainty. The class also is concerned with government reporting and analysis issues, supply chain issues, and special topics as warranted. The class will follow a seminar format, including presentations and case analysis.

FORMAT: Lecture 3 hours, with significant emphasis on student presentations

PREREQUISITE: COMM 3116.03

**COMM 4112.03: Accounting Research.**

This class considers the fundamental issues of financial reporting, establishing the reasons that accounting is valuable, and how financial reporting can best describe the economic value and economic performance of enterprises. Topics include accounting under ideal conditions, complications caused by information asymmetry, including adverse selection and moral hazard, challenges in the decision-based models of accounting information users, standard setting frameworks and mechanisms and governance and social responsibility implications of reporting issues. The class will follow a seminar format, including presentations and analysis of current events. Students will be required to formulate a research proposal as a major class deliverable.

FORMAT: Lecture 3 hours, with significant emphasis on student presentations.

PREREQUISITE: COMM 2102.03, COMM 3105.03, COMM 3111.03

**COMM 4120.03: Taxation.**

An introduction to the taxation system in Canada, with special reference to the provisions of the Income Tax Act and their effects on business decisions. The measurement processes used to determine the tax base are examined, and the basic elements in the calculation of tax payable for individuals and corporations are discussed.

FORMAT: Lecture 3 hours, with significant effort directed to the solving of short case problems.

PREREQUISITE: COMM 1101.03 or MGMT 2101.03; ECON 1101.03 and ECON 1102.03

CROSS-LISTING: BUSI 6102.03

**COMM 4121.03: Advanced Taxation.**

The class involves analysis of income tax in Canada. The class is a follow-up class to COMM 4120.03, and accordingly revisits certain aspects of corporate tax structure. Integrative exercises are used to accomplish this objective. In addition, specialized topics including rollovers, taxation of partnerships, trust and estate tax issues, GST/HST tax systems and various current topics are included in the course.

FORMAT: Lecture 3 hours, with significant effort directed to the solving of short case problems.

PREREQUISITE: COMM 4120.03

**COMM 4201.03: International Financial Management.**

The purpose of the class is to present some techniques which have been developed to help managers manage sets of cash flows of different currencies. The first section of the class is a description of the financial transactions associated with international trade. Some models dealing with the interaction between international trade and currency prices are described. The second section of the class examines properties of currency exchange rates. It presents models for forecasting exchange rates and describes the economic justifications for the models, the arbitrage opportunities presented by the models, and practical limitations of the models. The third section presents models for assessing foreign exchange risk: so-called transaction, economic, and translation exposure. Implications for the operation of the firm subject to the different types of foreign exchange exposure are also presented. Some implications of international equity investments will also be presented. The fourth section examines techniques for hedging foreign exchange risk. Foreign exchange derivative products, such as

forward contracts, futures contracts, call and put options, and currency swaps are examined.

PREREQUISITE: COMM 2202.03 and COMM 2203.03

**COMM 4202.03: Derivatives.**

This class is an introduction to derivatives and the main applications of derivatives for both investment purposes and corporate finance use. As an introductory or first class in derivatives, the goal is to cover the central concepts and issues that will permit the student to start using the products and understanding the main advantages, as well as the issues with derivative transactions. The class covers both quantitative pricing issues, as well as the many practical qualitative issues involved with the use of derivatives. Students should be comfortable with basic statistics and algebra. Knowledge of calculus is not required for this course. Students should also be comfortable with Excel spreadsheets and basic Excel mathematical functions.

PREREQUISITE: COMM 2202.03 and COMM 2203.03

**COMM 4240.03: Advanced Corporate Finance.**

This class will help students learn to apply fundamental ideas of corporate finance to real-life problems of business valuation and financial decision. Topics that will be discussed include valuation, mergers and acquisitions, financial distress, capital structure, payout policy, securities issuance, and corporate governance. The class builds on concepts and techniques that students have learned in finance, accounting, statistics, and economics. Case studies will be used to bridge the gap between finance theory and its applications to practical problems in corporate finance.

PREREQUISITE: COMM 2202.03 and COMM 2203.03

**COMM 4250.03: Theory of Finance.**

This class is designed to complement other finance courses that have been previously offered to finance majors. It covers core theory of capital markets and corporate finance. Topics include functions and operations of capital markets, analysis of consumption-investment decisions, diversification and portfolio selection, valuation theory and equilibrium pricing of risky assets, and investment and financing decisions of firms. Theoretical foundation for further study and practical applications will be emphasized.

FORMAT: Seminar 3 hours

PREREQUISITE: COMM 3206.03

CROSS-LISTING: BUSI 6250.03

**COMM 4301.03: Managing the Venturing Process.**

Managing the Venturing Process is a capstone class that explores the strategic elements required to venture successfully. Delivery is in a seminar format with students taking significant responsibility for their own learning. The constructs of venture stage, venture process and venture context are used to frame the discussion and a simulation (capstone) is used as a practical way for students to build competence in managing a large venture strategically.

PREREQUISITE: COMM 3307.03 or MGMT 3907.03, or permission of instructor

CROSS-LISTING: MGMT 4901.03

**COMM 4306.03: Organizational Change, Theory and Design.**

This class will provide students with an understanding of contemporary organizational theories relating to organizational structure, design and change.

The main thrust of the class will be a practical analysis of why organizations change, why organization/structures evolve and the impact of change on individuals. The objective of the class is for students to fine-tune those analytical and decision-making skills necessary for the effective introduction of change into complex organizations.

NOTE: This class replaces COMM 4305.03

PREREQUISITE: COMM 2303.03 (or COMM 2301.03) and COMM 3309.03

EXCLUSION: COMM 4305.03, COMM 4302.03, MGMT 3320.03

**COMM 4315.03: International and Intercultural Management.**

This senior level class is designed to provide students with the knowledge and skills necessary for effective membership and management in global as well as culturally diverse domestic workplaces. The growing importance of international business and escalating levels of involvement in global competitiveness necessitates that the manager of the 21st century acquire additional skills and abilities for effective international and intercultural interactions at home and abroad.

The course content includes such topics as: introduction to comparative and cross-cultural management, variations on cultural orientations and value, cross-cultural

communications, employee attitude, motivational issues in cross-cultural settings, training for international assignments, cross-cultural staffing, inter-cultural negotiations, leadership and gender differences, ethics and social responsibility, expatriation and repatriation management, and designing global structure.

RECOMMENDED: COMM 3303.03 and COMM 3309.03

FORMAT: Lecture 3 hours, cases, exercises

PREREQUISITE: COMM 2303.03

### COMM 4340.03: Corporate Governance.

The central focus of corporate governance is the relationship between the top management team (TMT), the board of directors (BoD), and other stakeholders, especially stockholders. The collapse of once successful, large corporations across the globe illustrates the frankishness of their board members and the degree of their lack of concern for stockholders' interests. The reputation of audit and consulting companies associated with these ill-fated corporations suffered a great setback, leaving stakeholders wondering whom to trust to safeguard their interests.

Students will take an in-depth look at the corporate governance triad, as indicated above, that controls the modern corporation. Accordingly, this course will deal with the control, composition, functions, roles, and structure of boards; board responsibility and accountability; CEO tenure and compensation, shareholder and other stakeholder representation; corporate board's vis-à-vis social responsibility and ethics; and comparative corporate governance across North America, Europe, and selected Asian countries.

FORMAT: Lecture

PREREQUISITE: COMM 4351.03

### COMM 4351.03: Competitive Strategy.

Competitive Strategy focuses on how a firm competes at various levels; that is, functional, business, corporate, and international. The class is designed to analyze the sources of competitive advantage among firms and to develop knowledge and skills necessary for effectively analyzing and formulating strategy. Accordingly, the class examines the role of the general manager in the organization; environmental and industry factors; organizational resource and capability constraints; the creation of value through functional-, business-, and corporate-level strategies, and, finally, how an organization leverages its resources and capabilities to extend its product and geographic scope internationally. Building upon this foundation, students will practice formulating well thought-out strategy recommendations that are specific and actionable. Throughout the term, students will be exposed to a wide variety of organizations through readings, case studies, and experiential exercises.

PREREQUISITE: At least 12.5 full credits earned, including COMM 3802.03 and at least 9 other full credits in the core area (Commerce, ECON 1101.03 and ECON 1102.03, MATH 1115.03 or MATH 1000.03, PHIL 2081.03 are core area courses)

EXCLUSION: MGMT 4001.03

### COMM 4352.03: Strategic Management.

Strategic Management builds on COMM 4351.03: Competitive Strategy. After conducting a brief review of the external environment faced by the organizations, the focus of this capstone class turns to the examination of the internal workings of an organization. More specifically, this class is about the general manager's task of implementing competitive strategy and managing strategic changes. This class is integrative, as it deals with the organization as a holistic entity.

In COMM 4352.03, various pedagogical methods are used to develop and enhance your analytical, writing, and presentation skills required in today's business environment. It also emphasizes analytical tools and conceptual frameworks that aid in the development of judgment. Although it draws on specific concepts, tools, and techniques from other core courses in the Bachelor of Commerce program, its basic purpose is to sharpen students' expertise and skills at developing judgments to help guide managerial actions in the face of uncertainty and complexity. Therefore, students are strongly encouraged to leverage and apply those concepts, tools, and techniques in this course.

PREREQUISITE: COMM 4351.03

EXCLUSION: MGMT 4002.03

### COMM 4401.03: Marketing Strategy.

This class is intended for marketing majors who wish to deepen their understanding of how marketing strategy is formulated and implemented. This involves high-level, long time-frame decisions, since the product and market strategies are at issue. The class aims to improve decision-making skills in managing product/market portfolios and implementing marketing strategies. As a capstone course, it is designed to permit the integration of learning from other marketing courses. Instruction is mostly through case study discussions, report writing, and group presentations.

FORMAT: Seminar 3 hours

PREREQUISITE: Prerequisites for major in Marketing Logistics: COMM 2401.03, COMM 3404.03 and COMM 3407.03 with an average of at least B- in these three courses.

Prerequisite for Major in Marketing Management: COMM 2401.03 and COMM 3401.03 and COMM 3404.03 with an average of at least B- in these three courses

### COMM 4413.03: Marketing Informatics.

Marketing Informatics is an applications, not theoretical based class that provides the student with skills applicable to a wide range of marketing positions within an organization. It provides the student with the ability to analyze large data sets generated internally through customer accounts (for communications, retail and utility companies) and through loyalty programs offered by most service and retail organizations.

Following on what was learned in COMM 3404.03: Marketing Research, the student conducts segmentation analysis, and develops predictive models using Excel, Access and industry standard statistical software. The class works with an industry client who supplies a data set for analysis. The emphasis is on the student developing real world skills and many of those who have attended this class in the past have found exciting careers as market analysts in firms across Canada.

FORMAT: Lecture/discussion 3 hours and three or four 1.5 hour tutorials early in the semester

PREREQUISITE: COMM 2401.03 and COMM 3404.03

### COMM 4510.03: Corporate Communication.

By the end of this course, students will have learnt about various communication strategies adopted and deployed by corporations. Students will have competently demonstrated their ability to devise a corporate communications portfolio for stakeholders they will adopt in particular case scenarios. This portfolio will include formulating & delivering internal and external communications, developing and authoring press releases, creating a strategy document for managing press conferences and media relations, creating a post-incident marketing campaign, and writing incident and preliminary investigative reports (with financial and accounting analysis as evidence where available). Student teams will then make team presentations to possibly hostile audiences, and outline how to manage internal and external public relations, both day-to-day and in crisis conditions.

PREREQUISITE: COMM 1710.03, COMM 1720.03 and COMM 2303.03, OR MGMT 2304.03 and MGMT 3602.03

### COMM 4511.03: Business Process Integration using ERP Systems.

Enterprise Systems are comprised of a unified database with shared analysis and reporting tools allowing for real time business intelligence across global operations. Emphasis in this class is equally on learning business processes and integration between different functional areas as it is about the technology that facilitates this. This class will be taught in the teaching labs with a combination of individual and group simulations interspersed with short lectures.

An active learning approach in this class will include hands-on learning using SAP ERP, as well as ERPSim, a game-based SAP ERP simulation. Here you will learn to manage companies from end-to-end using the actual SAP ERP in a real-time simulated competitive environment and will learn the processes, gain technical skills with SAP and playfully learn how Enterprise Systems facilitate Business Intelligence which can be used to lead a company in a competitive environment.

PREREQUISITE: COMM 3501.03 and COMM 3511.03

### COMM 4523.03: Project Management.

This course provides an introduction to principles, concepts, and software applications as well as an actual experience of project management in a practical project team setting. The course also introduces theories and practices of project management as related to project objectives, lifecycle stages, and control variables such as time, cost, and scope. Students will gain insight into the realities of managing a project and will learn to adapt to varying financial, political and cultural challenges encountered within project teams and organizations.

PREREQUISITE: COMM 3501.03

CROSS-LISTING: MGMT 4333.03

### COMM 4538.03: Applied Multivariate Analysis.

The convenience of packaged statistical programs (e.g. SPSS) has opened the area of data analysis to researchers with a wide variety of backgrounds. Since it is possible to operate "canned" programs without understanding advanced mathematics, there is a need for a class that introduces the user to the concepts underlying the techniques. Students use and interpret statistical programs with

data sets from such business areas as marketing, finance and organizational behaviour.

PREREQUISITE: COMM 1502.03, and MATH 1115.03 (or MATH 1000.03), and COMM 2502.03, or permission of instructor

CROSS-LISTING: BUSI 6504.03

### **COMM 4701.03: International Business Strategy.**

The objective of this class is to help the students understand why firms expand overseas and how foreign operations differ from domestic ones. It provides the students with the necessary knowledge for a career or further study in international business. The class introduces the basic concepts of international business from a manager's perspective. It examines the issues and problems that arise when business operations extend across national boundaries and become international in scope or character. The emphasis is two-fold. First, consideration is given to the characteristics and contemporary dynamics of the world economy. Second, analysis is made of the development of the multinational firm and of the adaptation of the basic managerial functions due to internationalization. The class orientation is pragmatic and managerial. Through case studies, class discussions, assigned readings, and lectures, the students are expected to develop the skills for analyzing situations and formulating solutions in an international business context.

PREREQUISITE: COMM 3802.03 or MGMT 4001.03

EXCLUSION: COMM 3701.03

## **Management**

Location: 6100 University Ave.  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3710  
Fax: (902) 494-3480  
Website: <http://www.bmgmt.management.dal.ca>

### **Director**

Cunningham, P., BA (Hons) (Royal Military College of Canada), MMS  
(University of Central Texas)

### **Program Administrator/Academic Advisor**

Muise, M.  
Telephone (902) 494-2659  
Email: [margie.muise@dal.ca](mailto:margie.muise@dal.ca)

### **Academic Advisor**

Haigh, K.  
Email: [katie.haigh@dal.ca](mailto:katie.haigh@dal.ca)

### **Faculty**

Faculty are drawn from all four Schools that comprise the Faculty of Management: Business Administration, Information Management, Public Administration, and Resource and Environmental Studies.

## **I. General**

The Faculty offers a curriculum of undergraduate and graduate studies designed to prepare students for careers in the fields of business, public administration, environmental and information management.

The undergraduate management degree includes studies from the humanities and social sciences as well as in the functional areas of management.

In co-operation with the School of Health and Human Performance, the Faculty also offers a combined, five-year program in which the student receives both degrees upon graduation. Please refer to Faculty of Health Professions on page 403 for more information on the Bachelor of Science (Recreation)/Bachelor of Management.

## **II. Bachelor of Management**

The Bachelor of Management provides undergraduate education in the management of organizations and human activities, in public sector management, environmental management, information management, and enterprise management.

This degree recognizes that managers work and move across borders between these sectors of management. Drawing of faculty from all four schools in the Faculty of Management, the program recruits students locally, nationally and internationally.

### **The objectives of the Bachelor of Management program are to:**

- Develop students' knowledge of key concepts and issues that arise in formulating and implementing strategy in organizations.
- Develop students' analytical and decision making skills.
- Develop students' teamwork and communication skills.
- Develop students' awareness of their strengths, career aspirations and personal goals.
- Prepare students to graduate with management skills that can be applied in general management, information management, environmental management, public sector management, not-for-profit management, and enterprise management.

## A. Degree Requirements

- Four year program
- Total credits required - 20
- Required GPA for graduation - 2.00
- Required core area classes - 10.5 credits:
  - ECON 1101.03
  - ECON 1102.03
  - MGMT 1000.03
  - MGMT 1001.03
  - MGMT 1501.03
  - MGMT 1601.03
  - MGMT 1702.03
  - MGMT 2101.03
  - MGMT 2303.03
  - MGMT 2304.03
  - MGMT 2401.03
  - MGMT 2402.03
  - MGMT 2601.03
  - MGMT 2702.03
  - MGMT 2801.03
  - MGMT 2803.03
  - MGMT 3201.03
  - MGMT 3501.03
  - MGMT 3602.03
  - MGMT 4001.03
  - MGMT 4002.03
- Required Management electives
  - three half credit classes in management electives are required
  - one full credit Writing Class (see Section C.)
- Open Electives
  - seven full credits (14 half credits), chosen from all classes offered in the University
  - A maximum of three full credit (six half credits) classes at the 1000 level is permitted.
  - A maximum of three full credit (six half credits) classes in Commerce is permitted.
  - Strongly advise students to choose a class in ethics (e.g., PHIL 2081 Business Ethics, PHIL 2485 Technology and the Environment).

## B. Program Guide

Students will normally follow the classes as listed in the table below:

Year	Fall Sept - Dec (A)	Winter Jan - Apr (B)
Year 1	Writing Requirement ECON 1101.03 MGMT 1000.03 MGMT 1601.03 or MGMT 1501.03 Open Elective.03	Writing Requirement ECON 1102.03 MGMT 1001.03 MGMT 1501.03 or MGMT 1601.03 MGMT 1702.03
Year 2	MGMT 2101.03 MGMT 2303.03 MGMT 2801.03 MGMT 2401.03 Open Elective.03	MGMT 2601.03 MGMT 2304.03 MGMT 2803.03 MGMT 2402.03 MGMT 2702.02
Year 3	MGMT 3201.03 MGMT Elective .03 or MGMT 3602.03 Open Elective .03 Open Elective .03 Open Elective .03	MGMT 3602.03 or MGMT Elective.03 MGMT 3501.03 MGMT Elective .03 Open Elective .03 Open Elective .03
Year 4	MGMT 4001.03 MGMT Elective .03 Open Elective .03 Open Elective .03 Open Elective .03	MGMT 4002.03 Open Elective .03 Open Elective .03 Open Elective .03 Open Elective .03

## C. Writing Class

One of the first five credits chosen should be selected from a list of classes in which written work is considered frequently and in detail. These writing classes are approved by the Writing Across the Curriculum committee and are listed on page 131 of the academic calendar.

Classes which satisfy the Writing Requirement are identified by the following symbol and notation in their formal description:

✍ Writing Requirement

## D. Combined Degree

The School of Health and Human Performance and the Faculty of Management offer a five-year program in which a student graduates with both degrees, Bachelor of Science (Recreation)/Bachelor of Management. Please consult the School of Health and Human Performance in the calendar (page 403) for more information.

## E. Majors

During their fifth, sixth, seventh and eighth academic terms, students can either pursue a general program of study, by choosing electives from a wide range of the functional areas, or they can follow a more specialized program, taking their elective classes towards a major. Seven interdisciplinary thematic majors are available to students who focus their studies in specific aspects of management.

### Entrepreneurship and Innovation Major

#### Required Classes

- MGMT 2102.03: Managerial Accounting
- MGMT 3907.03/COMM 3307.03: New Venture Creation
- COMM 3308.03: Managing the Family Enterprise
- MGMT 3309.03: Management Skills Development
- MGMT 4901.03: Managing the Venturing Process [capstone]

### Leadership and Organization Major

#### Required Classes:

One of:

- SOSA 1100.06: Introduction to Anthropology
- SOSA 1200.06: Introduction to Sociology
- PSYO 1011.03/1012.03: Introduction to Psychology and Neuroscience I and II
- PSYO 1021.03/1022.03: Introduction to Psychology and Neuroscience I and II

#### Plus:

- MGMT 3309.03: Management Skills Development
- COMM 3310.03: Leadership and Strategic Change
- MGMT 3320.03: Organizational Theory
- MGMT 4309.03: Strategic Leadership [capstone]

### Management and Globalization Major

#### Required Classes:

- One full credit from second-year Political Science
- COMM 4315.03: International/Intercultural Management
- COMM 4701.03: International Management Strategy [capstone]

### Public Sector Management Major

#### Required Classes:

- MGMT 2502.03: Statistics for Managers II
- MGMT 3810.03: Government Policy towards Business
- MGMT 3802.03: Public Policy
- ECON 2216.03: Economics of Global Warming or ECON 2217.03: Women and the Economy

### Knowledge Management Major

#### Required Classes:

- MGMT 3601.03: Information in a Networked World
- MGMT 3603.03: Beyond Google
- MGMT 4601.03: Advanced Knowledge Management [capstone]
- MGMT 4540.03/INFO 6540.03: Database Management Systems or INFX 2640.03: Use and Design of Databases

### Sustainable Resources and the Environment Major

#### Required Classes:

- MGMT 3701.03: Resource/Environment Problem-Solving 1: Sustainable Ecosystems
- MGMT 3702.03: Resource/Environment Problem-Solving 2: Sustainable Industries
- MGMT 2502.03: Statistics for Managers II
- MGMT 4701.03: Advanced Resource/Environmental Management 1
- MGMT 4702.03: Advanced Resource/Environmental Management 2

## Environment, Sustainability and Society

Location: College of Sustainability  
 Telephone: (902) 494-4581  
 Fax: (902) 494-1123  
 Email: sustainability@dal.ca  
 Website: http://www.ess.dal.ca

### Degree Programs

The College of Sustainability offers a Major in the BMgmt program. For complete details about the College, its programs and classes please see the College of Sustainability section on page 44 of the Calendar.

#### Required Classes:

- SUST 1000.06
- SUST 2000.06 or SUST 2001.06
- Three full credits from the Approved ESS Electives list: at least two of these credits must be above 2000 level, and at least two of these credits must be from outside MGMT

See the College of Sustainability on page 46 for class descriptions and the list of Approved ESS Electives.

## F. Majors - Electives

### Major in Entrepreneurship and Innovation

Students need three half credits from list. A minimum of one half credit from each of columns A and B.

Column A	Column B
COMM 2603.03 Legal Aspects of Business	ECON 2213.03 Economic Rise of China & India
COMM 3310.03 Leadership and Strategic Change	ECON 3310.03 Economics Growth in Historical Perspective
COMM 3401.03 Consumer Behaviour	ECON 3315.03 Labour Economics
COMM 3402.03 Marketing Communications	ECON 3319.03 Industrial Organizations
COMM 3404.03 Marketing Research	LEIS 4362.03 Recreational Entrepreneurship & Special Events
COMM 3409.03 Sales Management	MGMT 3810.03 Government Policy Towards Business
COMM 4120.03 Taxation	PHIL 2081.03 Ethics in the World of Business
MGMT 3902.03 Starting Lean	SOSA 3005.03 Knowledge, Work & Culture in the Contemporary World
MGMT 4333.03 Project Management	

### Major in Knowledge Management

Students need four half credits from list.

COMM 3511.03 Management Information Systems
CSCI 1107.03 Social Computing
INFX 2601.03 Information Security
MGMT 4300.03/INFO 6300.03 Information Resources in Government
MGMT 4370.03/INFO 6370.03 Records Management
MGMT 4611.03/INFO 6610.03 Information Policy
MGMT 4620.03/INFO 6620.03 Electronic Text Design
MGMT 4681.03/INFO 6681.03 Geospatial Information Management

### Major in Leadership and Organizations

Students need four half credits from list.

COMM 2603.03 Legal Aspects of Business
COMM 3303.03 Introduction to Resource Management
ECON 2217.03 Women and the Economy
ECON 2218.03 The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade
ECON 3315.03 Labour Economics
ECON 3319.03 Industrial Organization

LEIS 3296.03 Leadership and Group Dynamics
MGMT 2102.03 Managerial Accounting
MGMT 3601.03 Information In a Networked World
MGMT 4333.03 Project Management
PHIL 2081.03 Ethics in the World of Business
PSYO 2080.03 Social Psychology
PSYO 2130.03 Introduction to Cognitive Psychology
PSYO 2770.03 Brain and Behaviour
SOSA 2002.06 The Sociological Perspective: Thinking and Doing Sociology
SOSA 3005.03 Knowledge, Work and Culture in the Contemporary World
SOSA 3060.03 Social Change and Development
SOSA 3165.03 People & Cultures/Area Study
SOSA 3206.03 Ethnicity, Nationalism, Race
SOSA 3284.03 Living Cities

### Major in Management and Globalization

Students need four half credits from list. A minimum of one half credit from each of columns A and B.

Column A International Development Focus	Column B International Business Focus
ECON 2213.03 Economic Rise of China & India	COMM 3405.03 Export Marketing
ECON 2334.03 Globalization & Economic Development	COMM 4201.03 International Financial Management
ECON 3317.03 Poverty and Inequality	ECON 2217.03 Women and the Economy
GWST 2217.03 Women and the Economy	ECON 2219.03 Euros and Cents
One of: INTD 2001.03 Introduction to Development I INTD 2002.03 Introduction to Development II INTD 3002.03 Introduction to Development IV	ECON 2239.03 European Economic History
INTD 2045.03 Indian Society: Continuity and Change	ECON 3326.03 Money and Banking
INTD 2106.03 Africa: An Introduction	ECON 3330.03 International Trade
INTD 3000 or above	ECON 3331.03 International Finance
INTD 3114.03 Environment and Development	GWST 2217.03 Women and the Economy
INTD 3115.03 Global Health	MGMT 2102.03 Managerial Accounting
MGMT 2102.03 Managerial Accounting	PHIL 2081.03 Ethics in the World of Business
PHIL 2475.03 Justice in Global Perspective	POLI 2300.06 Comparative Politics
POLI 2300.06 Comparative Politics	POLI 2520.03 World Politics
POLI 2520.03 World Politics	POLI 3321.03 Politics of the European Union
POLI 3360.03 Politics in Latin America	POLI 3544.03 Political Economy of South Africa
POLI 3385.03 Politics of the Environment	A minimum half credit language class (Arabic, Chinese, French, German, Greek, Italian, Latin, Russian, Spanish)
A minimum half credit language class (Arabic, Chinese, French, German, Greek, Italian, Latin, Russian, Spanish)	

### Major in Public Sector Management

Students need four half credits from list. A minimum of one half credit from each of columns A and B.

Students are strongly recommended to take a full credit of French or Spanish. Note that it is also possible to obtain a certificate of proficiency in French (see page 195) or Spanish (see page 316).

Column A	Column B
COMM 3511.03 Management Information Systems	CANA 2000.06 The Idea of Canada
ECON 2200.03 Intermediate Microeconomics	ECON 2216.03 Economics of Global Warming

ECON 3326.03 Money and Banking	ECON 2217.03 Women and the Economy
ECON 3330.03 International Trade	ECON 2218.03 The Canadian Economy in the New Millennium
ECON 3500.03 Public Economics	HIST class 2000 or above
MGMT 2102.03 Managerial Accounting	LAW 2500.06 Introduction to Law
MGMT 4300.03/INFO 6300.03 Information Resources in Government	PHIL 2020.03 Legal Thinking
	PHIL 3211.03 Philosophy of Law
	POLI 2210.03 Unity and Diversity: The Dynamics of Canadian Federalism
	POLI 2300.06 Comparative Politics
	POLI 3208.03 Canadian Provincial Politics
	POLI 3224.03 Canadian Political Parties
	POLI 3231.03 Urban Governance in Canada
	POLI 3321.03 Politics of European Union
	SOSA 2002.06 The Sociological Perspective
	A minimum half credit language class (Arabic, Chinese, French, German, Greek, Italian, Latin, Russian, Spanish)

### Major in Sustainable Resources and the Environment

Students need three half credits from column A, B, or C.

Column A Policy Focus
ENVS 3200.03 Introduction to Environmental Law
MGMT 3802.03 Public Policy
MGMT 4039.03/ENVI 5039.03 Indigenous Peoples and Natural Resource Issues
MGMT 4205.03/ENVI 5205.03 Law and Policy for Resource and Environmental Management
MGMT 4500.03/ENVI 5500.03 Socio-political Dimensions of Resource and Environmental Management
MGMT 4504.03/ENVI 5504.03 Management of Resources and the Environment
PHIL 2480.03 Environmental Ethics
PLAN 3005.03 Cities and the Environment in History
Column B Science Focus
BIOL 2060.03 Introductory Ecology
ECON 3335.03 Environmental Economics
ENVS 3400.03 Environmental and Ecosystem Health
MGMT 4013.03/MARA 5013.03 Ecosystem-Based Approaches (currently Marine Protected Areas)
MGMT 4505.03/ENVI 5505.03 Biophysical Dimensions of Resource and Environmental Management
OCEA 2000.06 The Blue Planet
Column C Applied Focus
BIOL 4065.03 Sustainability/Global Change
ECON 2216.03 Economics of Global Warming
ECON 3332.03 Resource Economics
ECON 3335.03 Environmental Economics
MGMT 2102.03 Managerial Accounting
MGMT 4009.03/MARA 5009.03 Integrated Coastal Zone Management
MGMT 4015.03/MARA 5015.03 Maritime Transportation
MGMT 4021.03/MARA 5021.03 Fisheries Management
MGMT 4031.03/ENVI 5031.03 Economics for Resource and Environmental Management
MGMT 4507.03/ENVI 5507.03 Environmental Informatics
PLAN 2001.03 Landscape Analysis
PLAN 3001.03 Landscape Ecology

## G. Minors

### For Bachelor of Management students

Bachelor of Management students can undertake a minor from various departments within the Faculty of Arts and Social Science, the Faculty of Science or the Faculty of Computer Science. They should consult advisors in those

faculties for the most current information on the requirements for particular minors.

#### Minor Subject Areas Faculty of Arts and Social Sciences

Chinese Studies  
Classics  
English  
Film Studies  
French  
Gender and Women's Studies  
History  
International Development Studies  
Philosophy  
Russian Studies  
Spanish  
Theatre

#### Minor Subject Areas Faculty of Science

Biology  
Earth Science  
Economics  
Mathematics  
Physics  
Psychology

#### Minor Subject Areas other Faculties

Journalism Studies  
Law and Society

### For students registered in the BA, BSc, Blnf and BCSc programs

The minor in management is available to students registered in the BA, BSc, Blnf and BCSc programs. The requirements are as for the appropriate degree program with completion of the following classes:

#### Required classes:

- MGMT 1000.03: Introduction to Management Issues I
- MGMT 1001.03: Introduction to Management Issues II
- ECON 1101.03: Micro Economics
- ECON 1102.03: Macro Economics
- MGMT 1501.03: Statistics for Managers

#### Any three half-credits chosen from:

- MGMT 2101.03: Financial Accounting
- MGMT 2303.03: People, work and organizations: Micro Organizational Behaviour
- MGMT 2401.03: Introduction to Marketing
- MGMT 2601.03: Knowledge Management
- MGMT 2702.03: Resource and Environmental Management
- MGMT 2801.03: Government Structure

Plus an additional two full credits of MGMT classes at or above the 2000 level.

## H. Optional Internship

The Bachelor of Management (BMgmt) internship is a minimum of 32 weeks (approximately eight months) of consecutive, full time work experience related to your studies. Internships can be at large multi-national corporations or small offices, at a not-for-profit organization or a government department. We will work with you to find the right internship for you.

Bachelor of Management students currently in the **second year** of their program are eligible to apply for the Internship Program. Please meet with your Program Administrator/Academic Advisor, Margie Muise (margie.muise@dal.ca) or Katie Haigh (katie.haigh@dal.ca) to discuss your course plan.

Acceptance to participate in the Internship Program will be assessed on the following criteria:

1. Completion of Application Form
2. Statement of Intent
3. Resume
4. GPA of 2.70 or higher in the two terms preceding application submission
5. Positive recommendations from references
6. Personal interview with Management Career Services (to be arranged once complete application is reviewed)

7. Full participation in the Internship Prep Seminar, MGMT 4895 (no credit value) which is held each fall

#### Internship Fee

Students accepted into the Internship Program are charged an Internship Fee. This fee is non-refundable after the deadline date provided by Management Career Services.

The Internship Fee covers:

Administration of the internship including, but not limited to:

- Job search assistance (cover letters and resume building, interview preparation and debrief, coaching for self-developed job search strategies)
- MGMT 4895, the Internship Prep Seminar
- Networking opportunities with employers (including special events, competitions, information sessions, corporate tours, mentoring, etc)
- Internship monitoring and mediation of unsatisfactory situations
- Post internship debrief
- Development of job opportunities
- Access to on-line job posting site and job posting administration
- Interview space and co-ordination
- Facilitation of job offers
- Tracking of eligibility and job search activity

### I. Career Development Fee

Bachelor of Management students have access to specialized career development services through the Management Career Services unit. This service is covered through the payment of a mandatory Management Career Services Fee. This fee is prorated for part-time students. The fee covers the following:

- Individual Resume and Cover Letter Reviews
- Career Related Workshops including: Winning Resumes, Effective Interviewing, Job Search Strategies and Networking
- On Campus Grad Recruitment
- Employer Information Sessions
- Special Events (i.e. Interview Competition, Recruiting Events such as Super Wednesday and Tap the Talent and Corporate Tours, both locally and in other cities)
- Strong Interest Inventory (career assessment tool)
- Bachelor of Management Internship Program Application Processing

Students have access to a Career & Recruitment Specialist within Management Career Services. There are six Career & Recruitment Specialists (CRS), each responsible for a specific area, and currently there are two CRS staff dedicated to work with Bachelor of Management students and are responsible for the administration of the optional internship program. Bachelor of Management students may also access another CRS if they require specific information on an area.

Career & Recruitment Specialists work with students individually or in group sessions to help with the following:

- Identifying student strengths, interests and priorities
- Helping students establish which career path and work environment is right for them
- Planning a job search strategy
- Writing effective resumes and cover letters
- Building and interacting with a network of contacts
- Preparing for interviews
- Providing support, advice and monitoring of the work term
- Providing job search assistance for graduating students

Career Recruitment Specialists can also guide students through a process that provides the ability and knowledge needed to develop their careers. These set of skills will serve students well now, and in the nearest future. It is also based on the principle that students are each best equipped to know what they want in their individual careers.

Career Recruitment Specialists are trained to mentor and guide students during the often frustrating time when students are trying to make career decisions and are searching for the right job. In typical situations, they assist by:

- Listening to students' ideas or concerns
- Providing feedback to help students gain insight
- Advising students on how to develop strategies
- Supporting and encouraging students to meet their individual goals.

## III. Class Descriptions

### MGMT 1000.03: Managing Organizational Issues I.

The course places management in its broadest context and helps students from diverse disciplines understand the complex social, economic, ecological, political and technological forces shaping 21st century leadership in the public, private and non profit sectors. Key themes explored in the course include systems thinking, values based approaches to management, and personal and professional development. We see those who successfully complete MGMT 1000/1001 as holistic, critical and strategic thinkers, acting with integrity to engage stakeholders, individually and in teams, to achieve personal, organizational and societal goals through interdisciplinary approaches. MGMT 1000/1001 graduates will possess the ability to think globally, strategically, boldly, holistically and inter-disciplinarily, while considering local ecological, economic and cultural differences.

EXCLUSION: HESA 4001.03

### MGMT 1001.03: Managing Organizational Issues II.

A continuation of MGMT 1000.03.

PREREQUISITE: MGMT 1000.03

EXCLUSION: ASSC 1100.03, SCIE 1100.03

### MGMT 1501.03: Statistics for Managers I.

An introduction to the principles and applications of statistics relevant to managers, with emphasis on making inferences based on observed data. Topics covered include descriptive statistics, probability, random variables, estimation, hypothesis testing and statistical software.

NOTE: Students enrolled in the Bachelor of Management must register for this class.

EXCLUSION: COMM 2501.03 and COMM 2502.03, MATH 1060.03 and MATH 2080.03 or STAT 1060.03 and STAT 2080.03, ECON 2260.03, ECON 2222.03

### MGMT 1601.03: Electronic Information Management.

This class will teach students how to use computer applications to structure and process data so that they may create and communicate information and knowledge, and it will teach them the role of business applications in the management environment. Students will master the word processing, spreadsheet, database, and presentation software in an integrated office suite. They will also learn to design and create web pages with html. It is strongly recommended that students complete this class in their first year of study.

NOTE: ASSC 1000 or CSCI 1200 will not be counted in the Bachelor of Management program

### MGMT 1702.03: Ecosystem Goods and Services.

The course explores the ecosystem goods and services on which our societies and economies depend, and the environmental basis of those goods and services. The course will cover the nature and function of: matter, energy, ecosystems, primary producers, natural resources, biodiversity, ecological footprints, and feedback loops; and their importance for managers.

EXCLUSION: MGMT 1700.06, ENVI 1100X/Y.06, ENVS 1000.06

### MGMT 2101.03: Financial Accounting.

This class focuses on the accounting principles used in the measurement and reporting of an organization's operating, financing and investing activities to the parties' external to that organization that have a need for this information. The organizational context includes business, government and not-for-profit settings. The coverage includes an examination of the accounting process, basic issues in financial reporting, the financial statement disclosure requirements, and techniques for analyzing the financial statements

PREREQUISITE: MGMT 1000.03, MGMT 1001.03, or professor approval

EXCLUSION: COMM 2101.03/COMM 1101.03

### MGMT 2102.03: Managerial Accounting.

This class examines how accounting can provide information to assist management in their planning, decision-making and performance evaluation activities -- whether for businesses, governments, not-for-profit organizations or special projects. Both qualitative and quantitative information supports this decision-making. Topics will include the understanding and determination of cost behaviours, an examination of the problems of tracing and allocating costs to the purpose(s) their incurrence was intended to serve, and the criteria for determining which costs are relevant to various types of decisions or areas of responsibility.

PREREQUISITE: MGMT 2101.03

EXCLUSION: COMM 2102.03

## MGMT 2104.01: Public Sector Financial and Managerial Accounting.

This is required for all students who have completed COMM 2101.03 or COMM 1101.03. It covers the components that are covered in the MGMT classes and absent from typical private sector accounting classes.

PREREQUISITE: COMM 2101.03 or COMM 1101.03

## MGMT 2303.03: People, Work, and Organizations: Micro Organizational Behaviour.

Organizational behaviour and the study of work organizations and management draw on a number of disciplines within social sciences to help us to understand and make sense of individual behaviour and human action in groups and organizations. Through a combination of individual and group work and a blend of classroom based activities supplemented by additional resources and materials available via BLS, this class will explore concepts and theories relating to micro aspects of organizational behaviour. Topics include: individual motivation, personality, perception, attitudes and values, and the relationships between individual choices and actions. Links will also be made to practice and processes in organizations (for example: rewards, appraisal, feedback and organizational commitment).

PREREQUISITE: MGMT 1000.03 and MGMT 1001.03

EXCLUSION: COMM 2303.03

\*Students who have taken COMM 2303.03 Introduction to Managing People are currently required to take MGMT 3309.03 (Management Skills Development) for full exclusion to MGMT 2303.03 and MGMT 2304.03.

## MGMT 2304.03: People, Work and Organizations: Macro Aspects of Organizational Behaviour.

Mgmt 2304.03 builds on the concepts and principles identified in Mgmt 2303.03. This course takes a macro perspective that will consider the relationships between structural, cultural, social, economic and political factors and managing and organizing work. Topics include: organizational structure and processes; leadership, power and politics; organizational cultures, processes of organizational change, and legal and ethical issues and frameworks. To achieve a balance between theoretical and practical learning, the teaching methods will combine mini-lectures with in-class/on-line exercises, cases, presentations and group facilitated discussions.

PREREQUISITE: MGMT 2303.03 or equivalent: MGMT 2304.03 is a continuation of MGMT 2303

EXCLUSION: COMM 2301.03/2302.03, COMM 2303.03\*, COMM 3301.03 and MGMT 2301.03

\* Please note: where a student is transferring from Commerce to Management and has taken COMM 2303.03, they will need to take the complementary course MGMT 3309.03 (Management Skills Development) to receive full credit for MGMT 2303.03 and 2304.03.

## MGMT 2401.03: Introduction to Marketing.

The objective of this class is to familiarize you with marketing's mode of inquiry—the way marketers look at the world. As a marketer you should be able to: 1) ask the right questions about markets; 2) organize data into relevant information; 3) discover market opportunities; 4) set goals; 5) create a marketing plan that includes clear target markets, as well as product, price, distribution and communication strategies; and 6) implement and control a marketing program. Students work in groups and run a business in an online marketing simulation. This provides students with hands-on group decision making and data analysis skills, and they are specifically responsible for making product, pricing, promotion and placement strategies for a brand or group of brands. The class will also train students in a number of skills that are necessary for higher level classes and career advancement (i.e., case analysis and analytical report writing).

NOTE: Students enrolled in the Bachelor of Management must register for this class under its MGMT designation. Only students enrolled in the Bachelor of Management are permitted to take MGMT 2401.03

PREREQUISITE: MGMT 1000.03, MGMT 1001.03, ECON 1101.03, ECON 1102.03

CROSS-LISTING: COMM 2401.03

EXCLUSION: COMM 2401.03

## MGMT 2402.03: Marketing Applications in the Not-for-Profit Sectors.

This class is intended to further the student's understanding of the ways in which the discipline of marketing can be applied to a number of public policy, environmental, professional and non-profit management areas. It will integrate the basic theory and concepts covered in the introductory marketing class with the knowledge gained in the introductory classes in environmental and public policy

management or in introductory classes in a number of professional fields. The class will maintain an overall managerial perspective in examining the ways in which various constituencies fulfill their strategic organizational objectives through the application of marketing practices. Topic areas examined will be: micro-marketing (firm perspective) vs. macro-marketing (societal perspective); non-profit, cause-related, "green" and social marketing; de-marketing (e.g. anti-smoking, etc.); the use of marketing communications in the electoral and public policy-making process; ethics in marketing; marketing and development. The class may also examine the application of the discipline of marketing to a number of professional fields, such as sports/recreation and health sciences. Learning activities might include: lectures, videos, seminars, internet exercises, examinations and field assignments.

PREREQUISITE: MGMT 2401.03

## MGMT 2502.03: Statistics for Managers II.

A continuation of MGMT 1501.03. The main topics covered are analysis of variance, goodness of fit tests, simple and multiple regression, time series, statistical software.

PREREQUISITE: MGMT 1501.03

EXCLUSION: COMM 2501.03 and COMM 2502.03, MATH 1060.03 and MATH 2080.03, STAT 1060.03 and STAT 2080.03; ECON 2260.03, ECON 2222.03

## MGMT 2601.03: Knowledge Management.

An introduction to the ways in which organizations create, identify, capture, process, and distribute knowledge. Topics include knowledge generation and coordination, knowledge markets, knowledge transfer and skills, and knowledge management principles. Discussion also covers new organizations and intellectual capital; the integration of human resources, training and development, information systems and security, and business units to implement knowledge management strategies; and new roles and responsibilities for knowledge workers.

PREREQUISITE: MGMT 1000.03, MGMT 1001.03, Second year students

## MGMT 2702.03: Resource and Environmental Management.

This course provides an overview of principles and techniques and explores challenging cases of environmental and resource management. Sustainable development provides a framework for examining the issues involved in the extraction, manufacture, use and disposal of materials, energy and products, and the management tools available for addressing those issues.

PREREQUISITE: MGMT 1702.03

EXCLUSION: MGMT 1700.06, ENVI 1100.06 or ENVS 1000.06

## MGMT 2801.03: Government Structure.

This class introduces students to the organizing principles and structures of the three levels of Canadian government; federal, provincial and municipal. The focus is particularly directed at the permanent public service and seeks to examine the collective "whole of government" influence on Canadian affairs. For those interested in business this is an important course as it provides an understanding of the core structures business must understand when dealing with government. As citizens this course provides a framework for understanding how you might protect your rights.

PREREQUISITE: Second year student; MGMT 1000 and MGMT 1001

EXCLUSION: PUAD 2249.03

## MGMT 2803.03: Management in the Public Sector.

This class provides an introduction to the principles and methods used in the management of financial, human, and information resources in public sector organizations, with an emphasis on leadership in the Canadian context. It is designed to meet the educational needs of undergraduate students who are interested in a career in public service, the arts, or non-profit organizations, and who wish an exposure to modern management practices in the public sector.

FORMAT: WebCT

PREREQUISITE: MGMT 2801.03 or instructor's approval

## MGMT 3201.03: Financial Management.

This class is an introduction to the techniques and core principles for making optimal financial decisions for profit, not for profit and public sector organizations. The emphasis is on understanding the role of finance in an integrated management framework. Concepts covered include stakeholder analysis, financial planning, valuation and triple bottom line analysis.

PREREQUISITE: ECON 1101.03, ECON 1102.03, MGMT 2101.03, MGMT 1501.03

EXCLUSION: COMM 2202.03 and COMM 2203.03



**MGMT 3308.03: Managing the Family Enterprise.**

Managing the Family Enterprise is about the special problems and issues that confront family businesses. It explores the family system, the business system, the ownership system and their interactions - functional and dysfunctional. Specific topics, examined from the family business perspective, include: the decision to join a family firm, management succession, ownership succession, the role of key non-family employees, strategic planning and other issues especially relevant for family firms. The course also addresses conflict and communication in the family and business.

The course has two purposes. First it provides an organized framework for students to understand the dynamics and special issues of family firms. Second it is designed to allow students to explore their interest in joining a family firm.

Therefore, it is especially intended for students who come from families which are in business or for students considering joining a family business. Others who wish to explore a key segment of Canadian business are also welcome.

The course relies on field projects, guest speakers, case studies, videos, research papers and extensive class discussion to explore the territory of managing family businesses.

PREREQUISITE: or CO-REQUISITE: MGMT 210.03

**MGMT 3309.03: Management Skills Development.**

This class will expose students to key knowledge, skills, and attitudes (KSAs) considered critical to managerial success. Such an exposure is designed to provide the students with behaviours which will help ensure that, when managing human resources, staff will perform at or near peak capabilities. Topic areas include: understanding what the successful manager needs to know, understanding the personal self, communications, interpersonal negotiations, goal setting, managing innovation and change, handling conflict and anger, performance evaluation, counselling and feedback, and management attitudes needed for success.

Significant amounts of classroom time will be devoted to behaviour modelling exercises, role plays, case studies, and group discussions.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: MGMT 2303.03 and MGMT 2304.03

CROSS-LISTING: COMM 3309.03

**MGMT 3320.03: Organizational Theory.**

In this course we will examine how organizations function, how the environment in which they operate affects them, and how organizational design and change strategies can increase their effectiveness. The objective of the course is to provide students with conceptual skills to understand organizations and practical skills to influence organizational behavior.

PREREQUISITE: MGMT 2303.03, MGMT 2304.03

EXCLUSION: COMM 4306.03

**MGMT 3501.03: Operations Management.**

This class introduces the student to some of the standard techniques used in managing operations in manufacturing, services, as well as not-for profit organizations. Topics include: inventory, supply chains, project management, quality and queueing. Cases are used to build general skills, illustrate the application of techniques and general approaches to managing operations in the public and private sector.

PREREQUISITE: MGMT 1000.03, MGMT 1001.03, MGMT 2401.03, MGMT 1501.03, MGMT 3201.03

EXCLUSION: COMM 3501.03


**MGMT 3601.03: Information in a Networked World.**

This course provides an introduction to the economic, political, and social dimensions of today's networked information economy. It considers the historical development of information and knowledge production, issues related to control versus the free flow of information, the ethical and legal aspects of information management, and organizational use of information management for storing and processing information, managing knowledge, and making decisions.

PREREQUISITE: MGMT 2601.03

**MGMT 3602.03: Professional Communication Skills.**

This course will introduce students to the broad range of written and oral communication skills needed by managers, including how to adapt a document or presentation for a particular audience and purpose, how to select a suitable method of organization, how to make good use of graphics, how to work effectively as part of a collaborative project team. Students will have the opportunity to practice their communication skills and techniques in pairs, small groups, and in formal presentations before the whole class.

PREREQUISITE:  Writing Requirement

EXCLUSION: (COMM 1701.03 and COMM 1702.03) or (LIBS 1002.03 and LIBS 1003.03) or (INFO 1002.03 and INFO 1003.03) or (MGMT 1002.03 and MGMT 1003.03)

RESTRICTION: Third year student

**MGMT 3603.03: Beyond Google.**

Contextually relevant information is essential to support decision making and strategic planning by individuals, groups and organizations. This course discusses the theory and practice of searching for information, from the level of needs assessment though to systematically scanning through electronic, print and human sources efficiently, effectively and ethically. The use of technologies to streamline search processes will be emphasized, as well as the behavioural, affective and cognitive aspects of human information behaviour.

PREREQUISITE: MGMT 2601.03

**MGMT 3620.03: User Centred Design.**

This course takes a human-centred perspective in an analysis of the design of the technologies we use, from out cell phones to web pages and the tools of everyday life. Over the course of the term, students will examine what makes good and bad design and will explore how to integrate ultimate use into the design process. Students will learn how to use simple prototyping techniques and how to evaluate interfaces.

FORMAT: Lectures/discussions/in-class activities

PREREQUISITE: MGMT 1601.03 or permission of instructor.

**MGMT 3701.03: Resource/Environmental Problem-Solving 1: Sustainable Ecosystems.**

The class introduces students to concepts and methods for analyzing ecosystem sustainability across a spectrum of intensities of use from full legal protection to intensive urban and industrial development. Students learn how the abiotic and biotic components of the environment interact, and how to integrate analyses of biodiversity, soil, air and water in assessing ecosystem sustainability. Climate change is explored as a major driver of ecosystem change. A range of management and policy mechanisms for protecting ecosystems and fostering their sustainability in the face of multiple stresses is explored.

PREREQUISITE: MGMT 1700.06 or ENVI 1100.06 or ENVS 1000.06 or MGMT 1702.03 and MGMT 2702.03

**MGMT 3702.03: Resource/Environmental Problem-Solving 2: Sustainable Industries.**

The class introduces students to concepts and methods for analyzing industrial sustainability based on both renewable (e.g., forests, fisheries, agriculture) and non-renewable (e.g., minerals, fossil fuels) resources. Students learn how natural resources are managed and used, and how sustainable businesses and innovative economic enterprises can be based on sustainable resource use. A range of management and policy mechanisms for ensuring resource sustainability is explored.

PREREQUISITE: MGMT 1700.06 or ENVI 1100.06 or ENVS 1000.06, or MGMT 1702.03 and MGMT 2702.03

**MGMT 3802.03: Public Policy.**

This class serves as an introduction to the public policy process with an emphasis on the interplay between policy and the four thematic areas of study and professional practice upon which the Faculty of Management has been formed – the private sector, the environment, the public sector and information technology. Students assume the role of a policy analyst during the course and pursue a policy problem of their choosing through the policy process that culminates in a policy project briefing and paper.

PREREQUISITE: MGMT 1000.03, MGMT 2801.03 and MGMT 2803.03 or equivalent political science courses with a focus on Canada, with the permission of the instructor

**MGMT 3810.03: Government Policy Toward Business.**

The focus of this course is twofold: first, how governments shape business behaviour through policy, regulation, state ownership, and other forms of intervention; and secondly, why collaboration is a growing reality enjoining public sector and private sector organizations and the implications for each sector and society as a whole. The course aims to understand the fundamental difference between the public interest and the private interest and how such differences are sorted out through contemporary governance systems involving public, private and civic actors. While the emphasis will be on the Canadian environment, a comparative perspective will also be used in light of many issues that are increasingly transnational in scope. Students will be able to develop a critical view of government intervention and grow a sense of when and where government action is warranted and when and where it is not.

FORMAT: Lecture/seminar

PREREQUISITE: MGMT 2801.03, MGMT 2803.03, ECON 1101.03, ECON 1102.03 or equivalent

### **MGMT 3902.03: Starting Lean.**

This course provides real world, hands-on learning on what it's like to actually start a scalable company or enterprise. This class is not about how to write a business plan. It's not an exercise on how smart you are in a classroom, or how well you use the research library to size markets. And the end result is not a PowerPoint slide deck for a VC presentation. This is a practical class - essentially lab, not a theory or 'book' class. You will be getting your hands dirty talking to customers, partners, competitors, as you encounter the chaos and uncertainty of how a startup actually works. You'll work in teams learning how to turn a great idea into a great company. You'll learn how to use a business model to brainstorm each part of a company and customer development to get out of the classroom to see whether anyone other than you would want/use your product. Each day will be a new adventure outside the classroom as you test each part of your business model than share you hard earned knowledge with the rest of the class.

PREREQUISITE: MGMT 3907.03

### **MGMT 3907.03: New Venture Creation Entrepreneurship.**

This class is about venturing - the process of creating new ventures in both the for-profit and not-for-profit environment. The issue of Social Entrepreneurship will receive specific attention. The target audience is students, in any discipline, who have the desire to venture. The course is designed to expose students to the issues, problems and challenges of creating new ventures and to provide students with the opportunity, within the framework of a formal class, to explore and develop venture ideas as they have been considering or wish to investigate. Experiential exercises enable the student to better understand themselves, their venture potential and the merits of their new venture ideas. A major field project requires the development of a detailed plan for the new venture.

PREREQUISITE: MGMT 1000.03 and MGMT 1001.03, or COMM 1010.03,

MGMT 2401.03 or permission from the Professor

CROSS-LISTING: COMM 3307.03

### **MGMT 4001.03: Strategy Formulation.**

This is a capstone course which draws upon all previous courses in the BMgmt program, with a focus on the strategic choices facing public and private organizations today. The course introduces students to different theoretical frameworks for the development of strategy. Moving through the analysis phase, by way of external and internal scans of the environment and of the organization, itself, students progress to the Formulation phase of Strategy design through lectures, presentations, case studies and class discussions. Knowledge will be consolidated through the preparation and presentation of a major project based on the experiences of a real organization. The course also examines strategic sustainability by drawing upon the four thematic areas of study and professional practice upon which the Faculty of Management has been formed - the private sector, the environment, the public sector and information technology.

PREREQUISITE: All required first, second, and third year core classes for the

Bachelor of Management program.

EXCLUSION: COMM 4351.03

### **MGMT 4002.03: Strategy Implementation.**

This class is a continuation of MGMT 4001.03 and involves an analysis of the major components of strategy implementation which contribute to effective organizational performance. This class includes case examples from all three sectors - public, private and not-for-profit, as well as from a variety of institutional settings. Assignments and a major project will provide students with research tools to understand the complexity and uncertainty provided by "real world" issues and constraints in the implementation of strategy.

PREREQUISITE: MGMT 4001.03

EXCLUSION: COMM 4352.03

### **MGMT 4050.03: Directed Reading and Research.**

This class offers the student the opportunity to explore in greater detail a particular area of interest. The content of the class is negotiated with the individual instructor involved. The student and instructor must develop a proposal, and submit it to the Programme Committee for approval. Guidelines are available from the Bachelor of Management Programme Administrator.

### **MGMT 4309.03: Strategic Leadership.**

The study of organizational leadership from the perspective of senior managers who steer their organization toward creating value in the long term. Strategic leadership practices are engaged via a case study approach supported by

contemporary readings on both organizational leadership and strategy. Students also consider emerging issues related to how senior organizational leaders create value in terms of entrepreneurship, innovation, markets, strategy, human resources, design, and sustainability.

PREREQUISITE: MGMT 3320.03

### **MGMT 4333.03: Project Management.**

This course provides an introduction to principles, concepts, and software applications as well as an actual experience of project management in a practical project team setting. The course also introduces theories and practices of project management as related to project objectives, lifecycle stages, and control variables such as time, cost, and scope. Students will gain insight into the realities of managing a project and will learn to adapt to varying financial, political and cultural challenges encountered within project teams and organizations.

PREREQUISITE: MGMT 3501.03

CROSS-LISTING: COMM 4523.03

### **MGMT 4601.03: Advanced Knowledge Management.**

A study of knowledge management that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, practical application, and critical thinking. Emerging issues in knowledge management are considered. Key issues in knowledge management are highlighted by means of case studies, projects, and discussion.

PREREQUISITE: MGMT 2601.03

### **MGMT 4701.03: Advanced Resource and Environmental Management 1.**

A study of resource and environmental management that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, practical application, and critical thinking. Emerging issues in resource and environmental management are considered. Tactical and strategic management issues are highlighted by means of case studies, projects, and discussion.

PREREQUISITE: MGMT 3701.03, MGMT 3702.03

### **MGMT 4702.03: Advanced Resource and Environmental Management 2.**

A study of resource and environmental management that integrates knowledge gained through previous coursework and experience and builds on that conceptual foundation through integrative analysis, practical application, and critical thinking. Emerging issues in resource and environmental management are considered. Tactical and strategic management issues are highlighted by means of case studies, projects, and discussion.

PREREQUISITE: MGMT 3701.03, MGMT 3702.03, MGMT 4701.03

### **MGMT 4895.03: Internship Prep Seminar.**

Upon acceptance into the Bachelor of Management Optional Internship Program (Winter Term), students register for MGMT 4895 for the Fall Term. This course is designed to introduce internship students to aspects of career development and preparation for their internship experience.

NOTE: This course carries zero credit hours. Details on the Bachelor of

Management Internship Program are available at

[www.dal.ca/mcs/internship](http://www.dal.ca/mcs/internship)

### **MGMT 4896.03: Management Internship.**

The optional internship will take place between academic year 3 and the final academic year. It is designed to offer opportunity to combine relevant job experience with classroom studies. Students can work with professionals in their chosen field which will increase employability after graduation.

NOTE: This is a Pass/Fail course with only a maximum of six credit hours to be applied to the Bachelor of Management degree.

PREREQUISITE: MGMT 3602.03

### **MGMT 4897.03: Management Internship.**

The optional internship will take place between academic year 3 and the final academic year. It is designed to offer opportunity to combine relevant job experience with classroom studies. Students can work with professionals in their chosen field which will increase employability after graduation.

NOTE: This is a Pass/Fail course with only a maximum of six credit hours to be applied to the Bachelor of Management degree.

PREREQUISITE: MGMT 3602.03

### **MGMT 4898.03: Management Internship.**

The optional internship will take place between academic year 3 and the final academic year. It is designed to offer opportunity to combine relevant job

experience with classroom studies. Students can work with professionals in their chosen field which will increase employability after graduation.

NOTE: This is a Pass/Fail course with only a maximum of six credit hours to be applied to the Bachelor of Management degree.

PREREQUISITE: MGMT 3602.03

### **MGMT 4899.03: Management Internship.**

The optional internship will take place between academic year 3 and the final academic year. It is designed to offer opportunity to combine relevant job experience with classroom studies. Students can work with professionals in their chosen field which will increase employability after graduation.

NOTE: This is a Pass/Fail course with only a maximum of six credit hours to be applied to the Bachelor of Management degree.

PREREQUISITE: MGMT 3602.03

### **MGMT 4901.03: Managing the Venturing Process.**

Managing the Venturing Process is a capstone course that explores the strategic elements required to venture successfully. Delivery is in a seminar format with students taking significant responsibility for their own learning. The constructs of venture stage, venture process and venture context are used to frame the discussion and a simulation (capstone) is used as a practical way for students to build competence in managing a large venture strategically.

PREREQUISITE: MGMT 3907.03 or COMM 3307.03 or permission of instructor

CROSS-LISTING: COMM 4301.03

# Faculty of Medicine

## Office of the Dean of Medicine

Location: Room C-205, Clinical Research Centre  
5849 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone (902) 494-6592  
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## Admissions and Student Affairs Office

Location: Room C-132, Lower Level, Clinical Research Centre  
Telephone: (902) 494-1874  
Fax: (902) 494-6369

## Academic and Administrative Staff

### Dean

Marrie, T., MD

### Senior Associate Dean

Smith, P., MD, Regional & Rural Medical Education

### Associate Deans

Delva, D., MD, Undergraduate Medical Education  
Gardner, M., MD, FRCP (c), FACC, Post-graduate Medical Education  
Gorsky, D., MBA, Operations & Policy  
Johnston, G. C., PhD (York), Research  
Steeves, J., MD, Dalhousie Medicine (New Brunswick)

### Assistant Deans

Brisseau, G., MD, Postgraduate Medical Education  
Brownstone, R., MD (Manitoba), Research (Clinical Departments)  
McMaster, C., PhD (Manitoba), Graduate & Postdoctoral Studies  
Reiman, A., MD, Research Dalhousie Medicine (New Brunswick)  
Sutton, E., MD (Dalhousie), Admission in Student Affairs

### Academic Director

Sinha, G., Director, Student Advisor Program

### Administrative Directors/Staff

Graham, S. D., BComm (SMU), Admissions and Student Affairs  
Holmes, B., BSc (Acadia), MEd (Dalhousie), Learning Research Centre  
MacDougall, E., CME  
MacNeil, C., CMA, Finance  
Malloy, M., MEd (MSVU), Undergraduate Medical Education  
Paterson, G. I., BSc (UBC), MSc (Dalhousie), ISP, Medical Informatics  
Pelham, R., DME  
Power, G., CMA, IT  
Power, L., BSc (Dalhousie), BEd, MEd (MSVU), Human Resources  
Ross, C., Research Coordinator  
Silver Smith, C., Postgraduate Medical Education  
Weeden, A., Cert. BA (UNBSJ), BA (Dalhousie), Administrative Services

### Dalhousie Medical Research Foundation

Edwards, A., Executive Director  
Teixeira, D., Administrative Assistant

### Faculty Council

Clark, A. J.  
Clarke, J. (Chair)  
Dupré, B.  
Finley, A.  
Hyndman, J.

Kablar, B.  
Karten, B.  
Lin, T. J.  
Nassar, B.  
Quraishi, A.  
Ridgway, N.

Ex officio: President, Dean, Associate and Assistant Deans, Faculty Secretary,  
President of Medical Students' Society, President of PARI-MP, and Graduate  
Student Society Representative.

## I. General Information

Dalhousie Medical School was organized in 1868, but medical teaching was carried out by the independent Halifax Medical College from 1875 to 1911, when the Faculty of Medicine was re-established by the University.

The Faculty provides a complete medical training leading to the degree of Doctor of Medicine (MD). Nationally accredited postgraduate training in family medicine and specialty training is provided in University-affiliated hospitals in Nova Scotia, Prince Edward Island and New Brunswick. Continuing Medical Education is provided to the practitioners of the three Maritime Provinces.

The Faculty is fully accredited by the Liaison Committee on Medical Education and the Committee on Accreditation of Canadian Medical Schools.

The Medical School has strong research programs in basic biomedical sciences, clinical sciences, population health and medical education.

### A. Mission Statement

Serving Maritime Canada, the Faculty of Medicine enables excellence in health care through our medical education and research programs in partnership with government, health authorities and health care providers.

# Anatomy and Neurobiology

Location: Department of Medical Neurosciences  
Sir Charles Tupper Medical Building  
12th, 13th, and 14th Floors  
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## Dean

Marrie, T., MD

## Dr. D.G.J. Campbell Professor and Head of Department

Leslie, R. A., BSc (Brock), PhD (Cambridge)

## Professors

Baldrige, W. H., BSc (Toronto), PhD (McMaster)  
Bance, M., MSc, BSc, M.B., Ch.B., F.R.C.S. (c) (Manchester)  
Brownstone, R. M., BSc, MD, PhD (Manitoba), FRCS (c)  
Clarke, D. B., MDCM, PhD, FRCSC (McGill)  
Currie, R. W., BSA, MSc, PhD (Man)  
Darvesh, S. MD (Dalhousie), PhD (UNB)  
Leslie, R. A., BSc (Brock), PhD (Cambridge)  
Mendez, I., MD, PhD, FRCSC (Western)  
Morris, S., MSc, FRCSC, MD (Ottawa)  
Neumann, P. E., BA, MD (Brown)  
Rafuse, V. F., BSc (Acadia), PhD (Alberta)  
Rutherford, J. G., BA (Cornell), MS (Syracuse), PhD (SUNY), Post retirement appointment  
Semba K., BEd, MA (Tokyo), PhD (Rutgers), Graduate Studies Coordinator  
Wassersug, R. J., BSc (Tufts), PhD (Chicago)

## Associate Professors

Allen, G. V., BSc, PhD (Dalhousie)  
D'Arcy, R., BSc (Victoria), MSc, PhD (Dalhousie)  
Kablar, B., MD, PhD (Zagreb, PISA)  
Perrot, T. S., BSc, PhD (Western)  
Schmidt, M., BSc (Toronto), MD (Toronto), FRCPC (UPEI)  
Sinha, G., MBBS (Banaras)  
Smith, F. M., BSc, MSc, PhD (UBC)

## Assistant Professors

Awatramani, G., BSc (Rochester), PhD (NY at Buffalo)  
Hajek, T., MD, PhD (Prague)  
Iulianella, A., BSc (McGill), PhD (Montreal)  
Marsh, D. R. BSc (Guelph), MSc (Guelph), PhD (Alberta)  
Rot, I., BSc, MSc (Belgrade), PhD (Dalhousie)  
Zhang, Y., BSc, MSc (Beijing), PhD (Cornell)

The Department of Medical Neurosciences provides facilities for advanced study and research in Neuroscience, Histology, Embryology, Cell Biology, Neuroendocrinology and Evolutionary Biology.

The goals of the graduate program are to provide in-depth research training in a particular aspect of anatomy, neurobiology or a related field, and to introduce the student to methods of teaching anatomy.

## I. Class Descriptions

### ANAT 1010.03: Basic Human Anatomy.

This class is offered by the Department of Anatomy and Neurobiology primarily to students in the Schools of Nursing (Section 01). A limited number of seats are available for Special Health Professions, Arts and Science, or Non-Degree

students. Note that this class is also offered by DISTANCE EDUCATION (ANAT: 1010.03, Section 02) during the Regular Term (Fall or Winter). Upon successful completion of the class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. This class uses an online Virtual Anatomy Laboratory.

INSTRUCTOR(S): G.V. Allen

FORMAT: Lecture: 3 hours

RESTRICTION: Section 01 is restricted to Nursing students and a limited number of seats are available for Special Health Professions, Arts & Science, or Non-Degree students.

### ANAT 1020.03: Basic Human Anatomy.

This class is offered by the Department of Anatomy and Neurobiology primarily to student in Recreation, Physical and Health Education and Kinesiology. A limited number of seats are available for Special Health Professions, Arts & Science, or Non-Degree students. Note that this class is also offered by DISTANCE EDUCATION (ANAT 1010.03, Section 02) during the Regular Term (Fall or Winter). Upon successful completion of this class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. This class uses an online Virtual Anatomy Laboratory.

NOTE: This class is NOT offered during the summer term.

INSTRUCTOR(S): G.V. Allen

FORMAT: Lecture 3 hours

RESTRICTION: Restricted to student in Recreation, Physical and Health Education and Kinesiology. A limited number of seats are available for Special Health Professions, Arts & Science, or Non-Degree students.

### ANAT 1040.03: Basic Human Anatomy for Pharmacy Students.

This class is offered by the Department of Anatomy and Neurobiology to students in the College of Pharmacy. Upon successful completion of the class, the student will be able to explain and describe, at a basic level, the gross anatomy and histology of the human body. There are no formal laboratory sessions.

INSTRUCTOR(S): D. Marsh

FORMAT: Lecture 3 hours, tutorial 6 hours. 4 weeks

RESTRICTION: Restricted to Pharmacy students

### ANAT 2160.03: Introduction to Human Histology.

Histology is the study of the structure of cells, tissue and organ systems, and utilized information derived from both light and electron microscopy. This class complements studies in anatomy, cell biology, physiology, and biochemistry, broadening the understanding of how organisms function.

INSTRUCTOR(S): F. Smith (Dept. of Anatomy and Neurobiology)

FORMAT: Lecture 2 hours, lab 2 hours

PREREQUISITE: BIOL 2020.03 or permission of instructor

CROSS-LISTING: BIOL 3430.03

### ANAT 3421.03: Comparative Vertebrate Histology.

An advanced histology class surveying the whole range of vertebrate tissues and organs. The material is approached from a comparative perspective, considering tissue and organ histology throughout the major vertebrate classes.

INSTRUCTOR(S): F.M. Smith (Dept. of Anatomy and Neurobiology)

FORMAT: Lecture 2 hours, lab 2 hours

PREREQUISITE: BIOL 3430.03 or ANAT 2160.03 or equivalent

CROSS-LISTING: BIOL 3421.03

# Pharmacology

Location: Sir Charles Tupper Medical Building  
5850 College Street, 6B3, 6th Floor  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3435  
Fax: (902) 494-1388

## Dean

Marrie, T., MD

## Professors Emeriti

Gray, J. D., BSc, MD (Alta), FRCP(c)  
Renton, K. W., BSc (Sir Geo Wms), PhD (McGill)  
Robertson, H. A., BA, MSc (Western), PhD (Cantab)  
Ruedy, J., MDCM (Queen's), FRCP(c), FACP  
Vohra, M. M., BPhM, MPhM, PhD (Banaras)  
White, T. D., BSc, MSc (UWO), PhD (Bristol)

## Professor and Head of Department

McMaster, C. R., BSc (Hons), PhD (Manitoba)

## Professors

Denovan-Wright, E. M., BSc, PhD (Dalhousie)  
Howlett, S. E., BSc (Concordia), MSc, PhD (Memorial)  
Kelly, M. E. M., BSc, PhD (Southampton)  
Robertson, G. S., BSc, PhD (Dalhousie)  
Sawynok, J., BSc, MSc (Melb), PhD (Queen's)  
Sinal, C., BSc, (McMaster), PhD (Western)

## Associate Professors

Dupré, D. J., BSc, PhD (Sherbrooke)  
Fawcett, J., BSc, MSc, MSc (T) (McMaster), PhD (McGill)  
McDougall, J. J., BSc (Hons), PhD (Glasgow U Scotland)  
Pasumarthi, K. B. S., DVM (India), PhD (Manitoba)

## Assistant Professors

Brunt, K. R., BSc Hons (Saskatchewan), PhD (Queen's)  
Pelis, R., BSc, MSc (U of Massachusetts), PhD (U of Connecticut)

## Cross Appointments

Acott, P., Bc (UNB), MD (Dalhousie) Major Appointment in Pediatrics  
Gajewski, J. B., MD (Poznan), FRCS(C), Urology, Major Appointment in Department of Urology  
Goralski, K., BSc, PhD (Manitoba), Major Appointment in College of Pharmacy  
Grandy, S. A., BScK, MSc, PhD (Dalhousie) Major appointment in School of Health and Human Performance  
Hall, R. I., BSc Pharm, MD (Dalhousie), FRCP (C), FCC, Major Appointment in Department of Anesthesia  
Hung, O. R., BSc Pharm, MD (Dalhousie) FRCP (C), Major Appointment in Department of Anesthesia  
Lehmann, C., MD (Humboldt U Berlin), Major Appointment in Anesthesia  
Lynch, M. E., BSc, MD (Dalhousie), FRCP, Major Appointment in Department of Psychiatry  
MacRae, T. H., BSc Biol (Mt. A), MSc, PhD (Windsor), Major Appointment in Pediatrics  
Pohlmann-Eden, B., MD, PhD (U of Heidelberg, Germany), Major Appointment in Neurology  
Pollak, P. T., MD, PhD (Western Ontario), Major Appointment in Pharmacology and Cardiac Services, U of Calgary  
Rupasinghe, H. P. V., BSc (U of Peradeniya, Sri Lanka), MSc (Iowa State U., USA), PhD (Guelph), Major Appointment Department of Environmental Sciences, Nova Scotia Agricultural College  
Rusak, B., BA (Toronto), PhD (Berkeley), Major Appointments in Departments of Psychiatry and Psychology

## I. Introduction

Pharmacology is the study of the actions and fates of drugs in biological systems. Studies of the interaction of drugs with their receptors and the elucidation of the cellular mechanisms underlying the resulting responses are central to Pharmacology. It is also important to understand how drugs are handled in the body, why they produce adverse effects, and how they interact with each other. In addition, scientists often use drugs as tools to determine the basic mechanisms that underlie both normal and pathological conditions in biology. A solid understanding of the principles of Pharmacology is essential for any scientist who wishes to use drugs as tools properly. The experimental approaches used in Pharmacology are varied, ranging from bioassay, electrophysiology, chemical and biochemical analyses to molecular biology.

## II. Degree Programs

Students intending to pursue graduate training in Pharmacology are encouraged to study pharmacology at the undergraduate level. In addition, a solid background in pharmacology can open the door to employment in numerous sectors, most notably the pharmaceutical industry. The Department of Pharmacology does not offer an honours pharmacology degree program as such. However, it does provide classes that may be taken for credit within various other honours degree programs, including Biology, Biochemistry, Psychology (Neurosciences) and Microbiology & Immunology. In addition, students can conduct honours thesis research projects in the laboratories of Pharmacology faculty. Finally, undergraduate students may, with permission of their home department and the class instructor, take certain graduate specialty classes which are offered in the Department of Pharmacology.

## III. Class Descriptions

### BIOL 4404.03: Introduction to Pharmacology I.

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems is covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR: M.E.M. Kelly

FORMAT: Lecture 3 hours

PREREQUISITE: This class is restricted to third or fourth year students, or graduate students. Other students may be admitted with permission of the class coordinator. A previous class in biochemistry and in physiology is recommended. Extra reading will be required of students without these classes.

CROSS-LISTING: PHAC 5406.03, BIOC 4804.03, and NESC 4374.03

### BIOL 4407.03: Introduction to Pharmacology II.

This class is intended to cover specific aspects of drug action not covered in BIOL 4404.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, and immunopharmacology, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, and asthma.

COORDINATOR: D. Dupré

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 4404.03 (with a grade of B or better)

CROSS-LISTING PHAC 5409.03, BIOC 4806.03, and NESC 4376.03

EXCLUSION: BIOL 4405.03

# Physiology and Biophysics

Location: Sir Charles Tupper Medical Building, 3rd Floor  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3517  
Fax: (902) 494-1685

## Dean

Marrie, T., MD

## Head of Department

Morgunov, N., MSc, PhD

## Undergraduate Student Advisor

Penney, C., BSc, PhD (Dalhousie)

## Professors

Barnes, S. A., PhD (Berkeley)  
Brown, R. E., BSc (Victoria), MA, PhD (Dalhousie), Major appointment - Dept. of Psychology  
Chauhan, B., PhD (Wales), Major appointment - Dept. of Ophthalmology  
Croll, R. P., BSc (Tufts), PhD (McGill)  
Fine, A., AB (Harvard), VDM, PhD (Penn)  
French, A. S., MSc, PhD (Essex)  
Henzler, D., MD (Hannover), PhD (Aachen) - Dept. of Anesthesia  
Linsdell, P., BSc (London), PhD (Leicester). Undergraduate Coordinator  
McDonald, T. F., BSc (Alta), PhD (Dalhousie), DIC (Imperial College)  
Meinertzhagen, I. A., BSc (Aberdeen), PhD (St. Andrews), Major appointment - Dept. of Psychology  
Murphy, P. R., MSc, PhD (Dalhousie)  
Schmidt, M., MD (Munich), Major appointment - Dept. of Anesthesia  
Torkkeli, P. H., BSc, MSc, LcSc (Oulu), PhD (Alberta)

## Associate Professors

Carrey, N., MD (Toronto), Major appointment - Dept. of Psychiatry  
Chappe, V., Licence Maîtrise (Université de la Méditerranée-Marseille), Diplôme d'Etudes Approfondies, PhD (Université de Provence-Marseille, France)  
Cowley, E. A., BSc (London), PhD (Leicester)  
Krueger, S., PhD (Zurich)  
Morgunov, N., BSc, MSc, PhD (Toronto)  
Murphy, M. G., BSc, MSc, PhD (Dalhousie)  
O'Blens, S., BSc (Mt. A), MSc (Toronto), MD (Dalhousie), FRCS (C), Major appointment - Dept. of Surgery  
Tremblay, F., BSc, PhD (Montreal), Major appointment - Dept. of Ophthalmology  
Wang, J., PhD (State Univ. of NY), Major appointment - School of Human Communication Disorders

## Assistant Professors

Anini, Y., BSc (Agadir), MSc, PhD (Pierre & Marie Curie University, France), Graduate Student Coordinator  
Chen, R., BSc, MD (Dalhousie), FRCP (C), Major appointment - Dept. of Pediatrics  
Dong, X., PhD (University of Science and Technology of China)  
Li, A., BSc (UBC), PhD (Dalhousie), Major appointment - Dept. of Medicine  
Pavlov, E., MSc (Moscow State University), PhD (Institut. of Theor. & Exp. Biophysics, Russia)  
Quinn, T. A., BSc (McGill), MSc, MPhil, PhD (Columbia)  
Rose, R., BSc, MSc, PhD (Calgary)  
Sapp, J. L., BSc (Toronto), BSc Med, MD (Dalhousie), FRCP(C), Major appointment - Dept. of Medicine

## Senior Instructor

Penney, C., BSc, PhD (Dalhousie)

## I. Introduction

The Department of Physiology and Biophysics offers a wide range of undergraduate classes in addition to those restricted to students in the faculties of Medicine and Dentistry. Students who have previously taken biology, chemistry, physics will be best equipped to study physiology.

The classes listed below are aimed at providing the student with an understanding of the functioning of the human body. The Distance Education class 1000X/Y.06 is open to all students. PHYL 2030 or its component parts 2031.03 or 2032.03 is the recommended prerequisite for science students interested in taking higher level physiology classes. Students wishing to enrol in other specialized classes require permission from the Course Director or Department Head.

## II. Class Descriptions

### PHYL 1000X/Y.06: Human Physiology.

A full-credit Distance Education class equivalent to PHYL 1010X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. The class is based on a selected textbook and is supported by extensive blackboard content including a step-by-step guide, learning objectives, assignments, and virtual laboratories. The class is normally given in the Regular session (Sept - Apr), as well as in the Summer session (May - June, PHYL 1000). Distance Education classes have an additional fee over and above the listed tuition fees.

DIRECTOR: C. Penney

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

### PHYL 1010X/Y.06: Human Physiology.

This is a full-credit introductory human physiology class equivalent to PHYL 1000X/Y.06. The functions of body organs and body systems, as well as integrative functions of the whole organism are studied. This course is intended primarily for students in the Health Professions.

DIRECTOR: C. Penney

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. This course cannot be used as a prerequisite course for 3rd and 4th year physiology courses, nor as a co-requisite for PHYL 2570.03 (Cellular Neurophysiology).

FORMAT: Lectures 3 hours/weekly assignments and readings/virtual labs, and BLS

### PHYL 1400.06: Human Physiology.

This course is designed to give Pharmacy students a broad understanding of normal human physiology using pathophysiologic scenarios. Selected topics in physiology and biophysics will be presented in tutorials as case studies and in lectures. The central themes include: respiratory, endocrine/reproductive, gastrointestinal, neuromuscular, nervous system, renal and cardiovascular. Students will be provided with means for self-evaluation throughout the unit. Evaluation will be based on tutorial performance as well as mid- and end-of-unit examinations. This class is only for Pharmacy students.

DIRECTOR: M. Murphy and other staff members

FORMAT: A 7-week comprehensive unit with 6 hours tutorial and 4 hours lecture per week

PREREQUISITE: ANAT 1040.03

### PHYL 2031.03: Human Physiology A.

This is a survey course outlining the principles of human physiology. Function of organs and body systems is presented in lectures and laboratory work. Emphasis is placed on integration of function in the human body. In this term, the following topics are covered: cell and muscle physiology, neurophysiology and special senses, and endocrinology and reproductive physiology. This is a prerequisite for 3rd and 4th year physiology courses.

### PHYL 2032.03: Human Physiology B.

This is a survey course outlining the principles of human physiology. function of organs and body systems is presented in lectures and laboratory work. Emphasis is placed on integration of function in the human body. In this term, the following topics are covered: respiratory physiology, cardiovascular physiology, renal physiology and gastrointestinal physiology. This is a prerequisite course for 3rd and 4th year physiology courses.

**PHYL 2570.03: Cellular Neurophysiology.**

This course provides an introduction to the function of the nerve cells of the brain, which forms the basis for explaining features of brain function in terms of activity of individual cells and their membrane properties, as well as small networks of neurons. The course is designed for all students wishing to take more advanced courses in, or to major in, Neuroscience. Although the course covers topics of neuroscience at all levels, the content is directed towards cellular neuroscience; detailed coverage of the strictly developmental systems or molecular levels of neuroscience is provided in other courses.

DIRECTOR(S): S. Adamo and S. Barnes

FORMAT: Lecture

PREREQUISITE: PSYO 2470.03 or NESC 2470.03 or PHYL 2031.03

CROSS-LISTING: NESC 2570.03, PSYO 2570.03

CO-REQUISITE: PHYL 2030.06, or permission of the class director

**PHYL 3120.03: Exercise Physiology in Health and Disease.**

The function and dysfunction of body organ systems are reviewed, and the short- and long-term responses of these systems to physical exercise are analyzed.

Factors affecting physical performance are considered, and the preventive and therapeutic use of exercise for a wide range of clinical conditions is examined.

DIRECTOR: T.F. McDonald

FORMAT: Lecture/tutorial: average 4 hours per week

PREREQUISITE: PHYL 2030.06 or permission of the class director

**PHYL 3320.03: Human Cell Physiology.**

Events at the cellular and molecular level determine the activities of tissues, organs, and systems. This course examines key physiological principles at the cellular level, and uses this information to develop understanding of important body functions. Lectures focus on signaling within individual cells, membrane transport, electrical excitability and electrical signaling, communication between cells, muscle contractility, and epithelial transport.

DIRECTOR: TBA

FORMAT: Lectures 3 hours

PREREQUISITE: PHYL 2030.06 or 2031.03 or permission of course director

**PHYL 3420.03: Sensory Physiology.**

This course will describe the physiological and biophysical basis of human sensory systems including vision, audition, vestibular, olfaction, gustation, and somatosensory (skin and proprioception). Emphasis will be on the transduction of physical stimuli and the early neural processing that occurs in sensory cells and immediately associated tissues.

DIRECTOR: S. Barnes and guest lecturers

FORMAT: Seminar 2 hours

PREREQUISITE: NESC 2470 or PHYL/NESC 2570 or equivalents

**PHYL 3520.03: Core Concepts in Medical Physiology.**

Through didactic (lectures) and problem-solving (tutorial) sessions, students will gain a deeper understanding of the functions of various organ system physiologies. In addition, the integration of a number of organ system functions will also be discussed. Where appropriate, the physiology of disease processes will underscore the consequences of a malfunction of a physiological process.

Organ systems covered include cardiovascular, renal, respiratory and gastrointestinal. A firm understanding of physiological principles is essential for any student contemplating a career in the health professions.

DIRECTOR: N.S. Morgunov

FORMAT: Lectures/tutorial 4 hours per week

PREREQUISITE: PHYL 2030.06, PHYL 2032.03 or permission of course director

**PHYL 4000.03: Current Advances in Synaptic Function and Plasticity.**

Key recent research studies in cellular and system neurophysiology are presented and discussed. Emphasis is placed on synaptic function, and plasticity, excitability, dendritic integration, neural networks and relevant advances in experimental methods. Newly published papers within these areas are reviewed weekly, followed by a more extensive critique of two publications.

INSTRUCTOR(S): S. Krueger, A. Fine

FORMAT: Seminar 2 hours

PREREQUISITE: NESC 2570/PHYL 2570 or permission of course directors

CROSS-LISTING: NESC 4185.03

**PHYL 4324.03: Endocrine Physiology.**

This class is designed to provide intermediate and advanced undergraduates with a basic understanding of the function of the endocrine system. The class will

progress from a consideration of basic concepts and mechanisms to the physiological function of specific endocrine systems. Interactions between organ systems will be emphasized.

DIRECTOR: P.R. Murphy

PREREQUISITE: PHYL 3320.03 or permission of the class director

**PHYL 4328X/Y.03: Directed Project in Physiology.**

This class allows the advanced undergraduate student to pursue more specialized with student interest and faculty expertise. A student wishing to take this class must find a faculty member who is prepared to supervise a directed project. Before registering for this class, a student must provide the Course Director with a letter from the faculty member describing the project and agreeing to serve as supervisor. Class approval will not be given until this is done.

DIRECTOR: P. Linsdell

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: PHYL 2030.06 and permission of the class director

**PHYL 4680.03: Cardiovascular Physiology.**

This class provides an overview of key principles of cardiovascular physiology. Topics include cardiac anatomy/ultrastructure, cardiac pump-function, cardiac electrophysiology, excitation-contraction coupling, cardiac mechanics, cardiac energy metabolism and regulation of the vasculature. Cardiac diseases will be addressed.

INSTRUCTOR(S): R.A. Rose

FORMAT: Lecture 3 hours, week

PREREQUISITE: One of PHYL 2030 or PHYL 3320 or PHYL 3520 or permission of the course director

EXCLUSION: PHYL 4326



# Faculty of Science

Location: Life Sciences Centre (Biology)  
8th Floor, Room 827  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2373  
Fax: (902) 494-1123  
Email: [science@dal.ca](mailto:science@dal.ca)  
Website: <http://www.dal.ca/science>

## Dean

Moore, C., BA (Hons) (Cambridge), PhD (Cambridge), Professor (Psychology)

## Associate Dean (Administration)

Dasgupta, S., PhD (Rochester), Professor (Economics)

## Associate Dean (Academic)

Walde, S., PhD (Calgary), Professor (Biology)

## Assistant Dean (Research)

Moore, R. M., BA (Oxon), PhD (Southampton) (sabbatical)

## Assistant Dean (Student Affairs)

Beauchamp, C., MSc (Memorial), BEd (Dalhousie), Senior Instructor (Biology)

## Director of Finance, Research & Development

Jackson, D., BSc, MSc, PhD (Dalhousie)  
Telephone: (902) 494-2713

## Finance Coordinator

Hanna-Shea, D.  
Telephone: (902) 494-1443

## Administrative Assistant

Wells, J., BBA (MSVU)  
Telephone: (902) 494-3540

## Administrative Secretary

Wood, Danielle, BSc (Dalhousie)  
Telephone: (902) 494-2373  
White, Jackie  
Telephone: (902) 494-2765

## Alumni and Donor Relations Officer

MacIvor, Dawna  
Telephone: (902) 494-8443

## Development Officer

Tracy, Shawn, BSc (Dalhousie)  
Telephone: (902) 494-3545

## I. Introduction

Dalhousie's Faculty of Science, the primary centre in the region for science education and research, is part of the College of Arts and Science and consists of 10 departments and three programs. The principal mission of the Faculty is the discovery, organization, dissemination and preservation of knowledge and understanding of the natural world. The Faculty is dedicated to excellence in the pursuit of this mission. Students in the Faculty of Science develop a capacity for inquiry, logical thinking and analysis; cultivate an ability to communicate with precision and style; and acquire skills and attitudes for lifelong learning.

Undergraduate students in the Faculty of Science normally develop these abilities by concentrating their studies in one or more of the following areas: Biochemistry & Molecular Biology, Biology, Chemistry, Earth Sciences, Economics, Environmental Science, Marine Biology, Mathematics, Meteorology,

Microbiology & Immunology, Neuroscience, Ocean Sciences, Physics and Atmospheric Science, Psychology, and Statistics. It is possible to combine studies in many of these areas with minor programs in other areas of science or in areas outside the main faculty (see Minor Programs, page 134) or with a Co-op Education in Science option. (This requires work term opportunities.) Details concerning particular programs of study are found in the departmental entries.

## II. Departments and Programs of the Faculty of Science

### Departments:

Biochemistry & Molecular Biology\* (also in the Faculty of Medicine), Biology\*, Chemistry\*, Earth Sciences\*, Economics\*, Mathematics and Statistics\*, Microbiology & Immunology\* (also in the Faculty of Medicine), Oceanography, Physics and Atmospheric Science\*, and Psychology

### Programs:

Environmental Science\*, Marine Biology\*, Neuroscience

\* Co-op Option available.

# Biochemistry & Molecular Biology

Location: Sir Charles Tupper Medical Building, 9th Floor  
5850 College Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-6436  
Fax: (902) 494-1355  
Website: <http://www.biochem.dal.ca>

## Dean

Moore, C., BA (Hons) (Cambridge), PhD (Cambridge), Professor (Psychology)

## Head of Department

Bearne, S. L.

## Program Advisors

Undergraduate inquiries: [Advisor@webmail.biochem.dal.ca](mailto:Advisor@webmail.biochem.dal.ca)

Dobson, M., Undergraduate Coordinator  
Bigelow, B.  
Briggs, P.  
Byers, D.  
McLeod, R., Co-op Academic Advisor  
Too, C.K.L.

Graduate inquiries: [roisin.mcdevitt@dal.ca](mailto:roisin.mcdevitt@dal.ca)  
Archibald, J., Graduate Coordinator

## Professors Emeriti

Doolittle, W. F., AB (Harv), PhD (Stan)  
Helleiner, C. W., BA, PhD (Toronto)  
Gray, M. W., BSc, PhD (Alta)

## Professors

Archibald, J. M., BSc, PhD (Dalhousie)  
Bearne, S. L., BSc (Acadia), PhD (Toronto), MD CM (McGill) - cross appointment in Chemistry  
Byers, D. M., BSc, MSc (Dalhousie), PhD (Alta) - cross appointment in Pediatrics  
Dobson, M. J., BSc (Dalhousie), DPhil (Oxon)  
Doolittle, W. F., AB (Harv), PhD (Stan) - Post-Retirement  
Duncan, R., BSc (Guelph), MSc (Queen's), PhD (Guelph) - major appointment in Microbiology & Immunology  
Gray, M. W., BSc, PhD (Alta) - Post-Retirement  
Liu, P. X.-Q., BSc (Wuhan), PhD (Cornell)  
McLeod, R., BSc, PhD (UBC)  
McMaster, C. R., BSc, PhD (Man) - major appointment in Pharmacology  
Ridgway, N. D., BSc, MSc (Dalhousie), PhD (UBC) - joint appointment with Pediatrics  
Ro, H. -S., BSc, PhD (McMaster)  
Roger, A. J., BSc (UBC), PhD (Dalhousie)  
Singer, R. A., AB (Princeton), PhD (Harv) - cross appointment in Medicine  
Too, C. K. L., BSc, MSc (Malaya), PhD (Hawaii) - cross appointment in Obstetrics & Gynaecology  
Waisman, D. M., BSc (Brandon), PhD (Manitoba) - joint appointment in Pathology  
Wallace, C. J. A., BA, MA, DPhil (Oxon)

## Associate Professors

Blouin, C., BSc, (Laval), PhD (Dalhousie) - joint appointment with Computer Science  
Dellaire, G., BSc (UBC), PhD (McGill) - major appointment in Pathology  
Karten, B., MSc (Hamburg), PhD (Karl-Franzens, Austria)  
Marignani, P., BSc (Windsor), MSc (Western), PhD (McMaster) - cross appointment in Pathology

Rainey, J. K., BSc (Guelph), MSc, PhD (Toronto) - cross appointment in Chemistry  
Rosen, K. V., BSc, MSc, PhD (Moscow) - joint appointment with Pediatrics

## Assistant Professors

Pulinilkunnil, T., MSc (India), PhD (UBC)  
Riddell, D. C., BSc, PhD (Queen's) - major appointment in Pathology  
Slamovits, C., BSc, PhD (Buenos Aires, Argentina)  
Van der Spoel, A. C., MSc (Erasmus, The Netherlands), PhD (Utrecht, The Netherlands) - major appointment in Pediatrics

## Senior Instructor

Briggs, P., BSc (Acadia), BEd (Dalhousie), MEd. (MSVU)

## Adjunct Professors

Ewart, K. V., BSc (Moncton), PhD (Memorial), Senior Research Officer, NRC, Halifax  
Karakach, T., BSc (Kenya), MSc, PhD (Dalhousie), Research Officer, NRC, Halifax  
Syvitski, R., BSc, MSc (Thunder Bay), PhD (UBC), Research Officer, NRC, Halifax

## I. Introduction

Biochemistry is the study of biological function at the molecular level. Although biochemical processes follow the basic laws of physics and chemistry, living organisms, because of their complexity, operate on a set of distinct principles that are not found in simple isolated chemical systems. The goal of biochemistry is to elucidate these principles. The department offers an integrated series of classes that will provide students with an up-to-date view of modern biochemistry & molecular biology ranging from evolution of genomes to structure-function relationships in macromolecules to the dynamic aspects of metabolism. The core programs can be adapted to emphasize different biochemical specialties such as structural biology, metabolism, molecular biology and cell signaling. Students wishing to pursue advanced studies in Pharmacology or related sciences for which there is no undergraduate program can include classes in Physiology, Pharmacology and/or Pathology in their programs. Greater flexibility is available in combined degree programs of Biochemistry & Molecular Biology with another subject; most often with Chemistry, Microbiology, Biology, Neuroscience, Psychology or Environment, Sustainability and Society. Specific programs developed with the Department of Microbiology & Immunology provide coordinated studies of metabolism, enzymology and molecular biology with bacteriology, virology and immunology. These programs provide the foundation for molecular genetics, genetic engineering, biotechnology, biomedical research and medicine.

Laboratory Exercises: Some of the classes offered by the Department of Biochemistry & Molecular Biology include a laboratory component. The laboratory exercises provide an opportunity to develop laboratory skills, as well as to illustrate the theoretical principles taught in class. This process culminates in fourth year, with a supervised research project required for honours Biochemistry & Molecular Biology students. Although no exercise involves live animals, experiments may use materials derived from animal sources, as well as from plants and micro-organisms. Laboratory experiments will often be performed in groups, but writing of reports is expected to be an individual effort, meeting the guidelines on plagiarism set out in the University Regulations in the Calendar and the Department Policy on Plagiarism.

## II. Degree Programs

NOTE: Students interested in a Biochemistry & Molecular Biology degree should first read the Undergraduate handbook on the Department website that describes all of the programs available and the special requirements relating to them. Degree programs must be planned in consultation with a departmental advisor ([advisor@webmail.biochem.dal.ca](mailto:advisor@webmail.biochem.dal.ca))

Note that all Biochemistry classes have prerequisites.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

## A. BSc (20 credit) Honours in Biochemistry & Molecular Biology

This is a special concentrated Honours Program in which emphasis may be placed on different areas of biochemistry such as protein chemistry, metabolism or molecular genetics. Because Biochemistry and Chemistry are closely interwoven both conceptually and experimentally, the list of required classes includes both subjects. Additional chemistry classes beyond those required for the honours degree may be taken as electives. For entrance to BIOC 2300.03 and BIOC 2610.03, students require minimum grades of B- in BIOL 1010.03 and BIOL 1011.03 and CHEM 1011.03 and 1012.03 (or equivalents). Students should also note the minimum grade requirements specified in the prerequisites for all 3rd year and some fourth year Biochemistry & Molecular Biology classes. Honours students must meet the general degree requirements of the Faculty.

### Departmental Requirements

#### 1000 level

- CHEM 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
- BIOL 1010.03 and 1011.03 (or equivalent) - minimum passing grade B-
- MATH 1000.03 or 1215.03 and MATH 1010.03 or 1060.03
- or, in lieu of the above, SCIE 15XX

#### 2000 level

- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- CHEM 2201.03
- CHEM 2401.03 and 2402.03

#### 3000 level

- BIOC 3300.03
- BIOC 3400.03
- CHEM 3601.03 or one half credit in Biochemistry at the 3000 or 4000 level
- BIOC 3700.03

#### 4000 level

- BIOC 4604.03 and 4605.03
- One and a half credits from BIOC 40XX, 43XX, 44XX, 45XX, 47XX
- One additional credit in Biochemistry at the 4000 level

#### Other requirements

A pass is required in the Honours Qualifying examination. Students should also ensure that they have enrolled in any 2000 or 3000 level classes that are prerequisites for advanced classes they intend to take (see appropriate calendar entries).

## B. BSc or BA (20 credit) Combined Honours in Biochemistry and Another Subject

Biochemistry & Molecular Biology may be chosen along with one of Biology, Chemistry, Environmental Science, Mathematics, Microbiology, Physics, Psychology, or possibly another subject, for a Combined Honours Program.

### Departmental Requirements

#### 1000 level

- As specified in A except MATH 1000 and 1010 are required when combined with Chemistry

#### 2000 level

- BIOL 2020.03
- BIOL 2030.03
- CHEM 2401.03 and 2402.03
- BIOC 2300.03
- BIOC 2610.03

#### 3000 level

- BIOC 3300.03
- BIOC 3400.03
- BIOC 3700.03

#### 4000 level

- One credit from BIOC 40XX, 43XX, 44XX, 45XX, 47XX

Consult an Undergraduate Advisor for details of recommended classes of study.

## C. BSc or BA (20 credit) Major in Biochemistry & Molecular Biology

Please consult the Degree Requirements section II., for detailed information.

Although Dalhousie University does not require formal application for its 20 credit Major programs, this Department requires that all those registering with a view to completing such a degree must first consult with an Undergraduate Advisor from the Department of Biochemistry & Molecular Biology.

The department offers a four-year, 20 credit program of study leading to a BSc Major degree. The program, while not designed as a preparation for graduate study in Biochemistry & Molecular Biology, nevertheless introduces students to all main aspects of the subject, as well as meeting the general degree requirements of the Faculty. Students should also note the minimum grade requirements specified in the prerequisites for all third year and some fourth year Biochemistry classes.

### Departmental Requirements

#### 1000 level

- BIOL 1010.03 and 1011.03 (or equivalent) - minimum passing grade B-
- CHEM 1011.03 and 1012.03 (or equivalent) - minimum passing grade B-
- One full credit in mathematics
- or, in lieu of the above, SCIE 15XX

#### 2000 level

- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- CHEM 2201.03
- CHEM 2401.03 and 2402.03

#### 3000 level

- BIOC 3300.03
- BIOC 3400.03
- BIOC 3700.03

#### 4000 level

- Two full credits in Biochemistry at the 4000 level
- One half credit in BIOC 3XXX or 4XXX

## D. BSc or BA (20 credit) Double Major in Biochemistry & Molecular Biology and Another Subject

\*See notes in C, above.

The Department will approve the combination of Biochemistry with a wide variety of other fields of study, subject to confirmation by an Undergraduate Advisor from the Department of Biochemistry & Molecular Biology.

### Departmental Requirements

#### 1000 level

- as for Single Major, above

#### 2000 level

- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03
- BIOC 2610.03
- CHEM 2401.03 and 2402.03

#### 3000 level as for Single Major, above

#### 4000 level

- A minimum of one full credit in Biochemistry at the 4000 level.

## E. Co-operative Education in Biochemistry & Molecular Biology

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career-related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students should apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the "Co-operative Education in Science" section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

Admission to the Biochemistry Co-op program requires a GPA of at least 3.00 in first year classes. Continuance in the Biochemistry Co-op program and graduation with the Co-op designation requires that students maintain a GPA of 3.00 in the classes specified as departmental requirements.

Biochemistry Work - Study program:

Year	Fall	Winter	Summer
1	Acad	Acad	—
2	Acad	Acad	W1
3	Acad	Acad	W2
4	W3	Acad	W4 (optional)
5	Acad		

For further information, please see <http://www.sciencecoop.dal.ca>.

Co-op Academic Advisor in Biochemistry: Dr. McLeod  
Email: [roger.mcleod@dal.ca](mailto:roger.mcleod@dal.ca)

## F. Minor in Biochemistry & Molecular Biology

Departmental requirements:

- three full credits in advanced level BIOC classes

Note: Some non-BIOC classes such as BIOL 2020, BIOL 2030, CHEM 2401 and CHEM 2402 are required for Biochemistry & Molecular Biology degree programs. These non-BIOC classes cannot be counted as part of the three BIOC credits required for a minor.

## G. Minors and Other Programs

Minor programs allow students to develop subject specialities, especially ones taught outside their main Faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Biochemistry & Molecular Biology, minor programs are available in the following subject areas.

### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Environmental Studies (BA or BSc)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA only)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 134, as well as the particular subject area of the calendar.

## III. Class Descriptions

The Department also teaches students in Dentistry and Medicine; these classes are described in the appropriate sections of the Calendar.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

### BIOC 1040.06: Biological Chemistry and Metabolism for Students of Pharmacy.

The structures, significance, and metabolism of the main biologically important compounds are outlined in lectures, with some topics of particular interest studied further in the laboratory. Tutorials aim to develop students' ability to learn biochemistry on their own and in small groups.

INSTRUCTOR(S): D. Byers, P. Briggs

FORMAT: Lecture 4 hours, lab 3 hours, tutorial 6 hours, 7 weeks

CO-REQUISITE: CHEM 2442.03

RESTRICTION: This class is restricted to students in the BSc (Pharm) program.

### BIOC 1420.03: Introductory Biochemistry for Nursing Students.

Topics discussed include the structure, biosynthesis and functions of biologically important compounds, enzymes, control of metabolism, genetic engineering and nutrition. Medical aspects are stressed.

NOTE: This class cannot be used as a prerequisite for any other biochemistry class and is not normally accepted by the Faculties of Dentistry or Medicine in fulfilment of the requirement of a biochemistry class for admission.

INSTRUCTOR(S): P. Briggs

FORMAT: Lecture 3 hours, tutorial 2 hours

RESTRICTION: This class is restricted to students in the BScN and BHSc programs.

### BIOC 2300.03: Introduction to Biochemistry.

This class surveys basic topics and concepts of Biochemistry. The structures, properties and metabolic inter-relations of proteins, carbohydrates and lipids are considered together with an introduction to nutrition and metabolic control. Although mammalian examples predominate some consideration of special aspects of biochemistry of microbes and plants is included.

COORDINATOR: C. Wallace

NOTE: Students are advised to also take CHEM 2401.03 and 2402.03, or CHEM 2441.03. CHEM 2441 does not satisfy the prerequisite requirement for BIOC 3300.03 and BIOC 3700.03

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 1010.03 and 1011.03 (or equivalent), CHEM 1011.03 and 1012.03 (or equivalent), all with grades of B- or higher, or instructor's consent.

EXCLUSION: BIOC 2200.03

### BIOC 2610.03: Introductory Biochemistry Lab.

An introduction to fundamental techniques in Biochemistry through the exploration of the properties of essential biomolecules. This class is intended for students in Biochemistry and Molecular Biology and Microbiology Programs.

INSTRUCTOR(S): P. Briggs

FORMAT: Lab 3 hours

PREREQUISITE: BIOL 1010.03 and 1011.03 (or equivalent), CHEM 1011.03 and 1012.03 (or equivalent), all with grades of B- or higher, or instructor's consent.

EXCLUSION: BIOC 2200.03, BIOL 2010.03

CO-REQUISITE: BIOC 2300.03 and CHEM 2401.03 and CHEM 2402.03 or instructor's consent

### BIOC 3300.03: Intermediary Metabolism.

This class covers synthesis and catabolism of carbohydrates, lipids and some nitrogen compounds. Metabolic regulation is emphasized, including factors influencing the rate at which compounds flow through selected pathways. Compartmentalization of, inter-relationships between and environmental impact on metabolic pathways are considered. Laboratory exercises examine the techniques used to study metabolic pathways.

INSTRUCTOR(S): P. Briggs, N. Ridgway, C. Too, R. McLeod (Coordinator)

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOC 2300.03 and BIOC 2610.03 (both with grades of B- or higher) and BIOL 2020.03 and BIOL 2030.03 and CHEM 2401.03 and CHEM 2402.03, or instructor's consent

### BIOC 3400.03: Nucleic Acid Biochemistry and Molecular Biology.

This class focuses on the relationship of structure to function in RNA and DNA. Methods for studying the primary, secondary, and tertiary structures of nucleic acids are explored in lectures and in the laboratory. Topics covered include enzymic mechanisms for biosynthesis, rearrangement, degradation, and repair of nucleic acid molecules, and processes of replication, transcription, and translation. Nucleic acid biochemistry is emphasized as a basis for understanding storage and transfer of biological information.

INSTRUCTOR(S): P. Liu, C. Slamovits, P. Briggs, J. Archibald (Coordinator)

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2401.03 and CHEM 2402.03, or CHEM 2441.03;

BIOL 2020.03 and BIOL 2030.03 (both with grades of B- or higher); BIOC 2300.03; or instructor's consent

### BIOC 3620.03: Experiential Learning in Biochemistry and Molecular Biology.

This class is an outside the classroom learning experience in which the student works in a research laboratory an average of one day per week acquiring biochemistry or molecular biology knowledge and skills.

COORDINATOR: M. Dobson

NOTE: To register in this class, students must first find a faculty member from the Department of Biochemistry & Molecular Biology willing to supervise the work experience and sign a learning agreement with the class coordinator. Grading will be Pass/Fail.

FORMAT: A minimum of 72 hours for the term, representing at least 6-8 hours weekly, working in a research laboratory, an activity log and a final written report.

PREREQUISITE: BIOC 2300, BIOC 2610, BIOL 2020, BIOL 2030 (all with a grade of B- or higher), CHEM 2401 and CHEM 2402.

EXCLUSION: The following may not be used towards BIOC 3620: lab work that is part of another scheduled class at a learning institution, study that would qualify for Special Topics classes, co-op work terms, and paid work. Only one experiential learning class per degree is permitted. The class is only open to students registered in Biochemistry & Molecular Biology Degree programs, either Major or Honours, combined or concentrated. Students may not take BIOC 3620 concurrently with BIOC 4604 or 4605.

### BIOC 3700.03: Biomolecular Chemistry.

This class covers structural and functional properties of biomolecules, including the physical bases for their characterization, thermodynamic principles of protein folding and biomolecular interactions, and the kinetics and mechanisms of enzyme catalysis.

INSTRUCTOR(S): S. Bearne (Coordinator), J. Rainey

FORMAT: Lecture 3 hours, labs 3 hours

PREREQUISITE: BIOC 2300.03 and 2610.03 (both with a grade of B- or higher),

CHEM 2401.03 and 2402.03, or instructor's consent

EXCLUSION: BIOC 3200.03

### BIOC 4001.03: Special Topics in Biochemistry.

Students interested in topics not covered in formal classes may ask the department for special classes to meet their needs. An Undergraduate Advisor will assist students to ascertain if faculty expertise is available to direct reading and the preparation of papers and seminars in a particular subject area.

COORDINATOR(S): C. Too

PREREQUISITE: BIOC 3300.03, 3400.03, and 3700.03 (average of B or higher and consent of coordinator)

### BIOC 4010.03: Bioinformatics.

This class presents the theory and practice of bioinformatics. Topics include: rate of mutation, sequence alignment, database searching, phylogenetic analysis, bioinformatic tools for analyzing genes, genomes and proteins.

INSTRUCTOR(S): A. Roger (Coordinator), C. Blouin

FORMAT: Lecture 3 hours with some computer-based labs

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: BIOC 5010.03

### BIOC 4027.03: Molecular Mechanisms of Cancer.

The class focuses on the molecular mechanisms of cancer. Topics include: receptors and downstream signaling, oncogenes and tumor suppressors, cancer metastasis and angiogenesis, cell cycle control, and apoptosis.

INSTRUCTOR(S): P. Lee, D. Waisman

FORMAT: Lectures/student presentations/discussion

PREREQUISITE: Minimum grades of B+ in a 3000 level Biochemistry class and another 3000 level Biochemistry, Microbiology or Pathology class. Permission of instructor required

CROSS-LISTING: PATH 5027.03 and MICI 5027.03/4027.03

### BIOC 4302.03: Biochemistry of Lipids.

The biochemistry and metabolism of a variety of lipids is studied, especially of those, such as fatty acids, glycolipids, eicosanoids, steroids and phospholipids, with specialized physiological or lipid-second messenger functions. Intracellular and inter-tissue transport and regulatory processes are emphasized. The chemistry and physics of insoluble lipids in an aqueous environment are explored and problems in the interaction of lipids with soluble and insoluble enzymes are considered.

INSTRUCTOR(S): N. Ridgway (coordinator), A. Vanderspoel, B. Karten

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3300.03 and 3700.03

### BIOC 4305.03: Mechanisms of Signal Transduction.

The emphasis of this class is to introduce concepts and key mediators of signal transduction. Topics include protein kinases, tumour suppressors, oncogenes, G-protein coupled receptors, calcium signalling, lipids in signalling, integration of signalling cascades, cytoskeletal reorganization, cellular metastasis, apoptosis, anoikis, genomic stability, and stem cell biology.

INSTRUCTOR(S): P.A. Marignani (Coordinator), K. Rosen

FORMAT: Lecture 3 hours, oral presentations

PREREQUISITE: BIOC 3300.03, 3400.03, and 3700.03 or instructor's consent

EXCLUSION: BIOC 4301.03

### BIOC 4306.03: Nutritional Biochemistry.

Appropriate nutrition is essential for health and reflects the basic biochemistry of the organism. Changes in the human diet can impact health and disease. This class considers the principles of optimal nutrition in a biochemical context and the role of nutrition in disease etiology and treatment.

INSTRUCTOR(S): R. McLeod

FORMAT: Lectures/student presentations

PREREQUISITE: BIOC 3300.03, BIOC 3400.03, BIOC 3700.03 or instructor's permission

### BIOC 4403.03: Genes and Genomes.

This class discusses the organization of genes into genomes. It deals with (i) compartmentalization of genetic material in nuclear and organellar genomes, (ii) the structure, behaviour and origins of components of both nuclear and organellar genomes which are not genes (transposable and other repetitive elements, introns), (iii) genetic and physical methods for mapping genomes, and (iv) the significance of genetic organization and higher order chromosomal structure and function. The methodology and prospects of genomics are discussed at some length.

INSTRUCTOR(S): P. Liu

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: BIOC 5403.03, MICI 4403.03

### BIOC 4404.03: Gene Expression.

The different mechanisms for regulation of gene expression in bacterial and eukaryotic cells, and their viruses, are emphasized. Particular topics include genomic, transcriptional, and post-transcriptional modes of regulation.

INSTRUCTOR(S): R. Singer

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: BIOC 5404.03

### BIOC 4501.03: Medical Biotechnology I.

This class covers fundamental principles of biotechnology from a medical perspective. Topics discussed include: recombinant DNA technology, polymerase-chain reaction-based applications, DNA microarrays, immunochemical techniques and applications, production of transgenic organisms, potential applications for embryonic stem cell and nuclear transfer cloning, business and legal aspects of biotechnology.

INSTRUCTOR(S): M. Dobson

FORMAT: Lecture 3 hours, discussion, presentations

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: BIOL 5105.03, and BIOC 5501.03

### BIOC 4604.03: Research Project I.

This class requires original biochemical research in the laboratory of a faculty member, and requires the equivalent of at least one day per week to be spent in the laboratory. A report is submitted at the end of the term.

COORDINATOR(S): S. Bearne

NOTE: This class is intended to be taken in conjunction with BIOC 4605.03 and no credit can be given for one class without the other. The work undertaken in BIOC 4605.03 should be a continuation of that initiated in BIOC 4604.03 and hence the report submitted for BIOC 4605.03 may include data and analysis incorporated in the BIOC 4604.03 report. In exceptional cases, the research project can be done outside the Department of Biochemistry and Molecular Biology. Prior approval must then be obtained from the class coordinator.

FORMAT: Lab 1 day per week

PREREQUISITE: Permission of coordinator and a member of the Department who will serve as supervisor. At least a B average for BIOC 3300.03, 3400.03 and 3700.03.

### **BIOC 4605.03: Research Project II.**

This class requires original biochemical research in the laboratory of a faculty member, and requires the equivalent of at least one day per week to be spent in the laboratory. A report is submitted at the end of the term.

COORDINATOR(S): S. Bearne

NOTE: This class is intended to be taken in conjunction with BIOC 4604.03 and no credit can be given for one class without the other. The work undertaken in BIOC 4605.03 should be a continuation of that initiated in BIOC 4604.03 and hence the report submitted for BIOC 4605.03 may include data and analysis incorporated in the BIOC 4604.03 report. In exceptional cases the research project can be done outside the Department of Biochemistry & Molecular Biology. Prior approval must then be obtained from the class coordinator.

FORMAT: Lab 1 day per week

PREREQUISITE: BIOC 4604.03

### **BIOC 4700.03: Proteins.**

Our theme is the relationship between structure and function. The kinetic and thermodynamic determination of the protein fold is explored. Specific details of how form determines function in binding other molecules both small and large in membranes, and in energy transduction are provided. Protein evolution and turnover are examined.

NOTE: Some weeks, in addition to lectures, students will independently research and write about specialized topics suggested by the instructor and occasionally present these to a class in discussion group format.

INSTRUCTOR(S): C. Wallace

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3700; or (CHEM 3601 AND CHEM 2301 AND CHEM 2304), all with grades of B or higher or instructor's consent.

CROSS-LISTING: BIOC 5700.03

### **BIOC 4701.03: Enzymes.**

Fundamental principles of enzyme catalysis and its regulation are examined. Topics include enzyme kinetics, enzyme inhibition and inactivation, isotope effect measurements, site-directed mutagenesis, and the active site architecture and transition state stabilization of selected enzymes. Classic and current papers in the literature are reviewed and the experimental and conceptual approaches are critically appraised.

INSTRUCTOR(S): S. Bearne

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3700.03; or (CHEM 3601 AND CHEM 2301 AND CHEM 2304), all with grades of B or higher or instructor's consent.

CROSS-LISTING: BIOC 5701.03

### **BIOC 4702.03: Biophysical Characterization of Macromolecules.**

This class covers methods allowing determination of sub-molecular and atomic-level structure and dynamics of biomacromolecules in physiological settings (e.g. solution-state or lipid bilayers) including: fluorescence, electronic and vibrational circular dichroism and NMR spectroscopy; light vs. X-ray vs. neutron scattering; and, single molecule methods.

INSTRUCTOR(S): J. Rainey

FORMAT: Lecture 2.5 hours Seminar/tutorial 0.5 hours

PREREQUISITE: BIOC 3700.03; or (CHEM 3601 AND CHEM 2301 AND CHEM 2304), all with grades of B or higher or instructor's consent.

Recommended: PHYC 1280.03/1290.03 or 1300.06

CROSS-LISTING: BIOC 5702.03, CHEM 5602.03, CHEM 4602.03

### **BIOC 4804.03: Introduction to Pharmacology I.**

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) are considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various

body systems is covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms are also studied.

COORDINATOR(S): M.E.M. Kelly

FORMAT: Lecture 3 hours

PREREQUISITE: This course is restricted to third or fourth year students, or graduate students. Other students may be admitted with permission of the course coordinators. A previous class in biochemistry and in physiology is recommended. Extra reading will be required of students without these classes.

CROSS-LISTING: PHAC 5406.03, BIOL 4404.03, and NESC 4374.03

### **BIOC 4806.03: Introduction to Pharmacology II.**

This class covers specific aspects of drug action not covered in BIOC 4804.03.

The class includes: drug receptor signaling, ion channels, second messengers, G-proteins, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, asthma, and diseases of the thyroid, eye and gastrointestinal tract.

Special pharmacological topics including addition and drug abuse, treatment of Parkinson's disease, treatment of epilepsy and the use of stem cells in modern medicine are included.

COORDINATOR(S): D. Dupre

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL BIOL 4804.03 (with a grade of B or better)

CROSS-LISTING: PHAC 5409.03, BIOL 4407.03, and NESC 4376.03

EXCLUSION: BIOL 4405.03

### **BIOC 4813.03: Biochemistry of Clinical Disorders.**

This class is an introduction to the pathophysiology of disease. It provides the clinical and biochemical background to disease groups and system disorders and the laboratory approach to their diagnosis. Topics include cardiovascular, renal, gastrointestinal and hepatobiliary disorders, addiction to acid base, carbohydrate, lipid and amino acid disorders; endocrine and rheumatological diseases, as well as tumor markers and toxicology, blood and immune abnormalities.

FORMAT: Lecture and case discussion

PREREQUISITE: BIOC 3300.03 and BIOC 3400.03 and BIOC 3700.03 or consent of instructor

CROSS-LISTING: PATH 5013.03

EXCLUSION: BIOC 4811.03 and BIOC 4812.03

### **BIOC 4835.03: Human Genetics.**

For science students with special interest in human genetics. Topics include errors of metabolism, human development, transmission genetics, DNA structure, gene function, mutation and chromosomal alterations, population genetics, genetics of immunity and cancer, genetic technology in medicine, and ethical and social issues related to medical genetics.

COORDINATOR(S): W.L. Greer

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: BIOC 3400.03 or permission from instructor

CROSS-LISTING: BIOL 4035.03, 5035.03, PATH 5035.03

### **BIOC 8891.00: Co-op work term 1.**

### **BIOC 8892.00: Co-op work term 2.**

### **BIOC 8893.00: Co-op work term 3.**

### **BIOC 8894.00: Co-op work term 4.**

# Biology

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## Dean

Moore, C., BA (Hons) (Cambridge), PhD (Cambridge), Professor (Psychology)

## Chair

MacRae, T. H., MSc, PhD (Windsor)

## Biology Undergraduate Program Advisors

Bishop, T. (494-1696)  
Cooper, M. (494-8436)  
Gass, G. (494-8445)  
Gibson, L. (494-8817)  
McCarville, M. (494-7072) (Biology Co-op Academic Advisor)  
Staples, E. (494-2464)  
Van Dommelen, J. (494-1584)  
Welsh, E. (494-7110)

## Marine Biology 20 credit Major Program Advisors

Gass, G. (494-8445)  
Scheibling, R. (494-2296)  
Schmidt, A., (494-1638)

## Biology Honours Program Advisors

Crossin, G. (494-4258)  
McCarville, M. (434-2753) (Honours Co-op)  
Pohajdak, B. (494-1853)  
Wright, J. (494-6468)

## Marine Biology Honours Program Advisors

Herbinger, C. (494-1397) (Marine)  
McAllister-Irwin, N. (494-3818) (Marine Co-op)  
Pinder A. (494-3822) (Marine)

## Professors Emeriti

Hall, B. K., PhD, DSc (UNE), FRSC, University Research Professor Emeritus  
Von Maltzahn, K. E., MS, PhD (Yale)  
McLaren, I. A., MSc (McGill), PhD (Yale), George S. Campbell Professor Emeritus

## Professors

Bentzen, P., MSc (UBC), PhD (McGill), University Research Professor  
Croll, R. P., PhD (McGill), (major appointment in Physiology and Biophysics)  
Freedman, B., MSc, PhD (Toronto), Campbell Chair in Biology  
Hutchings, J. A., PhD (Memorial)  
Iverson, S. J., PhD (Maryland), University Research Professor  
Johnston, M. O., PhD (Chicago)  
Lane, P. A., MSc (SUNY Binghamton), PhD (SUNY Albany)  
LaRoche, J., PhD (Dalhousie)  
Leonard, M. L., PhD (Ottawa)  
MacRae, T. H., MSc, PhD (Windsor)  
O'Dor, R. K., PhD (UBC)  
Pohajdak, B., MSc, PhD (Man)  
Ruzzante, D. E., MSc, PhD (Dalhousie)  
Scheibling, R. E., PhD (McGill)  
Walde, S., PhD (Calgary)  
Whitehead, H., PhD (Cambridge), University Research Professor

Wright, J. M., PhD (MUN)

## Associate Professors

Bielawski, J. P., PhD (Texas A & M)  
Gunawardena, A., PhD (Oxford Brookes)  
Herbinger, C. M., PhD (Dalhousie)  
Latta, R., PhD (Colorado)  
Lotze, H. K., PhD (Kiel)  
Pinder, A., PhD (Mass)  
Romanuk, T. N., PhD (McMaster)  
Simpson, A. G. B., PhD (Sydney)  
Stone, S., PhD (York)  
Worm, B., PhD (Kiel)

## Assistant Professors

Côté, P., PhD (McGill)  
Crossin, G., PhD (UBC)  
Staicer, C., PhD (UMass/Amherst)

## Summer Education and Applied Science Institute at Dalhousie in Ecology (S.E.A.S.I.D.E.)

Staicer, C., PhD (UMass/Amherst), Director

## Adjunct Professors

Adl, S., MSc (UBC), PhD (Paris-VI)  
Bowen, W. D., PhD (UBC), BIO  
Broders, H., BSch (Acadia), MSc (Memorial), PhD (UNB)  
Campana, S. E., PhD (UBC), BIO  
Franz-Odenaal, T., BSc (Hons), MSc, PhD (Cape Town)  
Fraser, D. J., BSc (Guelph), PhD (Laval)  
Fredeen, A., BSA (Saskatoon), MSc (Guelph), PhD (California)  
Jonsen, I., PhD (Alberta)  
Kenchington, E., MSc (Dalhousie), PhD (Tasmania), BIO  
Kernaghan, G., MSc (UBC), PhD (Alberta)  
Lada, R., PhD (NSAC)  
Lall, S., BSc (India), MSc, PhD (Guelph)  
Lee, R. W., PhD (Stoney Brook)  
Li, H., BSc (China), MSc (France), PhD (Laval)  
Lynch, D., BSc, MSc (McGill), PhD (Guelph)  
MacKinnon, S., BSc (UNB), MSc (Dalhousie), PhD (Ottawa)  
Ross, N., BSc, PhD (McGill)  
Shutler, D., BSc, MSc (McGill), PhD (Carleton)  
Swain, D. P., PhD (UBC)  
Wang-Pruski, G., BSc (China), PhD (Alberta)  
Wong, M., BSc (Mt. A), PhD (UNB)  
Whoriskey, F., PhD (Brown)

## Honorary Research Associates

Horn, A., PhD (Toronto)  
Weilgart, L., PhD (Dalhousie)

## Senior Instructors

Beauchamp, C., BSc., MSc (Memorial), BEd (Dalhousie)  
Bishop, T., BSc, MSc (MUN)  
McAllister-Irwin, N., PhD (Dalhousie)  
McCarville, M., BSc, MSc (Dalhousie)  
Staples, E., BSc (Dalhousie), BEd (MSVU)  
Welsh, E., BSc, (McMaster), MSc (Guelph), BEd (Dalhousie)  
Van Dommelen, J.A., MSc (Dalhousie)

## Instructors

Cooper, M., PhD (Dalhousie)  
Gass, G., PhD (Toronto)  
Gibson, L., BSc (UVic), MSc (Dalhousie)  
Schmidt, A., MSc (Dalhousie)

## Post Doctoral Fellows

Eddy, T., PhD (UVic)  
Liu, H., PhD (China Agricultural University)  
Park, J.S. PhD (Seoul)  
Roy, D., PhD (V. Windsor)  
Tittensor, D., PhD (Dalhousie)

## Areas of Specialty of Biology Faculty

Animal Biology: S. Iverson, M. Leonard, I. McLaren, A. Pinder, C. Staicer.  
 Cell Biology: P. Côté, T. MacRae, W. Pohajdak, A. Gunawardena, S. Stone.  
 Developmental Biology: B.K. Hall, T. MacRae, A. Pinder, S. Stone  
 Ecology/Environmental Science: P. Bentzen, B. Freedman, J. Hutchings, M. Johnston, P. Lane, H. Lotze, R. Latta, M. Leonard, T. Romanuk, D.E. Ruzzante, R. Scheibling, C. Staicer, S. Walde, H. Whitehead  
 Evolutionary Biology: J. Bielawski, P. Bentzen, C.M. Herbing, J. Hutchings, M. Johnston, R. Latta, D.E. Ruzzante, A. Simpson  
 Genetics: J. Bielawski, P. Bentzen, C.M. Herbing, M. Johnston, R. Latta, D.E. Ruzzante  
 Genomics: J. Bielawski, A. Simpson  
 Marine Biology: P. Bentzen, C.M. Herbing, J. Hutchings, S. Iverson, P. Lane, H. Lotze, A. Pinder, T. Romanuk, D.E. Ruzzante, R. Scheibling, H. Whitehead  
 Molecular Biology: T. MacRae, B. Pohajdak, J. Wright, S. Stone  
 Physiology: S. Iverson, A. Pinder  
 Plant Biology: B. Freedman, A. Gunawardena, M. Johnston, R. Latta, S. Stone  
 Population and Conservation Genetics: P. Bentzen, C.M. Herbing, R. Latta, D.E. Ruzzante  
 Protistology: A. Simpson

## I. Degree Programs

The department offers the following degree programs in Biology:

- BA or BSc (20 credit) Honours (Concentrated, Combined, or Multidisciplinary)\*
- BA or BSc (20 credit) Major\*
- BA or BSc (20 credit) Double Major\*
- BA or BSc (15 credit) Minor

Departmental requirements for these programs are described below. In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, of this calendar.

Departmental Requirements for all Biology programs have changed effective 2005/2006. Please note that a student is governed by the academic regulations in place at the time of initial enrolment as long as the degree is completed within the time permitted, and that subsequent changes in regulations shall apply only if the student so elects. Students applying the old academic regulations should consult the calendar of the appropriate year.

Students should plan their program of study carefully and are encouraged to do so in consultation with a departmental academic advisor.

The department also offers degree programs in Marine Biology. Please consult the Marine Biology section of this calendar.

\* BSc Co-op option available.

## A. Co-operative Education Program in Biology

The Department of Biology offers a Co-operative Education Program for Biology Major, Double Major, and Honours students.

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science, Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study begins. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the "Co-operative Education in Science" section of this calendar, or visit <http://sciencecoop.dal.ca/>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

Students interested in pursuing a Biology Co-op Degree should contact the Biology Co-op Academic Advisor, Mindy McCarville ([Mindy.McCarville@dal.ca](mailto:Mindy.McCarville@dal.ca)) DURING THEIR FIRST YEAR OF STUDY for program details. A limited number of students will be admitted into this program each year.

## B. BA or BSc (20 credit) Honours Biology

Students will not normally be officially registered into an Honours program until their third year, after they have completed at least most of the required second and third year classes and earned the specified 3.0 GPA in them. Students may be admitted into a program without having completed all of the second and third year required classes but their ultimate graduation with an honours degree will be conditional upon achieving a 3.0 average in these classes.

Students considering doing an honours program are encouraged to consult a departmental honours record form which lists the classes which are required. These forms are available in the Biology Main Office in LSC 2078 and at <http://www.biology.dal.ca> (Undergraduate Program). Students should also attend the Cameron Conference for Honours Students which is held in the department in February of each year. This is an excellent opportunity to talk to honours students who are in the final year of their program and to find out about the thesis research, the process of finding honours supervisors and other issues related to an honours program.

It is the responsibility of students to arrange for a supervisor for their thesis research. Honours theses may be supervised by a faculty member of the Biology department, or by an external scientific investigator, subject to the approval of the Honours committee. A list of external researchers who have previously served as Honours supervisors and are therefore approved to supervise future Honours students is posted on the Honours bulletin board outside the Biology Main Office in LSC 2078 and is on the Honours Website. Students should begin to search for a potential supervisor during their third year of study and **should have completed arrangements by May of their third year**. If students wish to be supervised by someone external to the Department who has not been previously approved by the Honours committee, they must consult with their Honours advisor to determine this potential supervisor's eligibility.

## Departmental Requirements

See the following sections of the calendar: "Academic Regulations," "Degree Requirements" and "Graduation Standing" for the number of classes and the grade level required for Concentrated, Combined, or Multidisciplinary Honours Programs. To register for a Multidisciplinary Program, students meet with the Chairs of each of the Departments with which they wish to design a program. To register for a Concentrated or Combined Honours Program in Biology, students meet with a Biology Honours advisor. ***In addition*** to the University requirements for an Honours degree, students taking **ANY TYPE** of Biology Honours Program, even if Biology is the Allied subject of a Combined program, **MUST TAKE THE FOLLOWING CLASSES.**

### Classes required in all Biology Honours Programs

#### 1000 level

- BIOL 1010.03 or BIOL 1020.03 (minimum grade of C-)
- BIOL 1011.03 or BIOL 1021.03 (minimum grade of C-)
- CHEM 1011.03/1012.03

OR

- SCIE 1515X/Y.36, SCIE 1520X/Y.30 or SCIE 1540.27 (minimum grade of C-)

### A "B" average (3.0) must be attained in the following 2000 and 3000 level required biology classes.

A maximum of two of these required classes may be repeated in an attempt to achieve this grade point average. Students in ANY type of Biology honours program, even if Biology is the Allied Subject and not the major area of concentration, MUST take all of these second and third year required classes and earn a 3.0 GPA.

#### 2000 level

- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03 (or BIOL 3041.03 prior to 2005)
- BIOL 2060.03
- BIOL 2003.03 (or 2 of BIOL 2001, 2002, 2101 prior to 2005)
- BIOL 2004.03 (or 2 of BIOL 2001, 2002, 2101 prior to 2005)

#### 3000 level

- At least one class from BIOL 3050.03, BIOL 3078.03 AND BIOL 3079.03, and PHYL 2030X/Y.06 (PHYL 2030X/Y.06 will be counted as a second year level Biology credit)
- See recommendations under II. Class Selection Guidelines



**4000 level**

- BIOL 4900X/Y.06 (for those in Concentrated Honours and Combined Honours programs in which Biology is the major area of study)
- Honours Qualifying exam (graded as Pass/Fail and based on participation in BIOL 4900X/Y.06 class and the Cameron Conference for Honours students)
- NOTE: A minimum of nine credits in Biology above the 1000 level, including two credits above the 2000 level are required for the Honours degree.

**Other Recommended Classes**

- PHYC 1300X/Y.06 or 1280.03 and 1290.303
- STATS 1060.03 and MATH 1000.03 or 1215.03

**C. BA or BSc (20 credit) Major in Biology****Departmental Requirements****1000 level**

- BIOL 1010.03 or BIOL 1020.03 (minimum grade of C-)
- BIOL 1011.03 or BIOL 1021.03 (minimum grade of C-)
- CHEM 1011.03/1012.03

OR

- SCIE 1515.36, SCIE 1520.30 or SCIE 1540.27 (minimum grade of C-)

**2000 level**

- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03
- Any TWO of BIOL 2003.03, BIOL 2004.03, BIOL 2060.03
- One additional half (0.5) Biology credit at or above the 2000 level

**3000 level**

- Minimum of three full credits at or above the 3000 level for a BA
- Minimum of four full credits at or above the 3000 level for a BSc
- See recommendations under **II. Class Selection Guidelines**

**D. BA or BSc (20 credit) Double Major in Biology****Departmental Requirements****1000 level**

- BIOL 1010.03 or BIOL 1020.03 (minimum grade of C-)
- BIOL 1011.03 or BIOL 1021.03 (minimum grade of C-)
- CHEM 1011.03/1012.03

OR

- SCIE 1515.36, SCIE 1520.30 or SCIE 1540.27 (minimum grade of C-)

**2000 level**

- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03
- Any TWO of BIOL 2003.03, BIOL 2004.03, BIOL 2060.03
- One additional half (0.5) Biology credit at or above the 2000 level

**3000 level**

- Minimum of two Biology full credits at or above the 3000 level
- See recommendations under **II. Class Selection Guidelines**

**E. BA or BSc (15 credit) Minor in Biology**

Departmental requirements for this program are described below. In addition to the departmental requirements, students must satisfy the requirements outlined in the Degree Requirements section of this calendar.

**Departmental Requirements**

BSc degree: A minimum of three and a maximum of six full credits in Biology (BIOL) at the 2000 level or higher.

BA degree: A minimum of three and a maximum of four and a half full credits in Biology (BIOL) at the 2000 level or higher.

Please note that entry into upper level Biology (BIOL) classes requires completion of one full credit with a minimum grade of C- at the first year level (BIOL 1010.03 or BIOL 1020.03) and (BIOL 1011.03 or BIOL 1021.03) or DISP (SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27) or equivalent.

**F. Minor Program in Biology**

Students in a 20 credit degree program other than Biology or Marine Biology may choose to complete a Minor Program in Biology. A Minor in Biology is offered to students enrolled in other programs within the Faculty of Science and to students from other faculties, provided they complete the requisite classes. NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor Program.

To obtain a Minor in Biology, a student must successfully complete:

A minimum of three and a maximum of six full credits in Biology (BIOL) at the 2000 level or higher.

Please note that entry into upper level Biology (BIOL) classes requires completion of one full credit with a minimum grade of C- at the first year level (BIOL 1010.03 or BIOL 1020.03) and (BIOL 1011.03 or BIOL 1021.03) or DISP (SCIE 1520.30 or SCIE 1540.27) or equivalent.

**G. Minor Programs available to students enrolled in a Major or Honours Biology Program**

Minor programs allow students to develop subject specialities outside their main area of study. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor Program.

Combined with a four-year degree program in Biology, minor programs are available in the following areas.

*Minors in other Faculty of Science programs (see 5.a, page 135)*

*Minors offered by the Faculty of Arts and Social Sciences (see 5.a, page 135)*

*Minors in other Faculties (see 5.b, page 135)*

**H. BSc/Engineering or BA/Engineering Concurrent Programs**

Students will normally complete the requirements for a 15 credit BSc or 15 credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements in the calendar.

**I. Diplomas, Certificates, and Language Proficiency Certificates**

A number of certificate programs are available to students enrolled in an Honours, Major or Minor program in Biology. NOTE: Classes counted toward a Major, Honours or Minor program may also be used to fulfill the requirements of a Certificate.

**J. Certificates offered by other departments.****1. Certificates offered by the Biology Department:****Certificate in Animal Behaviour**

The certificate program is a collaborative effort of both the Biology and Psychology departments. It provides students an opportunity to take, within their BA or BSc Honours or Major program, a set of classes and a research project that will accord them an animal behavior specialization. Completion of the Certificate will be shown on a student's transcript.

**Certificate requirements:**

1. A minimum grade of a B- is required in **four** mandatory classes:

NESC/PSYO 2160.03 Animal Behaviour

PSYO 2501.03 Statistical Methods 1 or Stat 2080.03 Statistical Methods for Data Analysis and Inference

BIOL 3062.03 Behavioral Ecology

BIOL 3630.03 Field Methods in Animal Behaviour or NESC/PSYO 3161.03 Measuring Behaviour

2. A grade of B- in **two** full credits of elective classes chosen from the following list. One of the two-full credits must be at the 3000/4000 level.

### 2000 Level

NESC/PSYO 2140.03 Learning  
NESC/PSYO 2170.03 Hormones and Behaviour  
NESC/PSYO 2470.03 Systems Neuroscience

### 3000 Level

BIOL 3327.03 Entomology  
BIOL 3622.03 Ornithology  
BIOL 3067.03 Ecology and Evolution of Fishes  
BIOL 3626.03 Field Studies of Marine Mammals  
NESC/PSYO 3000.06 Independent Research in Modern Psychology (Animal Behaviour topic)  
NESC/PSYO 3001.03 Directed Research Project in Psychology (Animal Behaviour topic)  
NESC/PSYO 3043.03 Neurobiology and Learning  
NESC/PSYO 3044.03 Laboratory Methods of Learning and Conditioning  
NESC/PSYO 3162.03 Advanced Animal Behaviour (subject to approval)  
NESC/PSYO 3165.03 Neuroethology  
NESC/PSYO 3180.03 Psychoneuroimmunology/Ecological Immunology  
NESC/PSYO 3670.03 Genes, Brain and Behaviour

### 4000 Level

NESC/PSYO 4160.03 Topics in Behavioural Biology  
BIOL 4060.03 Marine Mammalogy  
BIOL 4806.03, BIOL 4807.03 Special topics (Animal Behavior topic)

3. A grade of B- in **one half credit or more** of independent research in Animal Behaviour.

The research topic must be pre-approved by the Certificate Coordinator prior to the start of their research class (i.e., NESC/PSYO 3000.06, NESC/PSYO 3001.03, NESC/PSYO 4500.06, BIOL 4800XY.06, BIOL 4806.03, BIOL 4007.03, or BIOL 4900.06). Honours students are encouraged to complete their Honours thesis on a topic in Animal Behaviour to fulfill this requirement.

Students are also encouraged to further develop their study design and analysis skills by taking additional classes such as BIOL 4061.03 (Design of Biological Experiments) or BIOL 4062.03 (Analysis of Biological data).

4. Enrollment in the 'Certificate in Animal Behaviour' program should be undertaken by students in their third or fourth year of studies when they are seeking approval of the research topic by the Certificate Coordinator.

The Certificate Coordinator will be named by the Animal Behaviour Working Group (S. Adamo, S. Gadbois, M. Leonard, C. Staicer).

## 2. Certificate in Environmental Impact Assessment (EIA)

The Faculty of Science offers a Certificate in Environmental Impact Assessment for students majoring in environmental areas and wishing to pursue additional training in EIA. This certificate is also available for students in International Development Studies (IDS) in the Faculty of Arts and Social Sciences and the College of Sustainability. Completion of the Certificate will be shown on a student's transcript.

Students must have received a minimum grade of B for all classes counted toward the certificate.

The Certificate requires four full credits for completion in the following categories:

1. Required EIA CLASS: BIOL 4001.03 or ENVS 4001.03 or ENVE 4772.03 (0.5 credits) to be taken in the fourth year.
2. Introductory Class in Science or IDS (Table 1) (minimum of 0.5 credits)
3. 3rd Level Environmental Classes with largely theoretical content from Table 2 (minimum of 1.5 credits)
4. 3rd Level Methods Classes that provide field, laboratory, statistical, modelling and related experience from Table 3 (minimum of 0.5 credits)
5. 3rd and 4th Level Supplementary Classes in Major and Related Disciplines from Table 4 (minimum of 1.0 credits)

Note: As usual, students will be required to meet the stated pre-requisites of all classes listed below or the permission of the instructor. Several classes on Tables 1-4 include cross-listings that are given in parentheses. No class can be included twice for the Certificate using different cross-listings.

Disclaimer: This Certificate in EIA has been developed within Dalhousie University and it is not designed to fulfil any governmental and/or professional requirements outside of the university in Canada or abroad.

### Certificate Requirements:

**Table 1. Introductory Classes (minimum of 0.5 credits from the following list)**

BIOL 2060.03 Introductory Ecology  
ERTH 2410.03 Environmental Issues in Earth Science  
ENVS 1000X/Y.06 Introduction to Environmental Science  
GEOG 2100 X/Y.06 Environment and Culture (SOSA 2100.06)  
INTD 2001.03 Introduction to Development 1 (GEOG 2201.03)  
INTD 2002.03 Introduction to Development 2 (GEOG 2202.03)  
OCEA 2000X/Y.06 (or OCEA 20001.03 + OCEA2002.03) The Blue Planet  
SUST 2000.06 Humanity in the Natural World  
SUST 2001.06 Environment, Sustainability and Governance: A Global Perspective

**Table 2. Theory-Based Classes (minimum of 1.5 credits from the following list)**

BIOL 3060.03 Environmental Ecology  
BIOL 3061.03 Communities and Ecosystems  
BIOL 3062.03 Behavioural Ecology  
BIOL/MARI 3063.03 Resource Ecology  
BIOL 3065.03 Conservation Biology  
BIOL 3069.03 Population Ecology  
BIOL 3601.03 Nature Conservation  
ERTH 3400.03 Fundamentals of Hydrogeology  
ERTH 3410.03 Environmental Geology II  
ERTH 4440.03 Geomorphology and Landscape Evolution  
ENVS 3200.03 Introduction to Environmental Law  
ENVS 3501.03 Environmental Problem Solving I  
ENVS/ERTH 3601.03 Global Biogeochemical Cycles  
GEOG/ERTH 3440.03 Geomorphology  
INTD/GEOG 3114.03 Environment and Development  
MARI/BIOL 3067.03 Ecology and Evolution of Fishes  
MARI/BIOL 3761.03 Marine Ecology  
MGMT 3701.03 Resource and Environmental Problem Solving 1: Sustainable Ecosystems  
MGMT 3702.03 Resource and Environmental Problem Solving 2: Sustainable Industries  
OCEA 3001.03 Introduction to Physical Oceanography  
OCEA 3002.03 Introduction to Chemical Oceanography  
OCEA 3003.03 Introduction to Biological Oceanography  
PLAN 3010.03 Urban Ecology  
SOSA 2260.03 Society, Politics and Culture  
SOSA 3060.03 Social Change and Development  
SUST 3000.03 Global Approaches to Environmental Decision-Making

**Table 3. Field and Methods-based Classes (minimum of 0.5 credits from the following list)**

BIOL 2601.03 The Flora of Nova Scotia  
BIOL/MARI 3003.03 Dynamics of Biological Oceanography  
BIOL/MARI 3221.03 Diversity of Algae  
BIOL/MARI 3301.03 Invertebrate Biology  
BIOL 3327.03 Entomology  
BIOL/ENVS 3615.03 Methods in Ecology  
BIOL 3620.03 Field Survey of Terrestrial Biodiversity  
BIOL 3622.03 Ornithology  
BIOL/ENVS/MARI 3623.03 Applied Coastal Ecology  
BIOL/ENVS 3624.03 Urban Freshwater Systems  
BIOL/MARI 3626.03 Field Studies of Marine Mammals  
BIOL 3630.03 Field Methods in Animal Behaviour  
BIOL/ENVS/MARI 3632.03 Applied Field Methods in Fish Ecology  
BIOL/ENVS/GEOG 3633.03 Spatial Information and GIS in Ecology  
BIOL/ENVS/MARI 3664.03 Intertidal Ecology and Diversity  
BIOL 3665.03 Food Web Assembly and Modeling  
BIOL 3666.03 Species Invasions  
BIOL/MARI 3680.03 Scientific Diving Methods for Marine Ecology

BIOL 4061.03 Design of Biological Experiments  
 BIOL 4062.03 Analysis of Biological Data  
 EARTH 3402.03 Practical Hydrogeology  
 EARTH/ENVS/GEOG 3500.03 Geoscience Information Management  
 EARTH/GEOG 4520.03 GIS Applications to Environmental and Geological Sciences  
 EARTH/GEOG 4530.03 Environmental Remote Sensing  
 ENVS 2000.03 Urban Field School  
 ENVS 2100.03 Environmental Informatics  
 ENVS 3001.03 Environmental Science Field School  
 ENVS 3300.03 Contaminated Site Management  
 INTD 3002.03 Development Practice  
 INTD 3103.03 Participatory Development: Methods and Practice  
 OCEA 4220.03 Numerical Modelling of Atmospheres and Oceans  
 OCEA 4380.03 Marine Modelling  
 STAT 3345.03 Environmental Risk Assessment  
 SUST/ENVS 3502.03 The Campus as a Living Laboratory

**Table 4. Higher-level Supplementary Classes (minimum of 1.0 credits from the following list)**

BIOL/MARI 4060.03 Marine Mammalogy  
 BIOL 4065.03 Sustainability and Global Change  
 BIOL 4160.03 Political Ecology  
 EARTH/GEOG 4450.03 Introduction to Landscape Simulation  
 ENVS 3301.03 Enterprise Sustainability  
 ENVS/GEOG 3400.03 Human Health and Environment  
 INTD 4013.03 Environmental Conflict and Security  
 MGMT 4009.03 Coastal Zone Management  
 OCEA/ERTH 4110.03 Geological Oceanography  
 OCEA 4120.03 Physical Oceanography  
 OCEA 4130.03 Chemical Oceanography  
 OCEA 4140.03 Biological Oceanography (BIOL/MARI 4661.03)  
 OCEA 4160.03 Fisheries Oceanography (BIOL/MARI 4369)  
 OCEA 4222.03 Estuary, Coast and Shelf Dynamics  
 OCEA 4230.03 Biology of Phytoplankton (BIOL/MARI 4662)  
 OCEA 4330.03 Benthic Ecology (BIOL/MARI 4666.03)  
 OCEA/BIOL/MARI 4335.03 Environmental Impacts in Marine Ecosystems  
 SUST 4000.06 ESS Capstone

### 3. Certificate in Geographic Information Science

The Environmental Science programs and the Departments of Earth Sciences and Biology offer a Certificate in Geographic Information Science. The certificate is intended to reflect that the student has completed classes of study in geographic information systems and geomatics that are appropriate for further study or employment related to geographic information science. This Certificate can be completed by a student in a BSc program, in addition to the student's regular program requirements and completion of such a Certificate would be shown on the student's transcript.

Students should enrol in the "Certificate in Geographic Information Science" by contacting the Certificate Coordinators (Charlie Walls, Earth Sciences or Dr. Daniel Rainham, Environmental Science or Dr. Cindy Staicer, Biology). Students can enrol when in their second, third or fourth year of the BSc program, but early enrolment is advised.

#### Certificate Requirements:

- Students must complete the following classes, with a minimum grade of B- in each:  
 EARTH/GEOG/ ENVS 3500.03 Geoscience Information Management  
 EARTH/GEOG 4520.03 GIS Applications to Environmental and Geological Sciences
- In addition students must complete at least two of the following classes, with a minimum grade of B- in each:  
 GEOG 2000.03: Cartography  
 GEOG 2006.03: Space, Place and GIS  
 ENVS 2100.03: Environmental Informatics  
 ENVS/GEOG 3400.03: Environment and Human Health  
 BIOL/ENVS/GEOG 3633.03 Spatial Information and GIS in Ecology  
 EARTH/GEOG 4530.03 Environmental Remote Sensing

- In addition, students must complete a research project with an emphasis in geomatics or geographic information science (as pre-approved by the Certificate Coordinators) via one of the following sets of classes, with a minimum grade of B-:

#### Set A: Earth Sciences

- ERTH 3500.03 (cross-listed with GEOG 3500.03 and ENVS3500.03)  
 OR EARTH 4530.03 (cross-listed with GEOG 4530.03)  
 OR EARTH 4100.06 (Research Project)  
 OR EARTH 4200.06 (Honours Thesis)

#### Set B: Environmental Science

- ENVS 3400.03 (cross-listed with GEOG 3400.03)  
 OR ENVS 3801.03 (Directed Reading)  
 OR ENVS 4901.03 (Honours Thesis)  
 OR ENVS 4902.03 (Honours Thesis)

#### Set C: Biology

- BIOL/MARI 4900.06 Honours Thesis  
 OR BIOL/MARI 4901.03 Honours Thesis  
 OR BIOL/MARI 4902.03 Honours Thesis  
 OR BIOL/MARI 4806.03 Special Topics  
 OR BIOL/MARI 4807.03 Special Topics

## II. Class Selection Guidelines

Biology is a large and diverse field, and students enroll in Biology programs with a corresponding diversity of interests and goals. While we encourage students to sample broadly across the various biological disciplines during their undergraduate years, we recognize that many students wish to emphasize one or more general areas within Biology. To help students select classes that fit their interests and goals, we have identified three general areas in Biology: **A. Ecology and Evolution, B. Organismal Biology, C. Cell/Molecular Biology.** Below, we list classes associated with each area, and provide recommendations for designing individual programs at the third and fourth year levels.

**IMPORTANT: Students should choose 2000 level classes in their second year with care, so that they will have the necessary pre-requisites to enroll in third and fourth year classes in their interest areas.**

**NOTE: THESE ARE NOT REQUIREMENTS. STUDENTS MAY SELECT CLASSES FROM ANY OR ALL AREAS, PROVIDED THEY MEET REQUIREMENTS FOR THEIR DEGREE PROGRAM.**

### A. Ecology and Evolution

Ecology and Evolution (E&E) spans a broad range of concepts and applications from ecosystem ecology through population ecology to molecular evolution. A well-rounded class of study in Ecology or Evolution or both will include some classes in basic principles applicable to all organisms and habitats/ecosystems, as well as more specific classes on the details of how these principles play out in particular situations (e.g. taxa, habitats), and how these principles are applied to real world problems. In addition, a well-trained student in E&E should have both well developed numerical skills as well as exposure to the application of E&E in broader society.

It is recommended that students wishing to emphasize E&E in their degree program select third and fourth year classes as follows:

- Three half credits from the Principles group (see below)
- At least one half-credit from each of
  - Biodiversity
  - Ecosystems or Evolution
  - Applications
  - Methods and Data Skills
- Two half credits of Statistics (Stat 1060 and 2080)
- A half-credit in calculus (MATH 1000 or MATH 1215)
- One half-credit class with a field component (marked <sup>F</sup> below)

**Principles:** BIOL 3042, BIOL 3044, BIOL 3046, BIOL 3061, BIOL 3062, BIOL 3065, BIOL 3069, BIOL 3101

**Biodiversity:** BIOL 3067, BIOL 3221, BIOL 3301, BIOL 3322, BIOL 3327, <sup>F</sup>BIOL 3620 <sup>F</sup>BIOL 3622, <sup>F</sup>BIOL 3626, BIOL 4060

**Ecosystems:** BIOL 3101, <sup>F</sup>BIOL 3664, <sup>F</sup>BIOL 3761, BIOL 4370, BIOL 4661, BIOL 4666, OCEA 3001, OCEA 3002, OCEA 3003, OCEA 3004

**Evolution:** BIOL 3102, BIOL 3326, EARTH 2205, EARTH 2420

**Applications:** BIOL 3060, BIOL 3063, BIOL 3225, BIOL 3226, BIOL 3580, BIOL 3600, BIOL 3601, <sup>F</sup>BIOL 3623, <sup>F</sup>BIOL 3624, BIOL 4065, BIOL 4160, PSY 2670, HSTC 2204

**Methods & Data Skills:** <sup>F</sup>BIOL 3664, <sup>F</sup>BIOL 3680, BIOL 4034, BIOL 4061, BIOL 4062, BIOL 4063

## B. Organismal Biology

Organismal biology includes areas such as development, physiology and anatomy, as well as the study of particular taxonomic groups. Students interested in organismal biology are encouraged to select classes from the following:

**Developmental Biology:** BIOL 3050, BIOL 4050

**Physiology/Anatomy:** BIOL 3078, BIOL 3079, BIOL 3326, BIOL 3421, BIOL 3430, PHYL 3120, PHYL 3140, BIOL 4074, BIOL 4404

**Microbes:** BIOL 2004, BIOL 3101, BIOL 3102, BIOL 3113, BIOL 4020

**Algae/plants:** BIOL 3221, BIOL 3225, BIOL 3226

**Animals:** BIOL 3067, BIOL 3301, BIOL 3322, BIOL 3326, BIOL 3327, BIOL 3622, BIOL 3626, BIOL 4060, EARTH 2420

**Organisms in the environment:** BIOL 3062, BIOL 3101, BIOL 3600, BIOL 3615, BIOL 3620, BIOL 3623, BIOL 3630, BIOL 3664, BIOL 4369, BIOL 4370

**General:** BIOL 3024, BIOL 3404, BIOL 3503, BIOL 3580, BIOL 4061, BIOL 4062, BIOL 4063, BIOL 4664

## C. Cell/Molecular Biology

Cell/molecular biology includes areas such as cell biology, molecular biology, genetics, biochemistry, microbiology, development, evolution and biotechnology. Students interested in cell/molecular biology are encouraged to consider classes from selections in the following departments.

**Biology:** BIOL 3020, BIOL 3046, BIOL 3102, BIOL 4035

**Microbiology:** \*MICI 2100, \*MICI 3033, \*MICI 3114, \*MICI 3115

**Biochemistry:** \*BIOC 2300, \*BIOC 2610, \*BIOC 3200, \*BIOC 3300, \*BIOC 3400, \*BIOC 4010, \*BIOC 4301, \*BIOC 4302, \*BIOC 4501, \*BIOC 4403, \*BIOC 4404

**Neuroscience:** NESC 2570, NESC 2670, NESC 3970

**Physiology:** \*PHYL 3320, \*PHYL 3520, \*PHYL 2030

Required in addition to the Biology core: BIOC 2300, BIOC 2610, CHEM 2441 or 2401/2402 as these are pre-requisites for advanced classes in biochemistry and microbiology

\*Classes offered by other departments (e.g. Microbiology), but for which Biology credit may be obtained

## III. Enrolment Limitations

Students intending to enroll in programs in Biology and Marine Biology should note that there are limitations on the number of students that can be accepted into 2000 and higher level classes in any given year. Passing the introductory Biology classes with the required grade of C- does not guarantee a place in any of these classes. Lecture classes are limited by room size. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Size limitations on 2000 and 3000 level laboratory classes are specified under the timetable listings for those classes.

Students are advised to register as early as possible during the registration period to secure their space within their desired classes.

Please note also that being registered for a class does not guarantee late admission. Students not appearing on the first day of class may be deleted from class lists.

## IV. Class Descriptions

The normal entry requirement for admission to upper level classes in Biology is a grade of C- or better in each of BIOL 1010.03 or BIOL 1020.03 and BIOL 1011.03 or 1021.03 or in SCIE 1515.36, SCIE 1520.30 or SCIE 1540.27. Students

with a grade lower than a C- and extenuating circumstances may appeal to the department Undergraduate Curriculum committee. Students should go to the Biology Main Office for further details.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

Consult the Biology Department's website for updates on new classes and suggested class combinations.

NOTE: Due to the combined pressures of student numbers and a dearth of available space in some classes, the names of students not appearing on the first day of class may be deleted from class lists. Students are advised that being signed into a class is no guarantee of late admission.

Biology classes are grouped into four general categories:

### 1. 1000 Level Classes

(BIOL 1010.03 or 1020.03) and (BIOL 1011.03 or 1021.03). These classes are the introductory university-level classes in biology. For entry into upper level Biology classes, a minimum of C- must be obtained in both first year classes.

### 2. 2000 Level Classes

All Biology majors (15, 20 credit and Honours) are required to take a core program at the 2000 level. Students should normally complete these core classes in their second year. The core program is designed to provide a basis for more advanced studies in Biology as well as to ensure that all majors are exposed to the general discipline or subject areas of biology. A variety of skills including writing, oral presentation, computer literacy, library use, and problem solving are integrated into the curriculum of these core classes along with 'hands-on' activities in the laboratory or field. The second-year core program covers five discipline areas:

1. Cell Biology - BIOL 2020.03
2. Diversity of Organisms (animals, plants and microbes)
  - BIOL 2003.03
  - BIOL 2004.03
3. Ecology - BIOL 2060.03
4. Evolution - BIOL 2040.03
5. Genetics and Molecular Biology - BIOL 2030.03

Students interested in biochemistry are advised to take the second-year biochemistry class offered by the Biochemistry & Molecular Biology departments. This class is not part of our core-program but is a prerequisite for entry into some higher level classes.

Students majoring in subjects other than Biology can design their own programs and will not have to conform to these 2000 level core requirements. All students should ensure they have the necessary prerequisite classes required for entry into 3000 level classes.

### 3. 3000 Level Classes

These classes are mainly for second- and third-year students. No student whose minor is in Biology will be allowed to register in any 3000 or 4000 level class without having completed, or being registered in 2000 level classes in biology totalling at least two full credits.

### 4. 4000 Level Classes

These classes are primarily for honours or major students. They are open to others with the permission of the instructor. Where biology classes are identified as being given in another department (eg. Anatomy), that department should be consulted for details.

### 5. Other Classes

The following classes given by other departments may be taken as a Biology class toward BA, BSc, and BSc (Honours) Biology degrees.

Any class cross-listed as a BIOL class.

Anatomy (ANAT):	All ANAT classes 2000 level or higher
Biochemistry (BIOC):	All BIOC classes 2000 level or higher
Environmental Sciences (ENVS):	3217, 3225, 3226, 3615, 3623, 3624, 3632, 3664, 4001
History (HIST):	2074, 2995, 3073, 3074
History of Science and Technology (HSTC):	1200, 2200, 3212, 3331
Microbiology (MICI):	All MICI classes 2000 level or higher

Neuroscience (NESC):	3125, 3440, 4374, 4375, 4376, 4377
Marine Biology (MARI):	All MARI classes
Oceanography (OCEA):	3003, 4140, 4160, 4230, 4330, 4331, 4335, 4370
Physiology (PHYL):	All PHYL classes 2000 level or higher
Philosophy (PHIL):	3420
Planning (PLAN):	3225
Science, Interdisciplinary (SCIE):	2000, 4001
Statistics (STATS):	4570

Note: to calculate the required honours GPA, the Registrar will use ALL Biology classes and ALL classes which are cross-listed with Biology or can be counted as Biology credits. That is, the GPA will be determined from all Biology classes and not just the best nine or 11.

### **BIOL 0010.00: University Prep Biology.**

This class is designed for students who have never taken biology, or who want to improve their knowledge before taking a university biology class. Students will gain a solid foundation in the subject by learning the major concepts of cell biology, genetics, development, the nervous system and evolution.

NOTE: BIOL 0010.00 is offered by the College of Continuing Education.

Students register and pay at the College of Continuing Education located at 1220 LeMarchant Street, 2nd Floor or by calling (902) 494-2375 (see page 40, College of Continuing Education, for more details). This class is accepted by Dalhousie University as equivalent to Nova Scotia Grade 12 Biology.

FORMAT: Lecture and lab

### **BIOL 1010.03: Principles of Biology Part I.**

This class, which prepares students for more advanced classes in biology and allied subjects, surveys the fundamental principles of biology with an emphasis on those features common to all organisms. Topics covered include cell and molecular biology, genetics, and evolution. Knowledge of high school mathematics, chemistry and biology is recommended.

COORDINATOR: T. Bishop

NOTE: Students wishing to continue as biology or marine biology majors should complete BIOL 1010 (or 1020) and BIOL 1011 (or BIOL 1021) in the first year of study. Students planning to take further classes in Biology or Marine Biology should read the Programme Requirements for these degrees.

INSTRUCTOR(S): B. Pohajdak, J. Wright, A. Simpson, T. Bishop, G. Gass, J. Van Dommelen

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: BIOL 1000.06, BIOL 1020.03 or DISP (15XX)

### **BIOL 1011.03: Principles of Biology Part II.**

Biology 1011 broadens the background laid down in BIOL 1010 to include plant and fungi form and function, animal form and function, and ecology. Knowledge of high school mathematics, chemistry and biology is recommended.

COORDINATOR: G. Gass

NOTE: Students wishing to continue as biology or marine biology majors should complete BIOL 1010 (1020) and BIOL 1011 (1021) in the first year of study. Students planning to take further classes in Biology or Marine Biology should read the Programme Requirements for these degrees.

INSTRUCTOR(S): M. Johnston, M. Leonard, S. Walde, T. Bishop, G. Gass, J. Van Dommelen

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: BIOL 1000.06, BIOL 1021.03 or DISP (15XX)

### **BIOL 1020.03: Introductory Biology I: Cells, Genetics & Evolution.**

Biology 1020.03 is the online distance education equivalent of BIOL 1010.03, and is offered in the fall, winter and summer terms. Topics include cell and molecular biology, genetics, and evolution. High school mathematics, chemistry, and biology is recommended. Learning activities include readings, quizzes, interactive multimedia, online labs and home labs.

NOTE: Students planning to take further classes in Biology or Marine Biology should read the Program Requirements for these degrees.

INSTRUCTOR(S): J. Van Dommelen/ G. Gass

FORMAT: Online (OWL, e-mail). Please go to <http://biology.dal.ca/online> for more details about taking this online class, including the technology and software requirements.

EXCLUSION: BIOL 1010.03 or DISP (15XX)

### **BIOL 1021.03: Introductory Biology II: Organismal Biology & Ecology.**

Biology 1021.03 is the online distance education equivalent of BIOL 1011.03, and is offered in the fall, winter and summer terms. Topics include diversity of eukaryotic life, ecology, and plant and animal biology. High school mathematics, chemistry, and biology are recommended. Learning activities include readings, quizzes, interactive multimedia, online labs and home labs.

NOTE: Students planning to take further classes in Biology or Marine Biology should read the Program Requirements for these degrees.

INSTRUCTOR(S): J. Van Dommelen, G. Gass

FORMAT: Online (OWL, e-mail). Please go to <http://biology.dal.ca/online> for more details about taking this online class, including the technology and software requirements.

EXCLUSION: BIOL 1011.03 or DISP (15XX)

### **BIOL 1030.03: Biology for Engineers.**

An introduction to Biology as it relates to Engineering, including a basic understanding of Cell Structure and Function, Genetics, Ecology, the relationship between living systems and the man-made environment, and the relevance of Biology to industrial and engineering applications.

NOTE: This class is restricted to students registered in an Engineering program.

INSTRUCTOR(S): M. Cooper, B. Latta

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: BIOL 1010.03, BIOL 1011.03, BIOL 1020.03, BIOL 1021.03 or DISP (SCIE 15XX)

### **BIOL 1031.03: Introduction to Biology II.**

A continuation of introductory Biology. Assumes a background in Cell Biology and Ecology. Topics presented at an introductory level include Genetics, Molecular Biology, Evolution, Organismal Diversity, and Plant and Animal Form and Function.

NOTE: Signature required; together with BIOL 1030.03 or SCIE 150.27, this class provides the same introduction to Biology as BIOL 1010.03 and 1011.03

INSTRUCTOR(S): C. Stacier

PREREQUISITE: Either SCIE 1530.27 or BIOL 1030.03 and CHEM 1011.03 or CHEM 1021.03 and (MATH 1000.03 or STAT 1060.03 or MATH 1215.03)

### **BIOL 1050.03: Biology and Society.**

For non-majors students interested in Biology, this class introduces the basics of cell biology, genetics and evolution and how they affect our society. The class will build a foundation for life-long learning and critical thinking in science through lectures, and hands-on lab activities.

INSTRUCTOR(S): E. Welsh

FORMAT: Lecture/lab

PREREQUISITE: None

EXCLUSION: BIOL 1010.03, BIOL 1020.03, DISP (SCIE 15XX))

### **BIOL 2003.03: Diversity of Life I.**

Surveys the diversity of forms and function in invertebrate and vertebrate animals. Emphasis is placed on the invertebrate phyla and fish of marine environments, and on arthropods, birds and mammals on land. The class takes a phylogenetic approach, exploring the evolutionary relationships, and introduces examples of the different life forms.

INSTRUCTOR(S): T. Romanuk, A. Pinder, L. Gibson

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36, or SCIE 1520.30 or SCIE 1540.27 (C- or better) or equivalent

### **BIOL 2004.03: Diversity of Life II.**

Introduces the main domains of plant, fungal and microbial life, based on modern phylogenetic taxonomy. Examines the diversity, structure, physiology and ecology of non – animal life forms. Reviews the origins of the main lineages of living things – Archaea, Eubacteria and Eukaryota, as well as the main groups of eukaryotes.

NOTE: Starting in the 2009-2010 academic year, BIOL 2004 will no longer serve as a pre-requisite for admission to 3rd year MICI courses (for which MICI 2100 will be required)

INSTRUCTOR(S): A. Simpson, A. Gunawardena, L. Gibson

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better) or equivalent

### BIOL 2020.03: Cell Biology.

An introduction to the eukaryotic cell. Major cell components and activities are described at ultrastructural and molecular levels with emphasis on mammalian systems. The concept of the cell as an integrated structural, functional unit is developed.

INSTRUCTOR(S): P. Côté, B. Pohajdak, M. McCarville

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better) or equivalent

RECOMMENDED: CHEM 1011.03 and 1012.03

### BIOL 2030.03: Genetics and Molecular Biology.

The power and prominence of modern genetics have grown from a blend of classical and molecular approaches; both approaches are emphasized. Topics include: Mendelian, population and quantitative genetics; chromosome structure and variation; structure and function of nucleic acids; DNA replication, transcription and translation; gene expression; gene mutations; and genetic engineering.

INSTRUCTOR(S): E. Staples, J. Wright, C.M. Herbinger, J. Bielawski, P. Bentzen

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better) or equivalent

RECOMMENDED: CHEM 1011.03 and 1012.03

### BIOL 2040.03: Evolution.

A thorough overview of the process of evolution. Genetic variation and changes in genetic composition of populations, the relationship between genetic and phenotypic change. Adaptation at various levels of organization (DNA to species), speciation, phylogeny, and macroevolutionary patterns. Introduces the full breadth of evolutionary concepts, preparatory to more advanced courses.

INSTRUCTOR(S): M. Johnston, R. Latta, E. Welsh

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better) or equivalent

EXCLUSION: BIOL 3041.03

### BIOL 2060.03: Introductory Ecology.

Ecology examines interactions of plants and animals, including humans, with each other and with their non-living world. Topics include population growth, competition, predation, food webs, metapopulation dynamics, biodiversity and ecosystem function. The class has a quantitative approach providing a foundation for further work in ecology, marine biology and environmental science.

INSTRUCTOR(S): S. Walde, D. Ruzzante, H.K. Lotze, B. Worm, A. Schmidt

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1530.30 (C- or better) or SCIE 1540.27 (C- or better) or ENVS 1000.06 (C- or better) or BIOL 1030.03 (C- or better) in consultation with the instructor.

### BIOL 2601.03: The Flora of Nova Scotia.

Introduction to the biodiversity of flowering plants (Angiosperms) found in Nova Scotia. A wide range of plant communities are visited on several day-long field trips. A focus on plant identification is supplemented with lessons in plant ecology, floral biology, pollination mechanisms, natural history, and human uses (e.g., edible, poisonous, medicinal).

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Staff

FORMAT: Lecture/lab/field

PREREQUISITE: One year of university classes

### BIOL 2605.03: Introduction to Marine Life of Nova Scotia.

Introduction to the variety of marine life found in Nova Scotia. The diversity and zonation of invertebrates and macroalgae is explored on field trips to different shore environments, including a salt marsh, rocky shore and sandy beach. Lectures and laboratory-based investigations on live marine organisms complement the field trips.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see

[seaside.science.dal.ca](http://seaside.science.dal.ca). Marine Biology students may NOT use this class as part of their major degree requirements. This class is aimed at non-majors who have completed at least one year of university.

INSTRUCTOR(S): Staff

FORMAT: Lecture/lab/field

PREREQUISITE: One year of university classes

### BIOL 3003.03: Introduction to Field Oceanography.

See class description for OCEA 3003.03 in the Oceanography section of the calendar.

### BIOL 2020.03: Advanced Cell Biology.

The eukaryotic cell is a complex array of interconnected organelles. Topics include the processing of proteins during trafficking, how the cell interacts with its environment and how it integrates information, with an emphasis on signaling pathways. Lectures are supplemented with assigned readings of original research articles for discussion in class.

INSTRUCTOR(S): Côté, P.

FORMAT: Lecture 1.5 hours/ discussion 1.5 hours

PREREQUISITE: BIOL 2020.03 with a minimum grade of B or instructor's consent)

### BIOL 3024.03: Microscopy.

See class description for MICI 3024.03 in the Microbiology and Immunology section of the calendar.

### BIOL 3036.03: Transgenic Organisms.

Transgenics are created by inserting foreign genes into organisms by genetic engineering. This class will include: Recombinant DNA technologies, the history of transgenics, methods of production/selection (plant and animal) and human gene therapy. Problems, ethics and controversy (e.g. Frankenfood) associated with this technology will be discussed.

INSTRUCTOR(S): B. Pohajdak

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better)

### BIOL 3042.03: Molecular Ecology.

We survey techniques of molecular genetic analysis and consider how they can be used to identify species, populations, sexes, individuals and family relationships, and study population attributes such as historical dispersal, contemporary connectivity, mating behaviour and effective population size. Evaluation is based on assignments, a test and a final exam.

INSTRUCTOR(S): P. Bentzen, D. Ruzzante

PREREQUISITE: A grade of B- or better in each of BIOL 2030, BIOL 2040, and BIOL 2060.

EXCLUSION: BIOL 4042

### BIOL 3044.03: Ecological Genetics.

An advanced examination of genetic variation in ecologically important (especially quantitative) traits. Topics will include determining whether a trait is inherited; natural selection in the wild; specialist vs. generalist strategies; how variation is maintained in the face of selection; trade-offs between competing selective pressures and selection for diversification.

INSTRUCTOR(S): R. Latta

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 2040.03 or BIOL 3041.03

EXCLUSION: BIOL 4044.03

### BIOL 3046.03: Molecular Evolution.

This class examines the process of evolutionary change at the molecular level. It begins with the sources of mutation, and moves on to dynamics of population variation. The class culminates with a macro-evolutionary perspective on topics such as adaptive evolution and genetic co-option. This class is complementary to BIOL 4010(Bioinformatics).

INSTRUCTOR(S): Bielawski, J.P.

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 2030.03, BIOL 2040.03

### BIOL 3050.03: Developmental Biology.

Lectures describe development as a sequence of processes and events, in which 'simple' structures such as fertilized eggs are progressively transformed into complex organisms. These events are governed by developmental 'rules' which have been determined through experimental study of animal and plant model organisms. Laboratories use live material whenever possible.

INSTRUCTOR(S): M. Cooper, S. Stone  
 FORMAT: Lecture/discussion 3 hours/lab 3 hours  
 PREREQUISITE: BIOL 2020.03, BIOL 2030.03

### BIOL 3060.03: Environmental Ecology.

The ecological effects of pollution, disturbance, and other stressors, both anthropogenic and natural. Major subject areas are air pollutants, toxic metals, acidification, eutrophication, oil spills, pesticides, forestry, warfare, urban ecology, risks to biodiversity, and resource degradation. The overarching context of the class is ecological sustainability of the human economy.  
 INSTRUCTOR(S): B. Freedman  
 FORMAT: Lecture 3 hours, tutorial 3 hours  
 PREREQUISITE: BIOL 2060.03 (or see instructor)  
 CROSS-LISTING: BIOL 5060.03

### BIOL 3061.03: Communities and Ecosystems.

Part 1 includes ecosystem history and theory, complex systems, community structure descriptors, interactions, stability, and food webs. Part 2 discusses the ecosystem approach, environmental management, ecosystem health and integrity, environmental indicators, ecological footprint, resilience theory.  
 INSTRUCTOR(S): P.A. Lane  
 FORMAT: Lecture 3 hours and BbLearn  
 PREREQUISITE: BIOL 2060.03, or INTD 2001.03 or INTD 2002.03  
 CROSS-LISTING: BIOL 5261.03

### BIOL 3062.03: Behavioral Ecology.

This class examines animal behaviour from an evolutionary perspective. Using the theory of natural selection as a basis, we will examine foraging, grouping patterns, territorial behaviour, parenting, mating behaviour, social organization, aggression and cooperation. There will be tutorials and essay assignments.  
 INSTRUCTOR(S): M. Leonard, A. Horn  
 FORMAT: Lecture 3 hours  
 PREREQUISITE: BIOL 2060.03

### BIOL 3063.03: Resource Ecology.

This class considers the ecology, utilization, and management of natural resources in fisheries, wildlife and forest management, agriculture and aquaculture. Topics include population dynamics, community interactions, and ecosystem support of resources as well as the history of resource utilization, practices of controlling production, pests, and predators, and sustainable management strategies.  
 INSTRUCTOR(S): H. K. Lotze  
 FORMAT: Lecture 2 hours, tutorial 2 hours  
 PREREQUISITE: BIOL 2060.03, MATH 1000.03 (or DISP), STAT 1060.03 (or DISP)  
 CROSS-LISTING: MARI 3063.03

### BIOL 3065.03: Conservation Biology.

This class offers an introduction to conservation biology: the science of understanding and conserving biodiversity on Earth. Students learn how biodiversity change is assessed and what tools are used to prevent the extinction of species and the disruption of ecosystems. Tutorials involve oral presentations as well as a written essay.  
 INSTRUCTOR(S): B. Worm  
 FORMAT: Lecture 2 hours, tutorial 2 hours  
 PREREQUISITE: BIOL 2060.03

### BIOL 3067.03: Ecology and Evolution of Fishes.

This class will examine selected topics on the ecology and evolution of marine and freshwater fishes. Topics shall include systematics, functional morphology, evolutionary ecology, behaviour, life history strategies, population biology, fisheries science, and conservation biology.  
 INSTRUCTOR(S): J. Hutchings  
 FORMAT: Lecture 3 hours, lab 2.5 hours  
 PREREQUISITE: BIOL 2003.03, BIOL 2060.03  
 CROSS-LISTING: BIOL 5067.03, MARI 3067.03

### BIOL 3069.03: Population Ecology.

An examination of selected topics in population ecology, including the effects of species interactions on population fluctuations, cycles and extinction. Case studies (hare cycles, forest insect outbreaks and elephant dynamics) will be studied in light of current ecological theory. Written assignments and exams will contribute to evaluation.  
 INSTRUCTOR(S): S. Walde  
 FORMAT: Lecture/tutorial 3 hours  
 PREREQUISITE: BIOL 2060.03 (minimum grade of B), (STAT 1060.03 and (MATH 1000.03 or MATH 1215.03) or DISP)

### BIOL 3078.03: Principles of Animal Physiology Part I.

Lectures on the mechanisms which coordinate the activities of cells within multicellular organisms and permit such organisms to remain in homeostatic balance. The emphasis is on the mechanisms most widely distributed throughout the animal kingdom. The laboratories are designed to illustrate these principles in a variety of organisms.  
 NOTE: Students must complete 3078.03 before 3079.03  
 INSTRUCTOR(S): N. McAllister-Irwin, TBA  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: BIOL 2003.03, BIOL 2020.03  
 EXCLUSION: BIOL/MARI 3074.03

### BIOL 3079.03: Principles of Animal Physiology Part II.

This class is a continuation of a discussion of the mechanisms which coordinate the activities of cells within multicellular organisms which began in BIOL 3078.03. This term emphasizes the urinary, cardiovascular and respiratory systems. The laboratories reflect the approaches taken to study these systems in a variety of organisms.  
 INSTRUCTOR(S): N. McAllister-Irwin, A. Pinder  
 FORMAT: Lecture 3 hours, Lab 3 hours  
 PREREQUISITE: BIOL 3078.03 or MARI 3074.03  
 EXCLUSION: MARI 3076.03

### BIOL 3101.03: Microbial Ecology.

Lectures on the ecology of bacteria, viruses and protists. Community structure, food web nutrient cycling, biogeochemical cycles, competition, succession and symbiosis are discussed with examples from marine, fresh-water and soil habitats. There is an emphasis on marine organisms.  
 INSTRUCTOR(S): J. Laroche  
 FORMAT: Lecture 3 hours  
 PREREQUISITE: BIOL 2004.03 or MICI 2100.03, and BIOL 2060.03

### BIOL 3102.03: Microbial Eukaryotes: Biodiversity and Evolution.

Microbial eukaryotes are of tremendous ecological, evolutionary and medical/veterinary importance. This class provides a comprehensive understanding of the biodiversity and evolution of both algal and protozoan eukaryotes, and examines important aspects of their organismal biology, including cell and genome organization, life histories, trophic strategies, locomotion and symbiosis.  
 INSTRUCTOR(S): A. Simpson  
 FORMAT: Lecture/lab 4 hours (alternate weeks 2 hour lab or lecture)  
 PREREQUISITE: BIOL 2020.03 and BIOL 2004.03 or MICI 2100.03

### BIOL 3221.03: Diversity of Algae.

This is a taxonomic introduction to the major algal groups (macrophytic and microscopic) with an emphasis on the marine seaweeds. Basic taxonomic differences are covered, along with an introduction to macrophyte ecology, human uses and symbioses. Laboratory sessions focus on morphology and reproduction.  
 INSTRUCTOR(S): B. Hymes  
 PREREQUISITE: BIOL 2004.03 or equivalent  
 CROSS-LISTING: MARI 3221.03  
 EXCLUSION: BIOL 3212.03, MARI 3212.03

### BIOL 3301.03: Invertebrate Biology.

A survey of the diversity, ecology and evolutionary history of the major invertebrate groups. Lectures will emphasize phylogenetics and diversity of body plans. Labs will emphasize identification and anatomy through dissections and observations.  
 INSTRUCTOR(S): T. Romanuk  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: BIOL 2003.03  
 CROSS-LISTING: MARI 3301.03

### BIOL 3322.03: Parasitology.

The class emphasizes the parasite-host relationships, evolution of the parasites and adaptations to the host, modifications of physiology, structure and life cycle for a parasitic existence. Since the most extensive research pertains to parasites of man, the emphasis is on human parasites.  
 INSTRUCTOR(S): T. Rossolimo  
 FORMAT: Lecture 2 hours, lab 3 hours  
 PREREQUISITE: BIOL 1010 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better), or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better)

### BIOL 3326.03: Vertebrate Design: Evolution and Function.

Vertebrate Design explores 600 million years of vertebrate evolution, with particular attention to origins of major groups and the anatomical and functional innovations associated with their rise and diversification. Functional morphology of swimming, flying and terrestrial locomotion is also covered, along with the effect of body size on function.

INSTRUCTOR(S): A.W. Pinder

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 2003.03 and BIOL 2040.03

### BIOL 3327.03: Entomology.

The class is an introduction to the study of insects. Topics include insect classification, evolutionary diversity, biology, ecology, behaviour, and various applied aspects. Through this survey of the insects, students will gain an appreciation of insect biodiversity as well as their economic and ecological importance.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): T. Rossolimo

FORMAT: Lecture, labs, field trips

PREREQUISITE: BIOL 2003.03

### BIOL 3328.03: Medical Entomology.

Medical Entomology covers direct injuries caused by arthropods such as phobias, annoyance, allergies, toxins, venoms and myiasis, arthropod transmission of vertebrate parasites, epidemiology of arthropod-borne diseases. Students study transmission of diseases, methods of surveillance of diseases, management by vector control and other methods of arthropod-borne diseases.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca)

INSTRUCTOR(S): T. Rossolimo

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 3327.03 or BIOL 3322.03 or permission of instructor

### BIOL 3329.03: Applied Entomology.

Insects not only comprise more than half of the world's biodiversity, but influence human health and economic well-being in many ways. In this class students are introduced to insect pest management, agricultural, forest and medical entomology, forensic entomology, and insects in food science, beneficial and harmful insects.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): T. Rossolimo

FORMAT: Lecture/labs/field trips

PREREQUISITE: BIOL 3327.03 or the permission of the instructor

### BIOL 3421.03: Comparative Vertebrate Histology.

See class description for ANAT 3421.03 in the Anatomy and Neurobiology section of this calendar.

### BIOL 3430.03: Introduction to Human Histology.

See class description for ANAT 2160.03 in the Anatomy and Neurobiology section of the calendar.

### BIOL 3503X/Y.06: Introduction to the History of Science.

See class description for HSTC 2200X/Y.06 in the History of Science & Technology section of the calendar.

### BIOL 3580.03: Philosophy of Biology.

See class description for PHIL 3420.03 in the Philosophy section of this calendar.

### BIOL 3600.03: Aquaculture.

Through lectures, laboratories and field trips (additional fees apply), this class offers an introductory overview of aquaculture, the culturing of aquatic plants and animals. The following topics are covered with both a Maritimes and global perspective: overview, physico-chemistry of water, engineering, culture techniques, health, nutrition, genetics, environmental and socio-economic considerations.

INSTRUCTOR(S): C. Herbinger

FORMAT: Lecture 3 hours, Lab 3 hours, Field trips (2 Sundays)

PREREQUISITE: BIOL 2003.03

CROSS-LISTING: MARI 3600.03

### BIOL 3601.03: Nature Conservation.

This interdisciplinary class explores relationships between humans and the natural world, including damage caused to species and ecosystems. The class looks at environmental ethics and world views, environmental philosophy, sustainability, the cultural expression of natural values (literature, music, art) and conservation science and actions, including the establishment of protected areas.

INSTRUCTOR(S): B. Freedman

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: BIOL 1010.03 or 1020.03 and BIOL 1011.03 or BIOL 1021.03 or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 or permission of instructor

### BIOL 3615.03: Methods in Ecology.

Through participation in several class projects, students obtain experience conducting field studies and laboratory experiments. Projects include a range of ecological questions, techniques, organisms, and ecosystems. Students collect, analyze, and interpret their own data in formal scientific reports. Recommended for students interested in ecological research, or environmental field sampling.

NOTE: Additional fees are charged to cover the cost of field trip transportation.

FORMAT: Field and Lab intensive

PREREQUISITE: BIOL 2060, MATH/STAT 1060 (or DISP) and at least one diversity class (e.g. BIOL 2003 or 2004)

RECOMMENDED: STAT 2080

CROSS-LISTING: ENVS 3615

EXCLUSION: BIOL 3614

### BIOL 3620.03: Field Survey of Terrestrial Biodiversity.

Measuring and interpreting trends in the biodiversity of organisms in terrestrial environments. Field-intensive, with one week spent camping at a field station. Techniques for identification of major groups (lichens, mosses, higher plants, insects, amphibians, birds, mammals), sampling presence and abundance of species, and relating trends to natural and anthropogenic variation.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2003.03 and BIOL 2060.03 or permission of instructor

### BIOL 3622.03: Ornithology.

Overview of avian biology and techniques for the scientific study of bird populations, including identification by sight and sound. Field-intensive, with 8 days in the field, including one week camping at a field station in southwestern Nova Scotia to conduct research on birds in their natural habitats.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): C. Staicer

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2003.03 or BIOL 2060.03 or DISP or permission of instructor

### BIOL 3623.03: Applied Coastal Ecology.

Impacts of anthropogenic inputs on the structure and function of coastal ecosystems. Through field trips and other classwork, students examine ecosystem health, e.g., in macroalgal communities on rocky shores, in seagrass beds on sedimentary shores, and learn basic experimental design, principles of environmental assessment and monitoring, and coastal habitat remediation.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca). Not offered every year.

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2003.03 and BIOL 2060.03

CROSS-LISTING: ENVS 3623.03, MARI 3623.03

### BIOL 3624.03: Urban Freshwater Systems.

Ecology of urban freshwater systems with a focus on understanding how they respond to human-caused stresses within their watersheds. Students conduct case studies at nearby lakes and/or streams to monitor water quality and characterize resident communities of plants and animals. Evaluation is based on individual and group research reports.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

FORMAT: Field intensive, labs, lectures



PREREQUISITE: BIOL 2060.03 and (MATH 1060.03 or STAT 1060.03 or DISP) or permission of instructor  
CROSS-LISTING: ENVS 3624.03

### **BIOL 3626.03: Field Studies of Marine Mammals.**

Hands-on introduction to research on marine mammals. Lectures provide an overview of marine mammal adaptations, evolution, population biology, social organization, conservation, and management. Labs include a necropsy and techniques of photographic identification of individuals. On a several-day camping trip, students observe marine mammals from whale-watch boats and conduct research projects.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03 and BIOL 3062.03 (or BIOL 3630.03 or PSYO 2160.03), MATH 1060.03 or STAT 1060.03

CROSS-LISTING: MARI 3626.03

### **BIOL 3630.03: Field Methods in Animal Behaviour.**

First-hand experience in studying animal behaviour in the field. Day-long field exercises teach basic methods, then students plan, conduct, write up, and orally present a 5-day project of their own.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): A. Horn

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 3062.03 or PSYO 2160.03 or PSYO 3160X/Y.06 or permission of instructor

### **BIOL 3632.03: Applied Field Methods in Fish Ecology.**

Practical experience conducting field research on fishes with field trips to streams and shallow water marine/freshwater habitats. Techniques include collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variability, quantifying temporal and spatial variation, planning for statistical analysis, and weighing tradeoffs between data quality, quantity, costs and ethical/environmental considerations.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Staff

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or MATH 1060.03 or DISP) or their equivalents or permission of instructor

CROSS-LISTING: MARI 3632.03, ENVS 3632.03

### **BIOL 3633.03: Spatial Information and GIS in Ecology.**

A hands-on approach to understanding and using spatial information, this class introduces students to Geographic Information Systems (GIS) as a tool to answer ecological questions. Together, students conduct a major field project, collecting data, creating maps using GIS, and interpreting spatial patterns, to address and applied problem in ecology.

NOTE: Offered in the summer through SEASIDE. an auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Staff

FORMAT: Labs, lectures

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: ENVS 3633.03, GEOG 3633.03

### **BIOL 3634.03: Agroforestry.**

Agroforestry is a land-use system in which trees or shrubs are grown in association with agricultural crops or livestock. As practiced in the tropics, agroforestry generates numerous ecological, environmental and economic benefits. This hands-on, field-intensive class provides a foundation for understanding this traditional practice and its applications in North America.

NOTE: Offered in summer through SEASIDE. an auxiliary fee is charged to cover field expenses. For dates, times, and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca)

PREREQUISITE: BIOL 2060.03 (Halifax campus) or AGRI 1000.03 (Faculty of Agriculture) or BIOL 3001.03 (Faculty of Agriculture) or permission of the Instructor. An additional class on the biology, ecology, diversity or physiology of plants is recommended.

### **BIOL 3664.03: Intertidal Ecology and Diversity.**

Hands-on, intensive introduction to ecological research on rocky shores, tidal flats, and sandy beaches. Relevant ecological concepts, sampling techniques for flora and fauna, and statistical skills are learned. Field sampling on day and camping trips is followed by lab work (e.g., identification of seaweeds, invertebrates), statistical analysis, and report preparation.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Staff

FORMAT: Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or MATH 1060.03 or DISP) and BIOL 2003.03

CROSS-LISTING: ENVS 3664.03, MARI 3664.03

EXCLUSION: BIOL 3662.03, BIOL 3663.03

### **BIOL 3665.03: Food Web Assembly and Modelling.**

In "Food Webs" the student will examine the structure and functioning of ecological communities through a lens of "who eats whom" predator-prey feeding interactions through field studies, experiments, and computer simulations.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): T. Romanuk

FORMAT: Lectures, labs, field trips

PREREQUISITE: MATH 1060.03 or STAT 1060.03, BIOL 2060.03

EXCLUSION: For third year and above or with permission of the instructor

### **BIOL 3666.03: Species Invasions.**

Students will examine species invasions, the establishment of non-native species in new communities, using an interdisciplinary framework incorporating impacts, theory, and management and control of invasive species.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): T. Romanuk

FORMAT: Lectures/labs/field trips

PREREQUISITE: BIOL 2003

EXCLUSION: For third year and above or with permission of the instructor

### **BIOL 3680.03: Scientific Diving Methods for Marine Ecology.**

This class introduces students that are certified divers to the practice of underwater research using SCUBA. It combines lectures with supervised dives in various marine habitats to demonstrate the application of standard sampling and experimental procedures in marine ecology, with an emphasis on logistical considerations and diving safety.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): R. Scheibling, A. Pinder, J. Lindley

FORMAT: Field Intensive, Lab and Lecture

PREREQUISITE: BIOL 2003.03, BIOL 2060.03, STAT 1060.03 or DISP,

internationally recognized diving certification, diving physical; recommended: BIOL 3212.03 or 3321.03, BIOL 3301.03

CROSS-LISTING: MARI 3680.03

### **BIOL 3761.03: Marine Ecology.**

Building upon an understanding of basic ecological and evolutionary principles, and a familiarity with the major marine invertebrate and algal taxa, this class examines patterns and processes at the organismal, population and community levels that determine the diversity and distribution of life in the sea.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture/Lab

PREREQUISITE: BIOL 2060.03 and (BIOL 2003.03 or BIOL 2004.03) and OCEA 2000X/Y.06 or (OCEA 2001.03 and OCEA 2002.03)

CROSS-LISTING: MARI 3761.03

RESTRICTION: This class is restricted to 3rd and 4th year students.

### **BIOL 3762.03: Terrestrial Ecology.**

This class provides a conceptual framework for understanding the function of terrestrial ecosystems. One week at a field station in Nova Scotia provides practical experience with forest, bog and agroecosystems. Topics include soil profiles and nutrients; plant productivity and interactions; and ecological roles of microorganisms, lichens, fungi, insects, and vertebrates.

NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times, and special registration procedures see [seaside.science.dal.ca](http://seaside.science.dal.ca)

INSTRUCTOR(S): R. Rajaselvam

FORMAT: Field intensive, lecture, lab

PREREQUISITE: BIOL 2003.03 or BIOL 2004.03, and BIOL 2060.03

### BIOL 3800.03: Experiential Learning.

Experiential Learning recognizes the learning experience relevant to the program outside the scheduled curriculum. Students are responsible for drafting a learning agreement with the class coordinator and supervisor to specify learning outcomes, activities designed to accomplish these outcomes, a quantifiable assessment strategy and a timetable.

NOTE: To register in this class, a student must first find a suitable supervisor and sign a learning agreement between the class coordinator, the student and the supervisor.

FORMAT: A minimum of 84 hours of work experience should be documented.

For example students could spend 7-8 hours per week throughout a regular term or complete the 84 hours in a more concentrated period during the summer. Grading is pass/fail.

PREREQUISITE: Students must be registered in a Biology or Marine Biology program, have completed a minimum of three full credits in Biology above the 1000 level and have a minimum cumulative GPA of 2.4 or permission of coordinator.

CROSS-LISTING: MARI 3800.03

EXCLUSION: Scheduled classes at a learning institution, study that would qualify for a Special Topics class, an Honours project, co-op work terms and paid work. Only one experiential learning class per degree is permitted.

### BIOL 4001.03: Environmental Impact Assessment.

This class provides an opportunity to explore all aspects of environmental impact assessment (EIA) as practiced in Canada and in other countries. The class traces the development of EIA over the past 30 years and critically examines the scientific, procedural and political dimensions.

NOTE: All students taking BIOL 4001.03 or ENVS 4001.03 must have completed 90 credits and be in their fourth year of study or have permission of instructor.

FORMAT: Lecture 3 hours (fall and winter), lab 3 hours (winter only)

PREREQUISITE: ENVS 1000X/Y.06 or BIOL 2060.03 or EARTH 2410.03 or GEOG 2100X/Y.06 or GEOG 2201.03 or GEOG 2202.03 or INTD 2001.03 or INTD 2002.03 or OCEA 2000X/Y.06 (or OCEA 2001.03 and OCEA 2002.03) or SUST 2000.06 or SUST 2001.06.

CROSS-LISTING: ENVS 4001.03

### BIOL 4035.03: Human Genetics.

See BIOC 4835 in the Biochemistry section of the calendar.

### BIOL 4050.03: Advanced Topics in Developmental Biology.

This class examines the molecular-genetic basis of development using model organisms, e.g., *Drosophila* and *Arabidopsis*, and the use of current techniques to identify key genes controlling development and explores how genes, proteins and cells interact in development of animals and plants.

INSTRUCTOR(S): S. Stone

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 3050.03 (or instructor's permission and BIOL 2020.03, BIOL 2030.03)

CROSS-LISTING: BIOL 5050.03

### BIOL 4060.03: Marine Mammalogy.

The class will examine the characteristics that mammals brought with them when they returned to the ocean, the evolution of the different groups of marine mammals, some of their special adaptations, the roles of marine mammals in oceanic ecosystems and general principles of the marine mammal population biology. Students will use information on the biology of marine mammals to explore conservation/management issues.

INSTRUCTOR(S): T. Wimmer

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: BIOL 5651.03

### BIOL 4061.03: Design of Biological Experiments.

This class introduces students with previous training in univariate statistics to the practice and pitfalls of experimental design and data analysis in biology. Lectures and take-home exams are used to demonstrate the fundamentals of design and analysis, with emphasis on potential problems and how they are overcome.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2080.03 or STAT 2080.03 or ECON 2280.03 (Grade of B+ or higher); offered to well prepared honours students as well as graduate students

CROSS-LISTING: BIOL 5061.03

### BIOL 4062.03: Analysis of Biological Data.

The class introduces students to techniques available for the analysis of biological data, including regression, general linear models and multivariate methods.

Emphasis is on the practical use of these techniques rather than derivations. Students analyze real and realistic data sets, and are assessed on write-ups of these analyses.

INSTRUCTOR(S): H. Whitehead

PREREQUISITE: STAT 2080.03 or ECON 2280.03

CROSS-LISTING: BIOL 5062.03

### BIOL 4065.03: Sustainability and Global Change.

Sustainability emphasizes equitable societies, protected environments, and robust economies. Most countries pursue Sustainable Development yet the concept remains controversial, and defined differently in the North and the South. The global trends focus on those that relate to environment and sustainability. Discussion format with Blackboard Learning/Internet assignments.

INSTRUCTOR(S): P. Lane

FORMAT: Lecture and discussion 3 hours

PREREQUISITE: BIOL 2060.03 and one of BIOL 3003.03, BIOL 3060.03, BIOL 3061.03, BIOL 3062.03, BIOL 3063.03, BIOL 3065.03, BIOL 3066.03, BIOL 3067.03, BIOL 3068.03, BIOL 3069.03, BIOL 3101.03, BIOL 3601.03, BIOL 3614.03, BIOL 3615.03, BIOL 3601.03, or BIOL 3623.03, BIOL 3624.03, BIOL 3664.03, BIOL 3761.03 or BIOL 3762.03, or INTD 2001.03 or INTD 2002.03 or permission of instructor

CROSS-LISTING: BIOL 5065.03

### BIOL 4160.03: Political Ecology.

Political ecology (PE) examines the politics of the environment but not on specific policies, political theories, or ideologies. PE considers an interacting array of political and socio-economic forces that shape human-environmental relationships. International case studies will be evaluated using several PE tools. Discussion format with Blackboard Learning/Internet assignments.

INSTRUCTOR(S): P. Lane

FORMAT: Discussion 3 hours in class and BbLearn

PREREQUISITE: BIOL 2060.03 and one of BIOL 3003.03, BIOL 3060.03, BIOL 3061.03, BIOL 3062.03, BIOL 3063.03, BIOL 3065.03, BIOL 3067.03, BIOL 3069.03, BIOL 3101.03, BIOL 3601.03, BIOL 3623.03, BIOL 3624.03, BIOL 3761.03, BIOL 3762.03, or INTD 2001 or INTD 2002 or consent of instructor

CROSS-LISTING: BIOL 5160.03

### BIOL 4220.03: Plant Cell Biology.

This class covers the structure, function, and dynamic properties of plant cellular components including constituent organelles, cytoskeleton, and the cell wall.

Current areas of research such as programmed cell death, cell signalling and cellular trafficking are discussed in depth. The class consists of lectures, student seminars, and report writing.

INSTRUCTOR(S): A. Gunawardena

FORMAT: Lecture 3 hours per week

PREREQUISITE: BIOL 2020.03, and one of BIOL 2003.03 or BIOL 2004.03 or BIOL 3050.03 or BIOL 3218.03 with a minimum of B- in these classes or permission of the instructor

CROSS-LISTING: BIOL 5220.03

### BIOL 4302.03: Molecular Immunology.

See class description for MICI 4302.03 in the Microbiology and Immunology section of this calendar.

### BIOL 4335.03: Environmental Impacts in Marine Ecosystems.

See class description for OCEA 4335.03, in the Oceanography section of this calendar.

### BIOL 4369.03: Fisheries Oceanography.

See class description for OCEA 4160.03 in the Oceanography section of this calendar.

**BIOL 4370.03: Deep Sea Biology.**

See class description for MARI 4370.03 in the Marine Biology section or OCEA 4370.03 in the Oceanography section of this calendar.

**BIOL 4404.03: Introduction to Pharmacology I.**

See class description for BIOL 4404.03, in the Pharmacology section of the calendar.

**BIOL 4407.03: Introduction to Pharmacology II.**

See class description for BIOL 4407.03, in the Pharmacology section of the calendar.

**BIOL 4661.03: Biological Oceanography.**

See class description for OCEA 4140.03, in the Oceanography section of this calendar.

**BIOL 4662.03: Biology of Phytoplankton.**

See class description for OCEA 4230.03 in the Oceanography section of this calendar.

**BIOL 4664.03: History of Marine Sciences.**

See class description for MARI 4664.03 in the Marine Biology section, or SCIE 4001.03 in the Science, Interdisciplinary section of this calendar.

**BIOL 4666.03: Benthic Ecology.**

See class description for OCEA 4663.03 in the Oceanography section of the calendar.

**BIOL 4667.03: Census of Marine Life.**

The Census of Marine Life recorded over 250,000 known species of eukaryotes in the world's oceans. In this class, the Senior Scientist for Census 2010 examines the diversity, distribution and abundance of marine biota globally and reviews new approaches to discover new species and to monitor responses to climate change.

INSTRUCTOR(S): R. O'Dor

FORMAT: Lecture with discussions

PREREQUISITE: BIOL 2003.03 and BIOL 2060.03 and six half credits of BIOL, MARI, or OCEA classes

CROSS-LISTING: MARI 4667.03

**BIOL 4806.03: Special Topics in Biology.**

Independent study intended for students who wish to study an area of biology not covered in other classes. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be approved by the Chair of the Biology Undergraduate Curriculum Committee.

NOTE: For registration forms and further information see: <http://biology.dal.ca/Undergraduate/index.htm>

**BIOL 4807.03: Special Topics in Biology.**

Independent study intended for students who wish to study an area of biology not covered in other classes. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be approved by the Chair of the Biology Undergraduate Curriculum Committee.

NOTE: This class is for students who have already completed one Special Topics Class. For registration forms and further information see: <http://biology.dal.ca/Undergraduate/index.htm>

**BIOL 4900X/Y.06: Honours Research and Thesis.**

This class is required of, and restricted to, all Biology Honours programmes in which Biology is the major area of study. Students conduct a research project supervised by a research scientist and attend weekly meetings of the class.

NOTE: The class grade is based on the results of the research which are submitted in April as an Honours Thesis, an oral presentation about the research to the class, and an oral or poster presentation at the Honours Cameron Conference in February. Co-op students attend this class by registering for Biology 4901 and 4902. See details about selecting a supervisor for the honours research under the general requirements for Biology honours programmes at the beginning of Biology's calendar entry or on the honours page of Biology's website <http://biology.dal.ca/honours/index.htm>

INSTRUCTOR(S): G. Crossin and staff

FORMAT: Weekly class meetings (1.5 - 3.0 hrs) and an independent research project

CROSS-LISTING: MARI 4900X/Y.06

RESTRICTION: Honours students normally in their final year of study.

**BIOL 4901.03: Honours Research and Thesis I.**

This is required of, and restricted to, all Biology Co-op Honours programmes. The class description is the same as for Biology 4900X/Y. Students attend BIOL 4901 in the Winter term of their 4th year and BIOL 4902 in the Fall term of their 5th year to accommodate their work terms.

NOTE: 4901 and 4902 must be taken in consecutive winter/fall terms to get a grade for either class. No grade will be recorded for Biol. 4901 until 4902 is also completed and the final Honours Thesis has been evaluated - usually in April following the fall class of 4902. Students normally give a poster presentation about their previous work term at the Honours Cameron Conference in February.

INSTRUCTOR(S): G. Crossin and staff

FORMAT: Weekly seminars 1.5 - 3.0 hours

CROSS-LISTING: MARI 4901.03

EXCLUSION: BIOL 4900.06 and MARI 4900.06

RESTRICTION: Students in the Biology Co-op Honours Programme, normally in their final year of study.

**BIOL 4902.03: Honours Research Thesis II.**

This is the 2nd half of the required class for Biology Co-op honours students. The class description is the same as for Biology 4900X/Y. Students attend 4902 in the fall of their 5th year.

NOTE: 4901 and 4902 must be taken in consecutive winter/fall terms to get a grade for either class. No grade will be recorded for Biol. 4901 until 4902 is also completed and the final Honours Thesis has been evaluated - usually in April following the fall class of 4902.

INSTRUCTOR(S): G. Crossin and staff

FORMAT: Weekly seminars 1.5 - 3.0 hours

CROSS-LISTING: MARI 4902.03

EXCLUSION: BIOL 4900.06 and MARI 4900.06

RESTRICTION: Students in the Biology Co-op Honours Programme, normally in their final year of study.

**BIOL 8891.00: Co-op Work term I.**

PREREQUISITE: SCIE 2800.03

**BIOL 8892.00: Co-op Work term II.**

PREREQUISITE: SCIE 2800.03, BIOL 8891.00

**BIOL 8893.00: Co-op Work term III.**

PREREQUISITE: SCIE 2800.03, BIOL 8892.00

**BIOL 8894.00: Co-op Work term IV.**

PREREQUISITE: SCIE 2800.03, BIOL 8893.00

# Chemistry

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## Dean

Moore, C., BA (Hons) (Cambridge), PhD (Cambridge), Professor (Psychology)

## Chairperson of Department

Zwanziger, J. W.

## Graduate Coordinator

Stradiotto, M.

## Co-op Academic Advisor

Zhang, P.

## Faculty Undergraduate Advisors

Cozens, F. L. (494-6582)  
Grundy, K. R. (494-3409) (Transfer Credits)  
Laws, P. (494-6143) (First year Advisor)  
MacDonald, J. L. (494-2440)  
Wentzell, P. D. (494-3708)  
Zhang, P. (Co-op Academic Advisor)

## Professors Emeriti

Aue, W. A., PhD (Vienna), FCIC  
Coxon, J. A., BA (Cambridge), MSc, PhD (East Anglia)  
Knop, O., DSc (Laval), FCIC  
Kwak, J. C. T., BSc, MSc, PhD (Amsterdam), FCIC

## Professors

Bearne, S. L., BSc (Acadia), PhD (Toronto), MDCM (McGill), cross-appointment from Biochemistry & Molecular Biology  
Becke, A. D., BSc (Queen's), MSc, PhD (McMaster), FRSC, FRS, FCIC, Killam Chair in Computational Science, Shirreff Chair of Chemistry  
Boyd, R. J., BSc (UBC), PhD (McGill), FCIC, Alexander McLeod Professor of Chemistry  
Burnell, D. J., BSc, MSc (Carleton), PhD (UNB)  
Dahn, J. R., BSc (Dalhousie), MSc, PhD (UBC), Canada Research Chair in Battery and Fuel Cell Materials, NSERC/3M Canada Inc. Industrial Research Chair and cross-appointment from Physics and Atmospheric Science  
Jakeman, D. L., BSc, PhD (Sheffield), cross-appointment with College of Pharmacy  
Martin, R. V., BS (Cornell), MSc (Oxford), PhD (Harvard), cross-appointment with Physics and Atmospheric Science  
Stradiotto, M., BSc, PhD (McMaster), Faculty of Science Killam Professor  
Thompson, A., BSc (Leicester), PhD (Sheffield), Faculty of Science Killam Professor  
Weaver, D. F., MD, PhD (Queen's), FRCP(C) (Dalhousie), FCIC, Canada Research Chair in Clinical Neuroscience and cross-appointment with the Division of Neurology  
Wentzell, P. D., BSc (Dalhousie), PhD (Mich State)  
White, M. A., BSc (Western), PhD (McMaster), FCIC, University Research Professor and cross-appointment with Physics and Atmospheric Science  
Zwanziger, J. W., BA (Chicago), PhD (Cornell), Canada Research Chair in NMR Studies of Materials, cross-appointment with Physics and Atmospheric Science

## Associate Professors

Andreas, H. A., BSc, PhD (Calgary)  
Cozens, F. L., BSc (York), PhD (Toronto)  
Doucette, A. A., BSc (Dalhousie), PhD (Alberta)  
Grundy, K. R., BSc, MSc, PhD (Auckland)  
Obrovac, M. N., BSc (SFU), MSc, PhD (Dalhousie), Industrial Research Chair in Materials Science, cross-appointment with Physics and Atmospheric Science  
Rainey, J. K., BSc (Guelph), MSc, PhD (Toronto) Director of NMR-3, cross-appointment with Biochemistry & Molecular Biology  
Schepp, N. P., BSc, PhD (Toronto)  
Turculet, L., BSc (MIT), PhD (Berkeley)  
White, R. L., BSc (Dalhousie), PhD (McMaster), FCIC  
Zhang, P., BSc, MSc (Jilin U., China), PhD (Western)

## Assistant Professor

Welch, G. C., BSc (Calgary), PhD (Windsor)

## Senior Instructors

Alemán Milán, G., BEng (Superior Polytechnic Institute of Havana), MSc, PhD (Dalhousie)  
Barkhouse, S. A., BSc (MSVU), BEd, MBA (Dalhousie)  
Byers, C. M., BSc (Dalhousie)  
Laws, P. A., BSc (Acadia), MSc (Dalhousie), BEd (MSVU)  
Thompson, K. E., BSc (Acadia), MBA (SMU)

## Instructors

MacDonald, J. L., BSc, BTech (CBU), PhD (Dalhousie)  
Moya Barrios, R., BSc (U of Havana, Cuba), MSc, PhD (Dalhousie)  
Whalen, M., BSc (Dalhousie), PhD (McMaster)

## Adjunct Professors

Burford, N., BSc (Wales, Cardiff), PhD (Calgary), FCIC, University of Victoria, Victoria, BC  
Cameron, T. S., BA, MA, DPhil (Oxon), Dalhousie University, Halifax, NS  
Chatt, A., BSc (Calcutta), MSc (Roorkee), MSc (Wat), PhD (Toronto), FCIC, Dalhousie University, Halifax, NS  
Grindley, T. B., BSc, MSc, PhD (Queen's), FCIC, Dalhousie University, Halifax, NS  
Grossert, J. S., BSc, MSc, PhD (Natal), FCIC, Dalhousie University, Halifax, NS  
Hellou, J., BSc (Montreal), MSc, PhD (UBC), Bedford Institute of Oceanography, Dartmouth, NS  
Kralovec, J., MSc (U of Chemical Technology, Prague); PhD (Czech Academy of Sciences, Prague), Ocean Nutrition, Dartmouth, NS  
Matta, C., B. Pharm. Sci. (Alexandria U, Egypt), Graduate Diploma in Health and Hospital Administration (National Institute of Management, Egypt), PhD (McMaster), Mount Saint Vincent University, Halifax, NS  
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Pincock, J. A., BSc, MSc (Man), PhD (Toronto), FCIC, Dalhousie University, Halifax, NS  
Pinto, D. M., BSc (McGill), PhD (Alberta), Institute for Marine Biosciences, Halifax, NS  
Pottie, I. R., BSc (SMU), PhD (MUN), Mount Saint Vincent University, Halifax, NS  
Quilliam, M., BSc, PhD (Manitoba), National Research Council, Institute for Marine Biosciences, Halifax, NS  
Ramaley, L., BA (Colorado), MA, PhD (Princeton), FCIC, Dalhousie University, Halifax, NS  
Syvitski, R., BSc, MSc (Lakehead), PhD (UBC), Institute for Marine Biosciences, Halifax, NS  
Werner-Zwanziger, U., Vordiplom (Mathematics), Diploma (Chemistry), PhD (Westfälische Wilhelms-Universität Münster, Germany), Dalhousie University, Halifax, NS

## Part-time Academics

Grindley, T. B., BSc, MSc, PhD (Queen's)  
Perrott, A., BSc, PhD (Dalhousie), BEd (Acadia)  
Pincock, J. A., BSc, MSc (Man), PhD (Toronto)

## Postdoctoral Fellows, Research Associates/ Assistants

Banfield, S., BSc (Acadia), PhD (UWO)  
 Barden, C. J., BSc (James Madison U), PhD (U of Georgia)  
 Chen, R., BSc (U of Sha Shi, China), MSc, PhD (China U of Petroleum)  
 Cordes, R. E., BSc (Dalhousie), MSc (UBC)  
 Crawford, S. M., BSc (UVic), PhD (Dalhousie)  
 Fisher, L., BS (The College of New Jersey), PhD (U of Delaware)  
 Hatchard, T., BSc, BComm (SMU), MSc, PhD (Dalhousie)  
 Hawco, C., BSc (SMU), MSc (Dalhousie)  
 Johnson, M., BSc (Dalhousie), MSc (UWO)  
 Marchal, E., BSc, MSc (Nancy U, France), PhD (Rennes U, France)  
 Meek, A., BSc, MSc, PhD (Dalhousie)  
 McGrath, A., BSc (UNB), MSc (Queen's)  
 Reed, M., BSc (Reading, UK), D.Phil (Sussex, UK)  
 Robertson, K., BSc, MSc, PhD (Dalhousie)  
 Senadhi Pathiranalag, T. K., Graduateship course (Institute of Chemistry, Ceylon, Sri Lanka)  
 Smithen, D. A., MChem, PhD (Cardiff U, Wales)  
 Tang, G., BSc, MSc (Tong Ji U, China), PhD (Chinese Academic Science, China)  
 Wang, Y., BS (PLA's Medical College, China)  
 Weaver, C., BSc, MSc (Queen's)  
 Wu, F., PhD (Research Institute of Petroleum Processing, Beijing, P.R. China)

## I. Introduction

Chemistry is often called the central science because of its relevance to so many other disciplines. Understanding the composition and properties of matter, as well as the manner in which one substance is transformed into another, is essential to the study of our physical and natural worlds. As such, chemistry is often a starting point for many different careers in science. A variety of programs are available, ranging from focused studies to interdisciplinary options to suit the interests of the student.

A chemistry degree involves considerable breadth of training in the major branches of chemistry. These include organic, inorganic, physical, analytical and biological chemistry. In addition to establishing a solid foundation in the fundamental principles of chemistry, students who undertake a chemistry degree develop essential skills that include problem solving, critical thinking, organization, data analysis, and written and oral communication. The laboratories associated with classes develop the necessary experience with laboratory procedures, equipment and safety, and serve to reinforce the concepts learned in lecture.

## II. Degree Programs

The Department of Chemistry offers five main degree programs as either a BSc or BA: an Honours degree, a Combined Honours degree, a 20 Credit Major degree, a 20 Credit Double Major degree and a 15 Credit degree. Other programs include a Science Co-op degree, a 15 Credit degree concurrent with a Diploma in Engineering, a Multidisciplinary Honours degree, and a Minor in Chemistry.

The Honours degree and 20 Credit Major degree in Chemistry, as well as corresponding Co-op programs, are accredited by the Canadian Society for Chemistry (CSC). CSC accreditation ensures that graduates of these programs have met certain criteria concerning the quantity and quality of their instruction. It qualifies such graduates for membership in the CSC and to practice chemistry as professionals.

The sections below list the specific departmental requirements for various degree programs. In addition, students must satisfy the College of Arts and Science requirements that are outlined in the Undergraduate Calendar. Students who participated in the Dalhousie Integrated Science Program (DISP) in their first year should consult the Undergraduate Calendar for first-year class equivalencies in each class of study. For further information, it is suggested that students contact the department and speak with a Chemistry Advisor if necessary.

### A. Concentrated Honours Degree (20 Credit)

This program is intended to provide a broad training in chemistry while at the same time making provision for the individual interests of students. All honours students must consult with an academic advisor and obtain approval of their class selection.

For the Honours degree, all credits in the honours subject must be passed with a grade of at least C, except CHEM 4901, which requires a minimum grade of B- for honours qualification. The minimum GPA for classes in the honours subject is 3.00.

### Departmental Requirements

- CHEM 1011.03/1012.03, or CHEM 1021.03/1022.03, or DISP (SCIE 15XX)
- CHEM 2101.03, CHEM 2201.03, CHEM 2301.03, CHEM 2304.03, CHEM 2401.03, CHEM 2402.03
- CHEM 3103.03, CHEM 3201.03 or 3202.03, CHEM 3301.03, CHEM 3401.03 or 3404.03, CHEM 3601.03
- A minimum of 2.5 additional credits in chemistry above the 1000 level
- CHEM 4901.06

### Other Required Classes

- MATH 1000.03/1010.03 or equivalent
- MATH 2001.03
- MATH 2030.03
- PHYC 1100.06 or PHYC 1300.06 or PHYC 1280.03/1290.03 or equivalent

### B. Combined Honours Degree (20 Credit)

Students who want to study chemistry in conjunction with another subject may wish to pursue a Combined Honours degree program. The other subject may be any discipline from the Faculty of Science or the Faculty of Arts and Social Sciences, or may be a program in Computer Science or Environment, Sustainability and Society. Chemistry may be the primary subject (defined as the subject with the larger number of honours credits), or the secondary subject. If the primary subject area is from the Faculty of Arts and Social Sciences, the degree granted will be a BA. Students are advised that some of the College of Arts and Science requirements for a Combined Honours degree differ for the BA and BSc (see Undergraduate Calendar).

Students enrolled in the Combined Honours program must have their program of study approved by advisors in both subject areas. A minimum GPA of 3.00 is required for science classes in the honours subject(s); a minimum GPA of 2.70 is required for Arts and Social Sciences classes in the honours subject.

Students must complete an Honours Qualifying Examination in one of the two subject areas with a minimum grade of B- for honours qualification. This requirement is usually, but not necessarily, completed in the primary subject area. For chemistry, this requirement is satisfied through CHEM 4901.

For chemistry as the primary subject area, the requirements are listed below

### Departmental Requirements (Chemistry as Primary Subject)

- CHEM 1011.03/1012.03, or CHEM 1021.03/1022.03, or DISP (SCIE 15XX)
- CHEM 2101.03, CHEM 2201.03, CHEM 2301.03/2304.03, CHEM 2401.03/2402.03
- A minimum of three additional credits in chemistry above the 1000 level, including two credits above the 2000 level
- Honours Qualifying Examination (if taken in chemistry through CHEM 4901.06, this counts as one of the 3 additional credits above).

### Other Required Classes (Chemistry as Primary Subject)

- MATH 1000.03/1010.03
- A minimum of five credits in the secondary subject above the 1000 level, including two credits above the 2000 level. Consult with the secondary department for specific requirements.

For chemistry as the secondary subject area, the first-year requirements are as listed above. A minimum additional five unspecified credits in chemistry are required beyond the 1000 level, including two credits beyond the 2000 level.

For the Combined Honours degree, a minimum of 11 credits beyond the 1000 level are required in the two subject areas, with not less than five or more than nine in either. At least two credits in each subject must be above the 2000 level. Students are advised to consult the specific requirements of the other department involved.

## C. Major Degree (20 Credit)

The 20 Credit Major degree is suited to students who want to focus on chemistry but wish to have a program that is somewhat less constrained than the Honours degree. Like the Honours degree, this program is accredited by the Canadian Society for Chemistry. The departmental requirements are listed below.

### Departmental Requirements

- CHEM 1011.03/1012.03, or CHEM 1021.03/1022.03, or DISP(SCIE 15XX)
- CHEM 2101.03, CHEM 2201.03, CHEM 2301.03/2304.03, CHEM 2401.03/2402.03
- CHEM 3103.03, CHEM 3201.03 or CHEM 3203.03, CHEM 3305.03, CHEM 3401.03 or CHEM 3404.03, CHEM 3601.03
- A minimum of two additional credits in chemistry above the 1000 level including a half credit in chemistry above the 2000 level

### Other Required Classes

- MATH 1000.03/1010.03 or equivalent
- A total of one credit from a combination of MATH (above 1000 level), STAT (any class) or CSCI 1100.03
- PHYC 1100.06 or PHYC 1300.06 or PHYC 1280.03/1290.03 or equivalent

## D. Double Major Degree (20 Credit)

As with the Combined Honours degree, the Double Major degree allows students to combine a program of study in chemistry with another subject area, but with fewer constraints than the Honours program. The other subject may be any discipline from the Faculty of Science or the Faculty of Arts and Social Sciences, or may be a program from Computer Science or Environment, Sustainability and Society. Chemistry may be the primary subject (defined as the subject with the larger number of credits), or the secondary subject. If the primary subject area is from the Faculty of Arts and Social Sciences, the degree granted will be a BA. Students are advised that some of the College of Arts and Science requirements for a Double Major degree differ for the BA and BSc (see the Undergraduate Calendar).

For chemistry as the primary subject area, the requirements are listed below

### Departmental Requirements (Chemistry as Primary Subject)

- CHEM 1011.03/1012.03, or CHEM 1021.03/1022.03, or DISP(SCIE 15XX)
- CHEM 2101.03, CHEM 2201.03, CHEM 2301.03 or CHEM 2304.03, CHEM 2401.03
- A minimum of three additional credits in chemistry above the 1000 level including two credits in chemistry above the 2000 level

### Other Required Classes (Chemistry as Primary Subject)

- MATH 1000.03 and one of MATH 1010.03 or MATH 1060.03
- A minimum of five credits in the secondary subject above the 1000 level, including two credits above the 2000 level. Consult with the secondary department for specific requirements.

For chemistry as the secondary subject area, the first-year requirements are as listed above. A minimum additional five unspecified credits in chemistry are required beyond the 1000 level, including a minimum of two credits beyond the 2000 level.

For the Double Major degree, a minimum of 10 credits beyond the 1000 level are required in the two subject areas, with not less than five or more than nine in either, including two credits beyond the 2000 level in each subject. Students are advised to consult the specific requirements of the other department involved.

## E. Co-operative Education Program in Chemistry

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career-related work experience. Students undertake three or four work-terms throughout their academic study terms. Science Co-op degree programs enable students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students normally apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

A limited number of students will be admitted into this program each year. Students must be eligible to work in Canada. The minimum GPA of 3.00 is

required for admission to and continuation in the Co-op program. Students must apply before August 1, but should, however, register their intention to enter the program with the Chemistry Office in the Spring of their first year if possible. Registration details are available from the DalChem Co-op Academic Advisor or the Co-operative Education office. For more information, please see <http://www.sciencecoop.dal.ca>.

### Departmental Requirements

Students in the Co-op program will be enrolled in one of the 20 credit programs: Honours, Combined Honours, 20 Credit Major, or 20 Credit Double Major. Degree requirements are the same as outlined for these programs, plus any additional requirements (seminars, work-terms, reports, etc.) stipulated by the Co-op program. It should be noted that, because of the scheduling of work-terms, Co-op degrees normally require 4.3 years to complete.

Students must consult with the Chemistry Co-op Academic Advisor to have their program of classes and work-terms approved.

## F. BSc or BA (15 credit) Minor in Chemistry

The 15 credit degree with a minor in Chemistry is appropriate for students who want to study some chemistry but do not wish to complete the conventional four-year program. This degree provides a specialization in chemistry at a minimum level and does not generally qualify the student for graduate studies in chemistry. It is possible for students who obtain this degree to upgrade it to a 20 credit major or honours degree with additional study.

### Departmental Requirements

- CHEM 1011.03/1012.03, or CHEM 1021.03/1022.03, or DISP (SCIE 15XX)
- A minimum of three additional credits in Chemistry above the 1000 level, excluding courses that do not lead to a Chemistry degree. (CHEM 2441 may be applied with the Diploma in Engineering.)

### Other Required Classes

- MATH 1000.03 and one of MATH 1010.03 or MATH 1060.03

## G. Minor in Chemistry

The Minor in Chemistry is intended for students in non-chemistry degree programs who wish to include a significant component of chemistry as part of their studies. The Minor in Chemistry may be combined with any of the 20 credit degree programs within the College of Arts and Science, but students should note that it may be difficult to obtain with Combined Honours or Double Major degrees without additional credits. For the acceptability of the Minor in Chemistry in other faculties, please consult the appropriate section of the Undergraduate Calendar.

### Departmental Requirements

Any three credits in chemistry beyond the 1000 level, except courses that do not lead to a chemistry degree.

## H. Certificate in Materials Science

The Department of Chemistry is a participant in a certificate program offered through the Faculty of Science - a Certificate in Materials Science.

A Certificate can be completed by a student in a BSc program, in addition to the student's regular program requirements. Completion of such a Certificate would be noted at Convocation, and shown on the student's transcript.

The purpose of a "Certificate in Materials Science" is to show that the graduate has appropriate training in the breadth and depth of materials science, in addition to their BSc program. It is particularly suited for students in Chemistry, Earth Sciences and Physics programs at Dalhousie University.

Students should enrol in the "Certificate in Materials Science" by contacting the Certificate Coordinator, Dr. Mary Anne White ([mawhite@dal.ca](mailto:mawhite@dal.ca)). Students can enrol when in their second, third or fourth year of the BSc program, but early enrolment is advised.

### Departmental Requirements

During the BSc program, students in the "Certificate in Materials Science" must complete at least four of the following classes, with a minimum grade of B- in each:

- CHEM 3305.03 (or its former version, CHEM 3303.03): Materials Science
- CHEM 4502.03: Polymer Science
- CHEM 4311.03: Fundamental and Applied Electrochemistry

- EARTH 2001.03: Earth Materials Science I
- EARTH 2002.03: Earth Materials Science II
- PHYC 3303.03: Materials Science
- PHYC 3900.03: Introduction to Soft Condensed Matter Physics
- PHYC 4230.03: Introduction to Condensed Matter
- BIOE 4391.03: Polymeric Biomaterials
- BMNG 5110.03: Biocompatibility and Biomaterials Design
- MATL 3500.03: Materials Engineering
- MATL 3510.03: Extraction of Materials
- MATL 3601.03: Structure of Materials
- MATL 3611.03: Corrosion and Degradation of Materials
- MATL 3612.03: Thermodynamics of Materials
- MATL 3620.03: Introduction to Physical Metallurgy
- MATL 3621.03: Mechanical Behaviour of Materials
- MATL 4703.03: Non-Metallic Materials
- MATL 4722.03: Ferrous Alloys and Joining of Materials
- MATL 4805.03: Electrochemical Processing of Materials
- MATL 4806.03: Particulates in Materials Engineering
- MATL 4815.03: Kinetics of Materials Processing
- MATL 4823.03: Non-ferrous Alloys
- MATL 4824.03: Industrial Metallurgy
- MATL 4825.03: Solidification and Casting

### Other Required Classes

In addition, the Certificate in Materials Science students must complete a research project with a materials emphasis (as pre-approved by the Certificate Coordinator) via one of the following sets of classes, with a minimum grade of B-:

- CHEM 4801.03 and CHEM 4802.03  
OR CHEM 4901.06  
OR EARTH 4200.06 OR EARTH 4100.06  
OR PHYC 4800.03 and PHYC 4850.03

### I. Certificate in Medicinal Chemistry

The Department of Chemistry offers a Certificate in Medicinal Chemistry in conjunction with its 20 credit degree programs. This certificate is intended to reflect that the student has completed a class of study in chemistry that is appropriate for employment or further study related to pharmaceutical development and production. Once the requirements have been fulfilled, the certificate will be noted on the student's transcript and presented at convocation. The requirements include the completion of a 20 credit degree program in Chemistry (20 credit major, 20 credit honours, double major, combined honours, etc.), that includes the following classes.

#### Required classes:

- CHEM 2101.03, CHEM 2201.03, CHEM 2301.03 and 2304.03, CHEM 2401.03 and 2402.03
- CHEM 3203.03, CHEM 3401.03 and CHEM 3404.03, CHEM 3601.03
- CHEM 4401.03, CHEM 4601.03
- Any two of: CHEM 3301.03, CHEM 4201.03, CHEM 4205.03, CHEM 4206.03, CHEM 4301.03, CHEM 4402.03

Recommended Electives: CHEM 2488, BIOC 2300, BIOC 2610, BIOC 3200, BIOC 4701

To be awarded the Certificate in Medicinal Chemistry, students should contact their advisor in the Department of Chemistry no later than four weeks after the start of the term in which they intend to graduate, indicating that they wish to have their qualifications for the certificate assessed.

### J. BSc Multidisciplinary Honours (20 Credit)

In rare cases, students may want to study chemistry in conjunction with two or more other subject areas. For these students, the College of Arts and Science offers a Multidisciplinary Honours BSc degree program that may be appropriate. (see the Undergraduate Calendar for more details). Because of the complex nature of this program, students who are considering the Multidisciplinary Honours BSc should consult with an advisor in each of the departments involved to ensure that their program of study is acceptable.

### K. Minors in other subjects

Minor programs allow students to develop subject specialties, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program.

If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements.

For a list of subject areas for which minors are available and their requirements, students should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, as well as the particular subject area of the calendar.

## III. Class Descriptions

Undergraduate classes that are regularly offered by the Chemistry Department are briefly described in this section. More detailed information can be found on the departmental web site at <http://chemistry.dal.ca>. Students should note the following.

- Not all classes are offered every year. Please consult the Academic Timetable for the details of classes offered in a particular academic year.
- The first digit of the class number is the year of a student's program that a class would typically be taken, but this is not meant to be restrictive if a student has the necessary prerequisites or permission of the instructor. For example, a 3000 level class can be taken in the fourth year and 4000 level class can be taken in the third year.
- The second digit of the class number defines the general sub-discipline:
 

0 = General Chemistry	5 = Interdisciplinary
1 = Inorganic Chemistry	6 = Biological Chemistry
2 = Analytical Chemistry	8,9 = Research Classes
3 = Physical Chemistry	
4 = Organic Chemistry	
- The extension following the class number (e.g., XXXX.03) indicates the number of credit hours assigned to the class (e.g., three credit hours). Note that six credit hours are equivalent to one credit.
- All chemistry classes, unless stated otherwise, have a minimum grade requirement of C- for their prerequisite chemistry classes. Students with grades below C- in the prerequisite chemistry classes can only register with the permission of the instructor for the class.
- Unless stated otherwise, the minimum grade requirement for credit in a chemistry class is a D, except for Honours programs, where the minimum grade requirement for chemistry credit is a C (B- for Honours Qualifying Examination).

### Chemistry Resource Centres

First-Year and Advanced Chemistry Resource Centres are located in Rooms 122 and 115, respectively. The former is staffed with advanced undergraduate and graduate students to help with both lab and class material. First-year students are encouraged to make use of the Concept Room, which is located in the First-Year Resource Centre. Here, first-year Instructors will be available at regularly scheduled times to provide aid with class material in a small group or one-on-one atmosphere.

The First-Year Chemistry Resource Centre also houses a number of computers with chemistry-specific programs for students to use. Additionally, there is a selection of resource materials such as molecular model kits and reference texts available to students.

### CHEM 1011.03: Concepts in Chemistry: Structure and Reactivity.

The electronic structures of atoms and molecules are used to explain the reactivity and properties of chemicals. Topics include atomic structure, bonding models, structure and shape of molecules and ions, and acid/base chemistry. It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this class.

COORDINATORS: S. Barkhouse, P. Laws

FORMAT: Lecture 3 hours, lab 3 hours

EXCLUSION: Credit will be given for only one of the following combinations:  
CHEM 1011.03/1012.03 or CHEM 1021.03/1022.03 or DISP (SCIE 15XX)

### CHEM 1012.03: Concepts in Chemistry: Energy and Equilibrium.

The principles of thermodynamics and kinetics are used to explain chemical reactivity and the principles of organic chemistry are used to develop an understanding of organic synthesis. Special topics include electrochemistry,

spectroscopy, chirality, polymers, and the chemistry of living systems to illustrate the relevance of chemistry in everyday life.

COORDINATORS: S. Barkhouse, P. Laws

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Chemistry 1011.03 or equivalent

EXCLUSION: Credit will be given for only one of the following combinations:  
CHEM 1011.03/ 1012.03 or CHEM 1021.03/ 1022.03 or DISP (SCIE 15XX)

### **CHEM 1021.03: Engineering Chemistry I.**

The electronic structures of atoms and molecules are used to explain the reactivity and properties of chemicals. Topics include atomic structure, bonding models, structure and shape of molecules and ions, and acid/base chemistry. It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this class.

COORDINATORS: S. Barkhouse, P. Laws

FORMAT: Lecture 3 hours, lab 3 hours

EXCLUSION: Credit will be given for only one of the following combinations:  
1011.03/ 1012.03 or 1021.03/ 1022.03 or DISP (SCIE 15XX)

### **CHEM 1022.03: Engineering Chemistry II.**

The principles of thermodynamics and kinetics are used to explain chemical reactivity and the principles of organic chemistry are used to develop an understanding of organic synthesis. Special topics include electrochemistry, spectroscopy, chirality, polymers, and the chemistry of living systems to illustrate the relevance of chemistry in everyday life.

COORDINATORS: S. Barkhouse, P. Laws

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1021.03

EXCLUSION: Credit will be given for only one of the following combinations:  
CHEM 1011.03/ 1012.03 or 1021.03/ 1022.03 or DISP (SCIE 15XX)

### **CHEM 1410.03: Introductory Chemistry Related to Human Health.**

General introductory chemistry topics are covered with an emphasis on their relevance to health related disciplines. Subject matter includes atomic and molecular structure, nuclear chemistry, chemical reactions, energy, gases, solutions, chemical equilibria, acids and bases, and introductory organic chemistry. Basic math skills and some chemistry background are assumed.

NOTE: This class does not qualify as a chemistry credit towards a chemistry degree.

INSTRUCTOR(S): J. MacDonald

FORMAT: Lecture 3 hours, tutorial 1.5 hours

EXCLUSION: CHEM 1410.03 cannot be taken concurrently with or after CHEM 1011.03/1012.03, 1021.03/1022.03 or DISP/SCIE 15XX

### **CHEM 2101.03: Introductory Inorganic Chemistry.**

The fundamentals of inorganic chemistry are covered. Specific topics include ionic bonding and the nature of solids, the structure of atoms and simple bonding theory, coordination chemistry of the transition metals, and selected topics in main group chemistry. The preparation, analysis and observation of inorganic compounds are the laboratory assignments.

INSTRUCTOR(S): K.R. Grundy

FORMAT: Lecture 3 hours, lab 4 hours every second week

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

### **CHEM 2201.03: Introductory Analytical Chemistry.**

The basic principles of analytical chemistry are presented, including chemical and instrumental methods of analysis. Instrumental techniques covered include mass spectrometry, chromatography, spectroscopy, and electrochemistry. Laboratory experiments explore all of these topics, and illustrate the techniques with practical examples.

INSTRUCTOR(S): A. Doucette

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

### **CHEM 2301.03: Introduction to Physical Chemistry I.**

The physical principles underlying chemical systems and reactivity are explored, with an emphasis on the forces between molecules and the properties of matter. Principles of thermodynamics are presented, including thermochemistry, entropy and free-energy relationships. Applications include phase equilibria, chemical equilibria, solutions, colligative properties and electrochemistry.

INSTRUCTOR(S): M. Obrovac

FORMAT: Lecture 3 hours, five 4-hour labs every second week

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent; MATH 1000.03 or equivalent

### **CHEM 2304.03: Introductory Physical Chemistry II.**

The physical properties of chemical systems at the level of atoms and molecules are examined. Topics include the quantum mechanical description of atoms and molecules, chemical bonding, experimental and computational methods for studying molecular systems, and the kinetics of chemical processes.

INSTRUCTOR(S): P. Zhang

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent; MATH 1000.03 and MATH 1010.03 or equivalent

### **CHEM 2401.03: Introductory Organic Chemistry: Structure, Concepts of Mechanisms and Spectroscopy.**

Organic chemistry is introduced through an examination of bonding, conformation and stereochemistry. Spectroscopic methods (MS, IR, <sup>1</sup>H and <sup>13</sup>C NMR) are used to determine the structures of compounds. Alkanes, alkenes, alkynes and alkyl halides are presented with an emphasis on the mechanisms of their reactions.

INSTRUCTOR(S): D.J. Burnell

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

### **CHEM 2402.03: Introductory Organic Chemistry: Reactivity of Functional Groups.**

Building on CHEM 2401, the properties and reactions of alcohols, ethers, amines, nitriles, the carbonyl-containing functional groups and aromatic compounds are examined. The reactions are used in synthetic sequences, and reaction mechanisms are stressed. The concepts of resonance and aromaticity become familiar. The use of spectroscopic methods is reinforced.

INSTRUCTOR(S): D.J. Burnell

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2401.03

### **CHEM 2441.03: Foundations of Organic and Biological Chemistry.**

This class develops an understanding for organic chemistry and the role that organic molecules play in a variety of organic systems, including those of living systems. Emphasis is placed on basic ideas, organic functional groups, stereochemistry, simple organic reactions, carbonyl chemistry and the structure relationship of proteins, sugars and DNA.

NOTE: CHEM 2441 does not satisfy a full-year organic chemistry requirement.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

EXCLUSION: CHEM 2441.03 does not qualify as a chemistry credit towards a chemistry degree (except for a 15-credit BSc/Dip Eng)

### **CHEM 2442.03: Organic Chemistry for Pharmacy Students.**

Aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy are presented. This class does not serve as a prerequisite for any other chemistry class.

INSTRUCTOR(S): N. P. Schepp

FORMAT: Lecture 4 hours

RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

### **CHEM 2488.03: Our Organic World.**

Pharmaceuticals, plastics, and some fuels are organic compounds with dramatic roles in our health and economy. Drugs or poisons? Caraway or spearmint? Bendable or stiff? Aspects of organic chemistry are surveyed so that issues such as these can be debated and the chemical facts applied to the world around us.

INSTRUCTOR(S): A. Thompson

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1000.03 or CHEM 1011.03 or CHEM 1410.03 or equivalent

EXCLUSION: CHEM 2488.03 does not serve as a prerequisite for any other chemistry class nor does it count as a chemistry credit towards any degree with a major in chemistry.

### **CHEM 3103.03: Intermediate Inorganic Chemistry.**

Modern bonding theories are developed using symmetry concepts. These are applied to understanding the molecular structure, reactivity and spectroscopic properties of inorganic compounds, including coordination compounds and



organometallic complexes. The compounds prepared in the laboratory introduce more advanced synthetic procedures for the preparation of inorganic compounds.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2101.03

EXCLUSION: CHEM 3101.03, CHEM 3102.03

### **CHEM 3201.03: Analytical Mass Spectrometry and Separations.**

The most commonly employed instrumental techniques in chemical analysis use spectroscopy in some form or involve separations. Qualitative and quantitative analysis and the instrumentation involved are discussed in some detail for mass spectrometry. Methods of separation including solvent extraction and the various types of chromatography are presented. Laboratory experiments illustrate the above techniques with practical examples.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2201.03

### **CHEM 3202.03: Instrumental Methods of Analysis.**

Modern scientific research depends on instrumentation to achieve accurate measurements. Students will gain experience in several important topics in instrumental analysis: electrochemistry, spectroscopy, sampling theory, and data analysis. Experimental principles, the instrumentation, and analytical applications are examined. The laboratory experiments illustrate the topics covered in the lecture.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2201.03

### **CHEM 3301.03: Quantum Mechanics and Chemical Bonding.**

The fundamentals and postulates of quantum mechanics are developed from first principles, with applications to illustrative model systems, vibrations, rotations, atoms, and molecules.

INSTRUCTOR(S): R. Boyd

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03 and MATH 2030.03, and CHEM 2304.03, and PHYC 1280.03/1290.03.06 or 1300.06

### **CHEM 3305.03: Materials Science.**

This class emphasizes the principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter are examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. Important processes such as photography and Xerography are explained.

NOTE: This class is the same as PHYC 3303, except CHEM 3305 has a lab and PHYC 3303 has a major term paper. Also, PHYC 3200.03 could be taken as a corequisite.

INSTRUCTOR(S): M.A. White

FORMAT: Lecture 3 hours, five 4-hour labs every second week

PREREQUISITE: CHEM 2301.03 or PHYC 2520.03 or PHYC 3200.03 (can be a corequisite) or EARTH 2001.03/2002.03 or ENGI 2800.03 or permission of instructor

EXCLUSION: PHYC 3303.03, CHEM 3303.03

### **CHEM 3401.03: Intermediate Organic Chemistry.**

Topics presented include aromatics, heterocycles, amines, enolate anions and other methods for forming C-C bonds, concerted reactions, carbohydrates and some heteroatom chemistry. There is a continuing emphasis on the principles of mechanistic organic chemistry. Students work independently in the laboratory on the preparation of organic compounds.

INSTRUCTOR(S): N.P. Schepp

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2401.03/2402.03

### **CHEM 3404.03: Intermediate Organic Chemistry — Physical Organic and Spectroscopy.**

This class provides an introduction to concepts in physical organic chemistry that are used to explain structure reactivity relationships. Spectroscopic techniques are also described with an emphasis on NMR spectroscopy. The organic laboratory will focus on organic compound separation and identification.

INSTRUCTOR(S): F.L. Cozens

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2401.03/2402.03

EXCLUSION: CHEM 3402.03

### **CHEM 3601.03: Chemistry of Living Systems.**

The chemical principles governing a wide variety of biological processes are discussed. Structure and mechanism are emphasized in explanations and predictions of the behavior of organic compounds in nature. Specific topics include proteins, activation of carboxyl groups, peptide synthesis and biosynthesis, enzyme catalysis, coenzymes and prochirality.

INSTRUCTOR(S): F.L. Cozens

FORMAT: Lecture 3 hours per week

PREREQUISITE: CHEM 2402.03

### **CHEM 4101.03: Advanced Main Group Chemistry.**

Following a brief overview of the fundamental aspects of preparation, structure and bonding for familiar systems, selected topics are examined in some detail. An emphasis is placed on novel structure and bonding arrangements in comparison with carbon chemistry.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3103.03

CROSS-LISTING: CHEM 5101.03

### **CHEM 4102.03: Advanced Transition Metal Chemistry.**

Various themes of modern transition metal chemistry are examined, including but not restricted to: fundamental structure and bonding; spectroscopic characterization methods; as well as reactivity and reaction mechanisms.

INSTRUCTOR(S): M. Stradiotto

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3103.03

CROSS-LISTING: CHEM 5102.03

### **CHEM 4120.03: Advanced Organometallic Chemistry.**

Catalytic and stoichiometric transition metal mediated reactions of fundamental significance in synthetic chemistry are surveyed. Molecular orbital theory is used to understand structure and bonding in metal complexes and the reactivity properties of these species. Relevant examples from the current chemical literature are introduced.

INSTRUCTOR(S): M. Stradiotto

FORMAT: Lectures 3 hours

PREREQUISITE: CHEM 3103.03

### **CHEM 4201.03: Advanced Topics in Separations.**

Classical methods (solvent extraction and ion exchange) are reviewed for pre-concentration of metal ions prior to their determination by spectroscopic methods. Chromatographic topics include gas, liquid, and supercritical chromatography with emphasis on multidimensional techniques. Examples in environmental and biological analysis are drawn from the current literature.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2201.03

CROSS-LISTING: CHEM 5201.03

### **CHEM 4205.03: Chemometrics.**

The application of statistical tools to univariate and multivariate chemical measurements is explored. Topics include descriptive statistics, probability and probability distributions, propagation of errors, hypothesis testing, analysis of variance, experimental design, univariate and multivariate calibration, pattern recognition, exploratory data analysis and mixture analysis. Students are introduced to programming in MatLab.

INSTRUCTOR(S): P.D. Wentzell

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2201.03

CROSS-LISTING: CHEM 5205.03

### **CHEM 4206.03: Analytical Mass Spectrometry.**

This class offers a thorough treatment of modern analytical mass spectrometry instrumentation, with applications towards chemical and biochemical analysis. Specific examples include characterization of pharmaceuticals and biomolecules (proteins, carbohydrates), and discussion of field portable instruments. Reaction mechanisms and spectral interpretation are discussed, but are not emphasized in this applied course.

INSTRUCTOR(S): A.A. Doucette

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2201.03

CROSS-LISTING: CHEM 5206.03

**CHEM 4301.03: Theory of Chemical Bonding.**

This class develops molecular orbital theory from both qualitative and quantitative perspectives. Topics include the basic principles of the LCAO (Linear Combination of Atomic Orbitals) MO method, qualitative understanding of MOs in simple molecules, orbital symmetries, through to state-of-the-art techniques for computer computations of molecular properties.

INSTRUCTOR(S): R.J. Boyd

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3301.03

CROSS-LISTING: CHEM 5301.03

**CHEM 4311.03: Fundamental and Applied Electrochemistry.**

This class provides a broad introduction to the fundamentals of electrochemistry, including electrochemical theory, double layer modelling and electrochemical methods. Additionally, important electrochemical applications are discussed, including corrosion, energy production and energy storage (fuel cells, batteries and supercapacitors).

INSTRUCTOR(S): M. Obrovac

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2301.03 and CHEM 2304.03

CROSS-LISTING: CHEM 5311.03

**CHEM 4401.03: Synthesis in Organic Chemistry.**

A number of important organic reactions are examined in depth with particular attention to regioselectivity and the development of relative or absolute stereochemistry. Applications of these reactions in the synthesis of complex molecules are illustrated with recent examples from the literature.

INSTRUCTOR(S): D.J. Burnell

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3401.03 or equivalent

CROSS-LISTING: CHEM 5401.03

**CHEM 4402.03: Organic Structure Determination.**

Nuclear magnetic resonance spectroscopy and mass spectrometry are emphasized in solving structural problems. Topics include 2D NMR, correlation of structure with chemical shifts and coupling constants, operation of NMR spectrometers, NMR relaxation, analysis of spectral patterns, the vector model of 1D and 2D experiments and ionization methods in mass spectrometry.

INSTRUCTOR(S): B. Grindley

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3402.03 or CHEM 3404.03

CROSS-LISTING: CHEM 5402.03

**CHEM 4502.03: Polymer Science.**

Aspects of synthesis, analysis, characterization, structure and uses of synthetic and naturally occurring macromolecules are explored. Emphasis is on the application of standard methods of organic synthesis, analytical separations, and physico-chemical characterization. There is no laboratory, but students will do an independent literature project.

INSTRUCTOR(S): G. Welch

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2201.03 and 2301.03 and 2304.03 and 2402.03

**CHEM 4504.03: Diffraction Techniques in Solid State Chemistry.**

All chemical elements and compounds can exist as crystalline solids. This class studies the arrangements of atoms and molecules in such solids and examines the methods used to determine these structures. Particular emphasis is placed on the techniques of X-ray crystallography.

INSTRUCTOR(S): Staff

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEM 2101.03 and MATH 2001.03 and 2030.03

**CHEM 4595.03: Atmospheric Chemistry.**

Fundamental introduction to the physical and chemical processes determining the composition of the atmosphere and its implications for climate, ecosystems, and human welfare. Origin of the atmosphere. Nitrogen, oxygen, carbon, sulfur cycles. Atmospheric transport and turbulence. Stratospheric ozone. Oxidizing power of the atmosphere. Regional air pollution: aerosols, smog, acid rain.

INSTRUCTOR(S): R.V. Martin

FORMAT: Lecture 3 hours

PREREQUISITE: Math 1000, PHYC 1280.03/1290.03 or PHYC 1300 and CHEM 1011/1012

CROSS-LISTING: PHYC 4595.03, OCEA 4595.03, OCEA 5595.03

**CHEM 4601.03: Principles of Biomolecular and Drug Molecule Design.**

The class covers both general principles and biochemical considerations in drug design. The fundamental goal is to give students the necessary tools to design new chemical structures as putative therapeutics for a human or veterinarian pathological problem. Students in chemistry are strongly recommended to take CHEM 3601.03 prior to registering in this class.

INSTRUCTOR(S): D.F. Weaver

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2402.03

CROSS-LISTING: CHEM 5601

**CHEM 4602.03: Biophysical Characterization of Macromolecules.**

Covers methods allowing determination of sub-molecular and atomic-level structure and dynamics of biomacromolecules in physiological settings (e.g. solution-state or lipid bilayers) including: fluorescence, electronic and vibrational circular dichroism and NMR spectroscopy; light vs. X-ray vs. neutron scattering; and, single molecule methods.

INSTRUCTOR(S): J.K. Rainey

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1010.03, BIOC 3200.03 or CHEM 3601.03, CHEM 2303.03 or CHEM 2301.03, CHEM 2304.03. Recommended: PHYC 1280.03/1290.03.06 or PHYC 1300.06

CROSS-LISTING: BIOC 4702.03, CHEM 5602.03, BIOC 5702.03

**CHEM 4801.03: Research Project in Chemistry I.**

Students carry out research projects under the supervision of a faculty member, and submit a report and make an oral presentation.

INSTRUCTOR(S): Staff

PREREQUISITE: CHEM 2101.03, 2201.03, 2301.03, 2304.03 (or 2302.03), 2401.03 and 2402.03 plus at least one full credit at the 3000 or 4000 level in the area of interest with an average grade of at least B- or permission of instructor; GPA 3.0

**CHEM 4802.03: Research Project in Chemistry II.**

Students carry out research projects under the supervision of a faculty member and submit a report and make an oral presentation. This class is intended for those students in the Major program who wish greater exposure to independent scientific research.

INSTRUCTOR(S): Staff

PREREQUISITE: CHEM 4801.03

**CHEM 4901X/Y.06: Honours and Major Research Project.**

This class is required for students in the honours program. Students carry out research projects under the supervision of a faculty member and submit reports and make oral presentations to the Department.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term. A minimum GPA of 3.0 is required for this class

INSTRUCTOR(S): A. Doucette

PREREQUISITE: Permission of instructor

# Co-operative Education in Science (Science Co-op)

Telephone: (902) 494-2044  
 Fax: (902) 494-6643  
 Email: [sciencecoop@dal.ca](mailto:sciencecoop@dal.ca)  
 Website: <http://www.sciencecoop.dal.ca>

## Acting Director

Myra, T. (494-6448)

## Co-op Coordinator

Galway, L., BSc (CBU) (494-1768)

## Employer Development Manager

Myra, T. (494-6448)

## Academic Director

Obrovac, M. N., BSc (SFU), MSc, PhD (Dalhousie)

## Co-op Academic Advisors

Cyrus, T., Economics (494-6992)  
 Dobson, M., Biochemistry (494-7182)  
 Dowd, M., Statistics (494-1048)  
 Labrie, D., Physics (494-2322)  
 McAllister-Irwin, N., Marine Biology (494-3818)  
 McCarville, M., Biology (494-7072)  
 Milson, R., Mathematics (494-6366)  
 Mushkat, P. W., Environmental Science (494-8056)  
 Stoltz, D. B., Microbiology/Immunology (494-2590)  
 Wach, G., Earth Sciences (494-8019)  
 Zhang, P., Chemistry (494-3323)

## I. Science Co-operative Education

Science Co-operative Education (Science Co-op) is an academic program where academic study is combined with career related work experience. Students complete three to four work terms throughout their academic study terms and graduate with a Bachelor of Science, Co-op. Science Co-op is available in Biochemistry & Molecular Biology, Biology, Chemistry, Earth Sciences, Environmental Science, Economics, Marine Biology, Mathematics, Microbiology & Immunology, Physics and Atmospheric Science, and Statistics. Students may choose a Major, Honours, or Double Major (where only one of the disciplines is a recognized Science Co-operative Education program).

Students who are accepted into Science Co-op generally begin their first work term in January or May of Year II. Work terms are paid employment related to the student's field of study. The program includes three to four work terms and a minimum of eight academic terms comprising 20 academic credits. The Science Co-operative Education degree program normally takes approximately four and a half years, depending upon the field of study chosen.

Students in Science Co-op must plan their academic class load carefully under the guidance of the departmental Co-op Academic Advisor. Science Co-op students have limited opportunity to take certain numbered classes and the choice of classes in the summer academic term may be limited. It is important that students realize that successful completion of the work terms is an integral part of their academic studies and degree.

### A. Eligibility

Students must be eligible to work in Canada and demonstrate sufficient academic potential (B average or better, consult departmental listings). Students apply to this program and approval of the academic department and Science Co-op Office is required for entry. Applications must be received by August 1st. Students must

be able to check their email every week day. With the permission of the Co-op Academic Advisor, some students may be admitted on a probationary basis pending an improvement in their grades. Co-op students whose grades drop below a B average (3.00 GPA) overall may be required to withdraw from the Science Co-op program. Academic departments may, at their discretion, allow a probationary period before the requirement to withdraw is enforced. During this probationary period, the student may not undertake any new work term commitments but may honour pre-existing arrangements.

### B. Science Co-op Seminar Series, SCIE 2800.00

This class is a required prerequisite to the first work term and is a mandatory component of the Science Co-op program. All Science Co-operative Education students are required to register for, and attend this class, upon acceptance into the program. A grade of Pass is required before students undertake the first work term experience. This class is designed to introduce Science Co-op students to aspects of career development and preparation for their work terms. SCIE 2800.00 is a required non-credit class which is offered in the fall term only. Students must register for this class, in addition to their full class load, in the fall term of the year they join Science Co-op. More detailed information about the class may be found at <http://www.sciencecoop.dal.ca>

### C. Work Terms

A work term is a period of study conducted in an employment environment and each work term is offered as a class listing within each academic discipline for registered Science Co-operative Education students only. Although the Science Co-op office has an outstanding job posting record, it is ultimately the responsibility of the student to arrange their work term. Students are expected to conduct their own job search as well. During a work term, the student is an employee in matters pertaining to the conditions of employment and is a student for the purpose of academic evaluation. The university accepts no liability for the working environment of the students work term. Students are remunerated according to employer policy and the labour laws of the province in which the work term takes place. Students must be remunerated, unpaid work terms are not permitted. Upon accepting a job the student must sign a Work Term Acceptance Agreement which acknowledges awareness of Co-op regulations, their responsibility to register for the work term with the Registrar's Office, pay a Co-op Fee\* (consult the fees section of the calendar), complete a Work Term Report, and other related forms. During the work term the student and employer normally receives contact from a Science Co-op staff member to ensure that the academic objectives of the work term are being met. Failure to complete all requirements of a work term will result in a grade of F.

Work terms must be a minimum of 13 weeks at 32.5 hours per week, or an equivalent combination of hours and weeks worked. Three work terms are required for graduation with a Bachelor of Science, Co-op. A fourth work term is optional, space permitting.

\*Please Note: The Co-op Fee is a program fee, not a "work term" fee.

### D. Work Term Sequence

Work terms alternate with study terms in a pattern set by you and your Co-op Academic Advisor, for each program. The work term sequence must be noted on the application to Science Co-op. Any request for change of work term sequence must be approved by the departmental Co-op Academic Advisor and the Director, Science Co-op. Requests must be received by the Science Co-op office 14 weeks before the next scheduled work term i.e., before January 15, May 15, or September 15. Two consecutive work terms are permitted. Three consecutive work terms may not be permitted.

Please consult with the Co-op Academic Advisor, in your discipline of choice, regarding your work term sequence. Work term sequences must be set and approved with your Co-op Academic Advisor and Science Co-op office.

### E. Work Term Reports

At the end of each work term, each student must submit an acceptable work term report. Specific guidelines for writing this report and submission deadlines are available on the Science Co-op website (<http://www.sciencecoop.dal.ca>). Satisfactory work term reports are required for continuation and graduation in the Science Co-op program. Satisfactory performance in the work place is also required and Co-op employers submit an Employer Evaluation for students in the program. The grade for the work term is based upon the work term report,

employer and student evaluations of the work term, and the work term visit. Failure to complete the work term requirements will result in the student being required to withdraw from the Science Co-op program and a failure mark would be given for the work term.

## F. Fees

Science Co-op students are required to register for their work terms and pay Co-op Fees regardless of whether the services of the Co-op office are used. Co-op Fees are program fees, not work term fees, and are due and payable even if the student withdraws, does not secure a work term, or is required to withdraw, from their work term once employment has begun. Consult the Science Co-op office or website for complete details.

# Earth Sciences

Location: Life Sciences Centre, Room 3006  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2358  
Fax: (902) 494-6889  
Email: earth.sciences@dal.ca  
Website: <http://earthsciences.dal.ca>

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## Chair of Department

Jamieson, R. A., BSc (Dalhousie), PhD (Mun)

## Undergraduate Advisor

Plug, L. (494-1200)

## Co-op Academic Advisor

Wach, G. (494-8019)

## Graduate Coordinator

Culshaw, N. (494-3501)

## Professors Emeriti

Cooke, H. B. S., MSc, DSc (Witwatersrand)  
Medioli, F. S., PhD (Parma)  
Milligan, G. C., MSc (Dalhousie), PhD (Harv)  
Reynolds, P. H., BSc (Toronto), PhD (UBC)  
Zentilli, M., BSc (Chile), PhD (Queen's), PGeo

## Professors

Gibling, M. R., BA (Oxon), PhD (Ottawa)  
Grujic, D., BSc (Belgrade), PhD (ETH Zurich)  
Jamieson, R. A., BSc (Dalhousie), PhD, (MUN)  
Scott, D. B., BSc (Washington), MSc (Washington State), PhD (Dalhousie)  
Wach, G. D., BA (Western Ontario), MSc (South Carolina), DPhil (Oxford)

## Associate Professors

Culshaw, N., BA (Keele), PhD (Ottawa)  
Fedortchouk, Y., MSc (Mosow State Univ), PhD (Victoria)  
Gosse, J. C., BSc (MUN), PhD (Lehigh University)  
Nedimovic, M., BSc (Belgrade), MSc, PhD (Toronto)

## Assistant Professors

Coutand, L., BSc, PhD, (Univ. of Rennes, France)  
Plug, L., BA (McGill), PhD (Univ. of Alaska - Fairbanks) (cross appointment with College of Sustainability)  
Sterling, S., PhD (Duke Univ.) (cross appointment with Environmental Sciences)

## Senior Instructors

Graves, M., BSc (Univ of Idaho), MSc (Dalhousie)  
Ryan, A. M., BSc (Univ College Dublin), MSc, BEd (Acadia), MEd (MSVU),  
PhD (Dalhousie) cross appointed with Environmental Science  
Walls, C., BSc, MSc (Dalhousie)

## Instructors

Cox, R., BSc Hons (Glasgow Univ.), MSc (Glasgow Univ.), PhD (Mun)  
Young, M., BSc (Dalhousie), MSc, MSC (Queen's)

## Cross Appointment

Rainham, D., PhD (Ottawa), Major appointment in Environmental Programs

## Adjunct Professors

Adam, J., Dip in Geology (Univ. of Clausthal), PhD (Tech. Univ. of Berlin), Royal Holloway

Anderson, A., BSc (Univ. of Windsor), MSc (Manitoba), PhD (Queen's), St. Francis Xavier

Barr, S., BSc (UNB), PhD (UBC), Acadia University

Beltrami, H., BSc (Winnipeg), MSc (Queens), PhD (U de Quebec à Montreal), St. Francis Xavier Univ.

Dehler, S., BSc (Calgary), MSc, PhD (UBC), GSC Atlantic

Deptuck, M., BSc (St. Mary's Univ.), PhD (Dalhousie) Canada-NS Offshore Petroleum Board

Dostal, J., BSc (Charles), PhD (McMaster), St. Mary's University

Fensome, R., BSc (Sask.), MSc (Sask.), PhD (Nottingham), GSC Atlantic

Hanley, J., PhD (Toronto), St. Mary's University

Kellman, L., BA (McMaster), MSc (McGill), PhD (Univ. du Quebec à Montreal), St. Frances Xavier University

Kettanah, Y., BSc (Baghdad Univ.), PhD (Southampton Univ. UK), Selahaddin University

Laroque, C., BSc (Sask.), MSc, PhD (Univ. of Victoria), Mt. Allison University

Melchin, M., MSc (Waterloo), PhD (Western), St. Francis Xavier University

Mosher, D., BSc (Acadia), MSc (Memorial), PhD (Dalhousie) GSC Atlantic

Murphy, J.B., BSc (Dublin), MSc (Acadia), PhD (McGill), St. Francis Xavier University

Parsons, M., BSc (Dalhousie), PhD (Stanford), GSC Atlantic

Pe-Piper, G., BSc (Athens), PhD (Cantab), St. Mary's University

Piper, D. J. W., BA (Hons) (St Catharine's Col, Cantab), MA (Cantab), PhD (Darwin Col, Cantab), GSC Atlantic

Risk, D., BSc (Toronto), MSc (St. FX), PhD (Dalhousie), St. Francis Xavier University

Rochon, A., BSc, MSc, PhD (U de Quebec à Montreal), GSC Atlantic

Salisbury, M. H., BSc (MIT), MSc, PhD (Wash), GSC Atlantic Emeritus Scientist

Siddiqui, Q., BSc (Lucknow), MSc (Lucknow), PhD (Leicester).

Swinden, S., BSc (Dalhousie), MSc, PhD (Memorial), NS Dept of Natural Resources, retired

Zentilli, M., BSc (Univ of Chile), PhD (Queen's)

## Honorary Research Associates

Brown, D., BSc (Dalhousie) Canada-NS Offshore Petroleum Board (CNSOPB)

Clair, T., BSc (Mt. A), MSc (Ottawa), PhD (McMaster)

Clarke, B., BSc, MSc (Toronto), PhD (Edinburgh)

Jansa, L., BSc, MSc (Masaryk State U, Czechoslovakia), PhD (Charles), GSC Atlantic, retired

Kosters, E., BSc (Groningen), MSc (Univ of Amsterdam), PhD (Louisiana State Univ)

Kronfeld, J., BA (Queens College, NY), MSc (Florida State), PhD (Rice) Tel Aviv University

Mudie, P. J., BSc (Cape Town), BSc (Leicester), PhD (Dalhousie)

Ruffman, A., MSc (Dalhousie), Geomarine Associates Ltd.

Shimeld, J., B. Applied Sci (Waterloo), MSc (Dalhousie)

Stockli, D., BSc, MSc (Swiss Federal Inst. of Tech, Eth), PhD (Stanford Univ), Univ of Kansas

Utting, D., BSc (Calgary), MSc (Simon Fraser)

Waldron, J., BA (Cambridge), PhD (Edinburgh), University of Alberta

Webster, T., BSc (UNB), MSc (Acadia), PhD (Dalhousie), NSCC, Lawrencetown

## I. Introduction

Earth Science studies the Earth and deals with many questions, such as: How was the Earth formed? What is its composition? Where do we look for oil? Or nickel? Or reliable water supplies? What changes the Earth now? What moves continents? Why are the ages of all the ocean basins less than one-twentieth the age of the Earth itself? Earth Science is an intellectually exciting discipline, and its study is of enormous economic and environmental importance to Canada.

Classes in Earth Sciences are offered for different types of students. Some will want to make a career in some aspect of the study of the Earth - as geologists, geochemists, geophysicists, oceanographers, or teachers - and work for private industry or government agencies. Some may need instruction in Earth Sciences as an aid to other disciplines: for example, a mining engineer, an environmental scientist interested in groundwater problems, a marine engineer interested in coastal processes, or a biologist interested in protozoa. Other students may be interested in an Earth Sciences degree before they take a professional qualification

such as law or business administration. Several of our classes emphasize computer applications; students who choose these may move on to careers in information technology. Those whose prime interest is the humanities or social sciences will find that introductory classes in Earth Sciences stimulate their awareness of their surroundings, their understanding of the environment and develop their appreciation of science.

## High School Preparation

Students in high school who plan a career in Earth Sciences, should have Advanced Math or Pre-calculus Math, plus Chemistry and Physics. Note that only Mathematics is a prerequisite, but the others are strongly recommended. The student should ideally aim to make up deficiencies in high school preparation in the first year at Dalhousie.

## II. Degree Programs in Earth Sciences

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the "Degree Requirements" section of the calendar.

### A. BSc or BA (20 credit) Honours Degree in Earth Sciences

An Honours degree is almost essential for any professional work in earth sciences, and for graduate study. Students must take the required classes listed below. See "Degree Requirements" section for complete information. Dalhousie Integrated Science Program (see separate entry in this calendar) is an appropriate preparation for entry into the second year of an Earth Sciences program.

### Departmental Requirements

#### 1000 level

Recommended:

- EARTH 1080.03 and any other 1st year EARTH class, EARTH 1090 recommended or SCIE 1502.21 or SCIE 1504.27 or SCIE 1510.33

#### 2000 level

- EARTH 2000.015: Earth Sciences Field School
- EARTH 2001.03: Earth Materials Science I
- EARTH 2002.03: Earth Materials Science II
- EARTH 2110.03 (Prerequisite: EARTH 2000.015): Field Methods
- EARTH 2203.03: Sediments and Sedimentary Rocks
- EARTH 2205.03: Introduction to Paleontology
- EARTH 2270.03: Introduction to Applied Geophysics
- EARTH 2380.03: Geochemistry

#### 3000 level

- EARTH 3000.015: Computing Camp
- EARTH 3010.03: Igneous Petrology
- EARTH 3020.03: Metamorphic Petrology
- EARTH 3140.03: Structural Geology
- EARTH 3302.03: Quaternary Sedimentary Environments
- EARTH 3303.03: Stratigraphy

#### 4000 level

- EARTH 4200X/Y.06: Honours Thesis
- EARTH 4350.03: Tectonics
- Plus other advanced Earth Science credits for a total of nine credits beyond the 1000 level.
- Honours Qualifying Examination

### Other required classes \*

- MATH 1000.03
- MATH 1010.03
- PHYC 1280.03/1290.03, CHEM 1011.03/1012.03

NOTE: PHYC 1280.03/1290.03 and a Mathematics class are prerequisites for EARTH 2270.03, which fits best into Year II of the program.

To satisfy the requirement concerning the Honours Qualifying Examination, a student will complete a thesis as EARTH 4200X/Y.06, followed by an oral examination, based on the general subject area of the thesis.

Theses must be completed by the posted deadline in March of fourth-year. Students who complete after this date must re-register for the following academic

year in EARTH 4200X/Y.06, pay the fees, and graduate at the spring convocation of the next academic year.

Each advanced class in the second, third and fourth year, except electives, must be passed with a grade of C or better.

In five of the advanced classes, a grade of B or better must be achieved, and in three additional advanced classes, a grade of B- or better is required.

A grade of B- or better must be achieved on the Honours Qualifying Examination.

For First-Class Honours, students must achieve a GPA of 3.70 for classes in the honours subject. A grade of A- or better is required on the Honours Qualifying Examination.

## B. Combined Honours

Students wishing to take combined Honours in Earth Sciences and another subject, should discuss their program in detail with the undergraduate advisor. Students must attend the field schools normally taken at the beginning of second-year (ERTH 2000.015) and third-year (ERTH 3000.015).

### Combined Honours: Earth Sciences and Biology

Earth Sciences Honours Program should be followed during Years I-III and students should take either a Biology class or EARTH 4502.03 in place of EARTH 3010.03/3020.03. For Biology classes, consult Biology Department.

### Combined Honours: Earth Sciences and Physics

Students should follow the Earth Sciences Honours Program in years I to III, including EARTH 2270.03 and EARTH 3270.03, but should take a Physics class in place of EARTH 3010.03/3020.03. For Physics classes, consult Physics Department. MATH 2001.03/2002.03 should also be taken in either Year II or III, and MATH 3110.03/3120.03 in Year III or IV.

### Combined Honours: Earth Sciences and Chemistry

Students should follow the Earth Sciences Honours Program in Years I-III, but should take 3000 level Chemistry classes in place of EARTH 3302.03/3303.03 and 2270.03/3270.03. For Chemistry classes, consult Chemistry Department.

### Combined Honours: Earth Sciences and Oceanography

Students should follow the Earth Sciences Honours Program in years one and two. In year two they should start the Oceanography component by taking OCEA 2000.06. Students should also take CHEM 1011.03/1012.03 and PHYC 1280.03/1290.03, preferably in their first year. In the third and fourth years students will take a combination of EARTH and OCEA classes, with a minimum of four credits in OCEA, which may include the Honours thesis.

## C. Co-op Education in Earth Sciences

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four workterms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. A minimum GPA of 3.0 is required. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the "Co-operative Education in Science" section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

Co-op Academic Advisor in Earth Sciences: Dr. Wach Email: [grant.wach@dal.ca](mailto:grant.wach@dal.ca)

## D. BSc or BA (20 credit) Major in Earth Sciences

### Departmental Requirements

#### 1000 level

- EARTH 1080 and any other 1st year EARTH class; EARTH 1090 recommended or SCIE 1502.21 or SCIE 1504.27 SCIE 1510.33

#### 2000 level

- EARTH 2000.015: Earth Sciences Field School
- EARTH 2001.03: Earth Materials Science I

- EARTH 2002.03: Earth Materials Science II
- EARTH 2110.03 (Prerequisite: EARTH 2000.015): Field Methods
- EARTH 2203.03: Sediments and Sedimentary Rock
- EARTH 2205.03: Introduction to Paleontology

#### 3000 level

- EARTH 3000.015: Computing Camp
- One half-credit in Earth Sciences above the 1000 level
- Four additional credits in Earth Sciences beyond the 2000 level

### Other required classes \*

- MATH 1000.03
- MATH 1010.03 or STAT 1060.03
- CHEM 1011.03, CHEM 1012.03, or CHEM 1021.03 and CHEM 1022.03

A grade of D in an Earth Sciences class precludes admission to classes for which the class is a prerequisite. Where several classes are listed as prerequisites, and a grade of C- or better was not obtained in all, the instructor's consent may be the basis for admission. Students must satisfy the Faculty of Science Writing Requirement and Mathematics Requirement.

## E. 20 Credit Major Co-op

### Departmental Requirements

Same as for the Major above plus the work described in the Co-op program section previously stated.

## F. 20 Credit Double Major: Earth Sciences and Oceanography

Students should follow the requirements for a Combined Honours in Earth Sciences and Oceanography, but replace the Honours thesis with other OCEA/ERTH classes.

## G. BSc or BA (15 credit) Minor in Earth Sciences

Three-year programs with a Minor in Earth Sciences are suitable for students who intend to take subsequent professional training or to enter fields where they are likely to need their geological training as background. A 15 credit degree is not suitable preparation for a career in the earth sciences nor does it meet requirements for Professional Registration as a Geoscientist.

### H. Minor Program in Earth Sciences

Students majoring in other disciplines may wish to explore Earth Sciences in more depth. A Minor in Earth Sciences allows students whose major is another discipline, to develop their earth science background in addition to their major discipline. A Minor in Earth Sciences requires the following:

- One full credit at the 1000 level in Earth Sciences (ERTH), including EARTH 1080 (Geology I)
- Any three full credits above the 1000 level in Earth Sciences (ERTH), at least one of which must be at or above the 3000 level.

## I. Minors offered in other disciplines for Earth Sciences Majors and Double Majors

Students in Earth Sciences 20 credit program may want to consider taking a Minor in another discipline. Minor programs are normally added to a four year major or double major or concentrated honours program. For details on available minors in addition to those listed below, consult the specific departmental section of the calendar.

In addition to Minors in the Faculties of Arts and Social Sciences and Science, the following Minors are offered in combination with a four year degree program in Earth Sciences:

- Business (BA or BSc)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Film Studies (BA and BSc only)
- Food Science (BSc only)
- Journalism (BA or BSc)
- Law and Society (BA or BSc)
- Management (BA or BSc)

## J. Other Programs

### BSc/Engineering or BA/Engineering Concurrent Programs

Students normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements section of the calendar.

## K. Certificate Programs

There are three Certificate Programs available to students enrolled in an Honours, Major, or Minor program in Earth Sciences. Please click here for a full listing of available Certificates

NOTE: Classes counted toward a Major, Honours or Minor program may also be used to fulfil the requirements of a Certificate.

**Certificate in Geographic Information Science** (Contact Lawrence Plug [Lawrence.plug@dal.ca](mailto:Lawrence.plug@dal.ca))

The Environmental Science programs and the Departments of Earth Sciences and Biology offer a Certificate in Geographic Information Science. The certificate is intended to reflect that the student has completed classes of study in geographic information systems and geomatics that are appropriate for further study or employment related to geographic information science. This Certificate can be completed by a student in a BSc program, in addition to the student's regular program requirements and completion of such a Certificate would be shown on the student's transcript.

Students should enrol in the "Certificate in Geographic Information Science" by contacting the Certificate Coordinators (Charlie Walls, Earth Sciences or Dr. Daniel Rainham, Environmental Science or Dr. Cindy Staicer, Biology). Students can enrol when in their second, third or fourth year of the BSc program, but early enrolment is advised.

#### Certificate Requirements:

- Students must complete the following classes, with a minimum grade of B- in each:  
ERTH/GEOG/ ENVS 3500.03 Geoscience Information Management  
ERTH/GEOG 4520.03 GIS Applications to Environmental and Geological Sciences
- In addition students must complete at least two of the following classes, with a minimum grade of B- in each:  
GEOG 2000.03:Cartography  
GEOG 2006.03:Space, Place and GIS  
ENVS 2100.03:Environmental Informatics  
ENVS/GEOG 3400.03: Environment and Human Health  
BIOL/ENVS/GEOG 3633.03 Spatial Information and GIS in Ecology  
ERTH/GEOG 4530.03 Environmental Remote Sensing
- In addition, students must complete a research project with an emphasis in geomatics or geographic information science (as pre-approved by the Certificate Coordinators) via one of the following sets of classes, with a minimum grade of B-:

#### Set A: Earth Sciences

- ERTH 3500.03 (cross-listed with GEOG 3500.03 and ENVS3500.03)  
OR EARTH 4530.03 (cross-listed with GEOG 4530.03)  
OR EARTH 4100.06 (Research Project)  
OR EARTH 4200.06 (Honours Thesis)

#### Set B: Environmental Science

- ENVS 3400.03 (cross-listed with GEOG 3400.03)  
OR ENVS 3801.03 (Directed Reading)  
OR ENVS 4901.03 (Honours Thesis)  
OR ENVS 4902.03 (Honours Thesis)

#### Set C: Biology

- BIOL/MARI 4900.06 Honours Thesis  
OR BIOL/MARI 4901.03 Honours Thesis  
OR BIOL/MARI 4902.03 Honours Thesis  
OR BIOL/MARI 4806.03 Special Topics  
OR BIOL/MARI 4807.03 Special Topics

**Certificate in Environmental Impact Assessment (EIA)** (Contact Pat Lane [patricia.lane@dal.ca](mailto:patricia.lane@dal.ca))

The Faculty of Science offers a Certificate in Environmental Impact Assessment for students majoring in environmental areas and wishing to pursue additional training in EIA. This certificate is also available for students in International Development Studies (IDS) in the Faculty of Arts and Social Sciences and the College of Sustainability. Completion of the Certificate will be shown on a student's transcript.

Students must have received a minimum grade of B for all classes counted toward the certificate.

The Certificate requires four full credits for completion in the following categories:

- Required EIA CLASS: BIOL 4001.03 or ENVS 4001.03 or ENVE 4772.03 (0.5 credits) to be taken in the fourth year.
- Introductory Class in Science or IDS (Table 1) (minimum of 0.5 credits)
- 3rd Level Environmental Classes with largely theoretical content from Table 2 (minimum of 1.5 credits)
- 3rd Level Methods Classes that provide field, laboratory, statistical, modelling and related experience from Table 3 (minimum of 0.5 credits)
- 3rd and 4th Level Supplementary Classes in Major and Related Disciplines from Table 4 (minimum of 1.0 credits)

Note: As usual, students will be required to meet the stated pre-requisites of all classes listed below or the permission of the instructor. Several classes on Tables 1-4 include cross-listings that are given in parentheses. No class can be included twice for the Certificate using different cross-listings.

Disclaimer: This Certificate in EIA has been developed within Dalhousie University and it is not designed to fulfil any governmental and/or professional requirements outside of the university in Canada or abroad.

#### Certificate Requirements:

##### Table 1. Introductory Classes (minimum of 0.5 credits from the following list)

BIOL 2060.03 Introductory Ecology  
ERTH 2410.03 Environmental Issues in Earth Science  
ENVS 1000X/Y.06 Introduction to Environmental Science  
GEOG 2100 X/Y.06 Environment and Culture (SOSA 2100.06)  
INTD 2001.03 Introduction to Development 1 (GEOG 2201.03)  
INTD 2002.03 Introduction to Development 2 (GEOG 2202.03)  
OCEA 2000X/Y.06 (or OCEA 20001.03 + OCEA2002.03) The Blue Planet  
SUST 2000.06 Humanity in the Natural World  
SUST 2001.06 Environment, Sustainability and Governance: A Global Perspective

##### Table 2. Theory-Based Classes (minimum of 1.5 credits from the following list)

BIOL 3060.03 Environmental Ecology  
BIOL 3061.03 Communities and Ecosystems  
BIOL 3062.03 Behavioural Ecology  
BIOL/MARI 3063.03 Resource Ecology  
BIOL 3065.03 Conservation Biology  
BIOL 3069.03 Population Ecology  
BIOL 3601.03 Nature Conservation  
ERTH 3400.03 Fundamentals of Hydrogeology  
ERTH 3410.03 Environmental Geology II  
ERTH 4440.03 Geomorphology and Landscape Evolution  
ENVS 3200.03 Introduction to Environmental Law  
ENVS 3501.03 Environmental Problem Solving I  
ENVS/ERTH 3601.03 Global Biogeochemical Cycles  
GEOG/ERTH 3440.03 Geomorphology  
INTD/GEOG 3114.03 Environment and Development  
MARI/BIOL 3067.03 Ecology and Evolution of Fishes  
MARI/BIOL 3761.03 Marine Ecology  
MGMT 3701.03 Resource and Environmental Problem Solving 1: Sustainable Ecosystems  
MGMT 3702.03 Resource and Environmental Problem Solving 2: Sustainable Industries  
OCEA 3001.03 Introduction to Physical Oceanography  
OCEA 3002.03 Introduction to Chemical Oceanography  
OCEA 3003.03 Introduction to Biological Oceanography  
PLAN 3010.03 Urban Ecology

SOSA 2260.03 Society, Politics and Culture  
 SOSA 3060.03 Social Change and Development  
 SUST 3000.03 Global Approaches to Environmental Decision-Making

**Table 3. Field and Methods-based Classes (minimum of 0.5 credits from the following list)**

BIOL 2601.03 The Flora of Nova Scotia  
 BIOL/MARI 3003.03 Dynamics of Biological Oceanography  
 BIOL/MARI 3221.03 Diversity of Algae  
 BIOL/MARI 3301.03 Invertebrate Biology  
 BIOL 3327.03 Entomology  
 BIOL/ENVS 3615.03 Methods in Ecology  
 BIOL 3620.03 Field Survey of Terrestrial Biodiversity  
 BIOL 3622.03 Ornithology  
 BIOL/ENVS/MARI 3623.03 Applied Coastal Ecology  
 BIOL/ENVS 3624.03 Urban Freshwater Systems  
 BIOL/MARI 3626.03 Field Studies of Marine Mammals  
 BIOL 3630.03 Field Methods in Animal Behaviour  
 BIOL/ENVS/MARI 3632.03 Applied Field Methods in Fish Ecology  
 BIOL/ENVS/GEOG 3633.03 Spatial Information and GIS in Ecology  
 BIOL/ENVS/MARI 3664.03 Intertidal Ecology and Diversity  
 BIOL 3665.03 Food Web Assembly and Modeling  
 BIOL 3666.03 Species Invasions  
 BIOL/MARI 3680.03 Scientific Diving Methods for Marine Ecology  
 BIOL 4061.03 Design of Biological Experiments  
 BIOL 4062.03 Analysis of Biological Data  
 EARTH 3402.03 Practical Hydrogeology  
 EARTH/ENVS/GEOG 3500.03 Geoscience Information Management  
 EARTH/GEOG 4520.03 GIS Applications to Environmental and Geological Sciences  
 EARTH/GEOG 4530.03 Environmental Remote Sensing  
 ENVS 2000.03 Urban Field School  
 ENVS 2100.03 Environmental Informatics  
 ENVS 3001.03 Environmental Science Field School  
 ENVS 3300.03 Contaminated Site Management  
 INTD 3002.03 Development Practice  
 INTD 3103.03 Participatory Development: Methods and Practice  
 OCEA 4220.03 Numerical Modelling of Atmospheres and Oceans  
 OCEA 4380.03 Marine Modelling  
 STAT 3345.03 Environmental Risk Assessment  
 SUST/ENVS 3502.03 The Campus as a Living Laboratory

**Table 4. Higher-level Supplementary Classes (minimum of 1.0 credits from the following list)**

BIOL/MARI 4060.03 Marine Mammalogy  
 BIOL 4065.03 Sustainability and Global Change  
 BIOL 4160.03 Political Ecology  
 EARTH/GEOG 4450.03 Introduction to Landscape Simulation  
 ENVS 3301.03 Enterprise Sustainability  
 ENVS/GEOG 3400.03 Human Health and Environment  
 INTD 4013.03 Environmental Conflict and Security  
 MGMT 4009.03 Coastal Zone Management  
 OCEA/ERTH 4110.03 Geological Oceanography  
 OCEA 4120.03 Physical Oceanography  
 OCEA 4130.03 Chemical Oceanography  
 OCEA 4140.03 Biological Oceanography (BIOL/MARI 4661.03)  
 OCEA 4160.03 Fisheries Oceanography (BIOL/MARI 4369)  
 OCEA 4222.03 Estuary, Coast and Shelf Dynamics  
 OCEA 4230.03 Biology of Phytoplankton (BIOL/MARI 4662)  
 OCEA 4330.03 Benthic Ecology (BIOL/MARI 4666.03)  
 OCEA/BIOL/MARI 4335.03 Environmental Impacts in Marine Ecosystems  
 SUST 4000.06 ESS Capstone

#### Certificate in IT (Earth Sciences)

To recognize students who have completed classes with a substantial Information Technology component, and to provide these students with a document to present to potential employers who seek graduates with IT skills, the Department of Earth Sciences will award a Certificate in Information Technology to students who meet the following requirements:

- Completion of the 20 Credit Major or Honours program in Earth Sciences;

- Completion of the following classes, with a minimum grade of B, identified by the Department of Earth Sciences as teaching a set of IT skills particularly relevant to geoscientists:
  - EARTH 2001.03
  - EARTH 2270.03 or EARTH 3400.03
  - EARTH 3000.03
  - EARTH 3500.03
  - EARTH 4200.03 or EARTH 4100.03
  - EARTH 4520.03 or EARTH 4530.03 or EARTH 4450.03
  - CSCI 1100.03
  - MATH 2300.03 or MATH 2400.03

To register, complete the registration form found under "IT" at the Faculty of Science URL: [http://science.dal.ca/EDUCATIONAL\\_PROGRAMS/Information\\_Technolo.php](http://science.dal.ca/EDUCATIONAL_PROGRAMS/Information_Technolo.php) and send your completed form to [Science@Dal.Ca](mailto:Science@Dal.Ca) or fax to (902) 494-1123.

### III. Programs and classes for those whose Major is not Earth Sciences

These classes are specially designed for those who want to know something about the Earth, but whose major field of study at Dalhousie will lie elsewhere, e.g., an economics student concerned with resources, a history student interested in the role played by Canada's geological framework in the development of transportation, a biology student interested in faunal environments on the seafloor.

#### A. Elective Classes

- EARTH 1030.03: Introduction to Physical Geography, a class for anyone who wants to learn more about the Earth, its subsystems and regions
- EARTH 1060.03: Earthquakes, Volcanoes and Natural Disasters, a class aimed for nonspecialists, investigates these natural disasters.
- EARTH 2410.03: Environmental Issues in Earth Sciences, open to those with the above prerequisite
- EARTH 2420.03: Dinosaurs: Origin, Evolution and Extinction, open to those with the above prerequisite
- EARTH 2430.03: Forensic and Medical Geology.

### IV. Special Information for Earth Sciences Programs

#### A. Field Work

Field excursions are part of many classes and are conducted at appropriate times during the session. In addition, some optional field excursions may be held each year. Note that some mandatory field trips may be held on Saturdays or Sundays. Field Schools are offered for about 10 days in late August, just before the start of the university Fall term.

#### B. Professional Registration

Professional Registration of Geoscientists (geologists and geophysicists), usually in a joint Association with engineers, is in place in Nova Scotia and across Canada. You should be aware that a program which meets our degree requirements does not necessarily meet criteria for registration. The educational requirements for the professional associations is a four-year degree with a minimum of nine geoscience credits after first year. Our Honours degree meets this requirement. A Major degree can, if nine Earth Sciences credits are taken after first year. Students should note that, in addition to Earth Sciences classes, Registration boards require students to have taken nine half credits in fundamental science which includes: first-year Chemistry, (CHEM 1011.03/1012.03), Calculus (MATH 1000.03 and 1010.03) and Physics (PHYS 1280.03/1290.03). For more information, consult the Earth Sciences Undergraduate Advisor.

### V. Class Descriptions

NOTE: Not all classes are offered every year, please check the current timetable for current class offerings. Note also that some mandatory field trips may be held on Saturdays or Sundays. Check with Instructor.

#### ERTH 1030.03: Introduction to Physical Geography.

This non-lab science course examines the nature of weather and climate, earth's surface features and processes, and internal processes that contribute to landform development. An integral component of the course is an exploration of the



representation and interpretation of physical geographic data through the examination of a variety maps.

NOTE: There are no pre-requisites for this course, and students may take this class in addition to any other first year Earth Science class.

INSTRUCTOR(S): A.M. Ryan, L. Plug

FORMAT: Lecture-class 3 hours each week and 1 hour tutorial weekly. Some classes may include map work

CROSS-LISTING: GEOG 1030.03

### **ERTH 1060.03: Earthquakes, Volcanoes and Natural Disasters.**

Earthquakes, meteorite impacts, rapid climate change, volcanic eruptions, hurricanes, landslides, solar flares, and floods are natural disasters that affect our economy, public policy, and safety. Where, why and how frequently do natural disasters occur? Are predictions possible? Are media portrayals of risk and damage realistic? This course, aimed at the nonspecialist, investigates these intriguing questions. Excerpts of "disaster films", in conjunction with lectures and discussions are used to identify the causes, consequences and sometimes erroneous perceptions of natural hazards. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and real-time events worldwide.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours

CROSS-LISTING: GEOG 1060.03

### **ERTH 1080.03: Geology I.**

This class focuses on the solid earth (geosphere) and how it evolved throughout earth's vast history, and continues to evolve today. The processes involved are recorded in the rocks and minerals of our earth, and we explore these natural processes and materials as a way to understanding our earth.

The class meets the needs of students who require a science class with a lab component, is a required prerequisite class for all Earth Science majors, and serves as an introduction for all those interested in Earth Science. No previous knowledge of geology is required.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture 3 hours, lab 3 hours

EXCLUSION: Credit will be given for only one of ERTH 1080, 1010, 1040 or 1041.

### **ERTH 1090.03: Geology II.**

Earth systems introduced in Geology I are explored in greater detail, with an emphasis on earth resources, and on geologic systems that are connected to human actions. This course provides a strong background to pursue further work in the environmental sciences and is the recommended course for Earth Sciences majors.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ERTH 1080 or permission of the instructor is a pre- or co-requisite for ERTH 1090 or ERTH 1091.

EXCLUSION: credit will only be given for one of ERTH 1090, 1091, 1020, or 1050

### **ERTH 1091.03: Geology II.**

ERTH 1091 has the same lecture content and lecture time as 1090, but does not have a corresponding lab session.

NOTE: This class is not offered every year. Please consult department.

INSTRUCTOR(S): A.M. Ryan

FORMAT: 3 hours lecture

PREREQUISITE: ERTH 1080.03 or permission of instructor.

EXCLUSION: Credit will be given for only one of ERTH 1091.03, ERTH 1090.03, ERTH 1020.03 or ERTH 1050.03.

### **ERTH 2000.015: Earth Sciences Field School.**

This class provides 10 to 11 days of introductory field methods in a broad range of Earth Science disciplines. A wide variety of Earth materials and geological processes are examined in the field through thematic excursions throughout southern Nova Scotia led by a variety of Earth Sciences faculty. Skills taught are soil, sediment and rock classification; note-taking, compass, map-reading and traversing; and geological analysis and report writing. The class is held at the end of summer before regular classes in the Fall term and should be taken by those enrolling in second-year level Earth Sciences classes: ERTH 2001.03, 2002.03, 2110.03, 2203.03.

INSTRUCTOR(S): M. Young

FORMAT: Day-long (8-10 hours) field trips based out of Halifax for the duration of the field school.

PREREQUISITE: ERTH 1080.03 and one other 1st year ERTH course; ERTH 1090 recommended; SCIE 1502.21, 1504.27, 1510.33

### **ERTH 2001.03: Earth Materials Science I.**

Materials from the Earth - including minerals, rocks, and the ore and petroleum resources they contain - form the basis of our industrial society and are vital to the Canadian economy. ERTH 2001/2002 introduce students to the origin, distribution, and chemical and physical properties of some important Earth materials. Lectures in the fall term focus on minerals as naturally occurring crystalline materials. Special attention is paid to the fundamental structure and composition of common rock-forming minerals such as quartz, feldspar, and mica, and to materials with special value to society, including iron, copper, and gemstones. Labs include the identification of minerals in hand sample, elements of crystallography, and an introduction to the use of the petrographic microscope. Students gain practical experience in the use of instrumental techniques such as X-ray diffraction and/or electron microprobe analysis to identify one or more unknown minerals. A weekend field trip may be included. This class is a prerequisite for ERTH 2002 and most third-year Earth Science classes. Students who have not already taken CHEM 1010 or its equivalent are strongly encouraged to take this concurrently.

INSTRUCTOR(S): R. Cox

FORMAT: Lecture 3 hours, lab 3 hours, weekend field trip

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; 1090 recommended; or SCIE 1502.21, 1504.27 or 1510.33, and CHEM 1011.03/1012.03 or CHEM 1021.03/1022.03; Chemistry majors should consult the department.

### **ERTH 2002.03: Earth Materials Science II.**

This class explores the relationships between minerals and rocks, building on the knowledge of mineral chemistry, crystal structure, and identification techniques gained in ERTH 2001. Lectures cover topics such as simple phase diagrams and their application to mineral chemistry and texture, crystal defects and their role in deformation of minerals and rocks, and radioactivity in minerals and its use in geochronology. The use of mineral assemblages and textures to classify rock types is discussed in class and labs. In the labs, students use the petrographic microscope to look at a variety of igneous, sedimentary, and metamorphic rocks in thin section, with an emphasis on gaining familiarity with their constituent minerals and diagnostic textures. Students are introduced to the use of reflected light microscopy to identify opaque (ore-forming) minerals. This class is a prerequisite for some third-year Earth Science classes.

INSTRUCTOR(S): D. Grujic

FORMAT: Lecture 3 hours, lab 3 hours, field trip

PREREQUISITE: ERTH 2001.03

### **ERTH 2110.03: Field Methods.**

This is intended as an introduction to field techniques useful to the practicing geologist, particularly those concepts essential for the accurate field description and identification of rocks and the use and construction of geological maps. Computer techniques and elementary structural geology are also considered. NOTE: Attendance at the Field School (ERTH 2000.015) is mandatory prior to attendance at this class.

INSTRUCTOR(S): N. Culshaw

FORMAT: Lecture 3 hours, lab 3 hours, field trips

PREREQUISITE: ERTH 2000.015

### **ERTH 2203.03: Sediments and Sedimentary Rocks.**

The class deals with physical, chemical and biological processes that generate modern sediments, and their conversion to sedimentary rocks through time. Labs provide a practical introduction to sediment analysis and to a range of sedimentary structures and rock types. Fieldwork includes description of beaches and bedrock in the Halifax area.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; ERTH 1090 recommended

### **ERTH 2205.03: Introduction to Paleontology.**

This class encompasses an introduction to all the major invertebrate groups that are important in the fossil record. It begins with introduction of the first life forms, basic taxonomy and uses of fossils followed by lectures and laboratories on each major group.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours, possible field trip

PREREQUISITE: ERTH 2203.03 or permission of the instructor

**ERTH 2270.03: Introduction to Applied Geophysics.**

An Introduction to using physical principles to explore the Earth's subsurface, with an emphasis on near-surface applications. Topics include seismic, gravity, magnetic, electrical, and electromagnetic surveying techniques, and their application in prospecting, hydrogeology, environmental assessments, and well-logging. The geophysics field school, normally conducted during the last week of April, is an integral part of this class.

INSTRUCTOR(S): M. Nedimovic

FORMAT: Lecture 3 hours, tutorial 2 hours, 3-day field school

PREREQUISITE: First year Mathematics and PHYC 1280.03/1290.03 or PHYC 1300X/Y

CROSS-LISTING: PHYC 2270.03

**ERTH 2380.03: Geochemistry.**

An introduction to the principles of chemistry applied to geologic systems, including an overview of the chemistry of rocks and minerals, isotopes in the geologic environment, processes that control the release and mobility of contaminants in the environment, and the use of geochemical data in solving geologic and environmental problems.

FORMAT: Lecture, 1hr/week tutorial

PREREQUISITE: EARTH 1080/1090, EARTH 2001 & CHEM 1011/1012 or equivalent, or permission of the instructor

**ERTH 2410.03: Environmental Issues in Earth Sciences.**

Geology underlies many of the environmental problems facing humanity today. Topics include environmental aspects of energy and mineral resource, geologic hazards, geologic connections to pollution and waste disposal, and the role that water plays in its various guises. Canadian examples are incorporated where appropriate. Approved with Canadian Studies.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture 3 hours

PREREQUISITE: One of: EARTH 1080, EARTH/GEOG 1030, EARTH/GEOG 1060, ENVS 1000, SUST 1001, or DISP with Earth Sciences

CROSS-LISTING: CANA 2410, ENVS 2410

EXCLUSION: This class is not available for Earth Sciences Majors

**ERTH 2420.03: Dinosaurs.**

Students will consider the origin, evolution and extinction of non-avian dinosaurs. What are dinosaurs? Why were some dinosaurs so big? What did dinosaurs eat? How fast could dinosaurs run? Were dinosaurs good parents? To answer these questions, we will examine the nature of evidence gathered from dinosaur fossils and their surrounding rocks.

INSTRUCTOR(S): M. Graves

FORMAT: Lecture 3 hours

PREREQUISITE: EARTH 1080.03 or any two of EARTH 1010, 1020, 1030, 1040, 1041, 1050, 1060, 1090, 1091, or SCIE 1502.21, 1504.27 or 1510.33, or permission of instructor

**ERTH 2430.03: Forensic and Medical Geology.**

Designed for non-earth sciences majors, this course explores the evolving fields within the realm of geosciences. Forensic and medical geology share a common thread in that both depend upon identifying potential geologic and geoenvironmental sources of evidence, and applying this information to solve a larger problem, either legal or health-related.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture/tutorial

PREREQUISITE: EARTH 1080 and one other Earth Sciences course or instructor's permission.

**ERTH 3000.015: Computing Camp.**

This class is required for BSc Major, and Honours programs and it is designed to provide the computing skills necessary to meet today's challenges. These skills are learned through a field-mapping project using computers to manipulate data and prepare geologic maps. The class is held the week before classes begin in the third year of a program.

INSTRUCTOR(S): C. Walls, I Coutand

FORMAT: Off Campus, 10 days

PREREQUISITE: EARTH 2000.015, 2001.03, 2002.03, 2110.03, 2203.03, 2205.03

**ERTH 3010.03: Igneous Petrology.**

Igneous petrology is the study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures discuss the classification and graphical representation of igneous rocks; the production, differentiation, and emplacement of magma in different tectonic environments. Practical work consists of laboratory petrographic examination and two field trips.

INSTRUCTOR(S): Y. Fedortchouk

FORMAT: Lecture 3 hours, lab 3 hours, field trips

PREREQUISITE: EARTH 2001.03, 2002.03 and 2380.03

**ERTH 3020.03: Metamorphic Petrology.**

Metamorphic petrology is the study of the way in which pre-existing igneous, sedimentary, and metamorphic rocks respond to changes in pressure, temperature, and geochemical environment. Metamorphic reactions, deformation and recrystallization, the stability relations of minerals and mineral assemblages under various physical and chemical conditions, and the concept of metamorphic facies are discussed. The relationship of metamorphism to other geological processes is considered. In the labs, microscopic mineralogy and texture are used to decipher the metamorphic history of rocks.

INSTRUCTOR(S): R. Jamieson

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3010.03

**ERTH 3140.03: Structural Geology.**

Introduction to the behaviour of rocks during deformation, stressing the geometrical aspects of rock structures. Students learn: (a) geometrical principles to identify, describe, and interpret common types of structures in outcrop and hand sample; (b) to interpret the mechanical properties of rocks based on their microstructure; (c) construction techniques to calculate and interpret stress and strain in deformed rocks.

INSTRUCTOR(S): D. Grujic

FORMAT: Lecture 3 hours, lab 3 hours, possible field trips

PREREQUISITE: EARTH 2001.03, EARTH 2002.03, EARTH 2110.03, EARTH 2203.03, 2205.03

**ERTH 3270.03: Solid Earth Geophysics.**

An introduction to global geophysics, including the workings of both the Earth's surface and its deep interior. Starting from plate tectonics, this class explores the Earth as a unified dynamic system. The class includes seismology, earthquakes, mantle convection, crustal accretion, isostasy, the Earth's magnetic field, radioactivity, and the Earth's heat budget.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: EARTH 2270.03

CROSS-LISTING: PHYC 3270.03

**ERTH 3302.03: Quaternary Sedimentary Environments.**

The class deals with facies models for Quaternary glacial, coastal, deep sea and alluvial sediment. Emphasis is placed on sedimentation processes typical of each depositional setting and the geometry of the resulting deposits. Ancient deposits, including those resulting from glacial events, are examined, and their association with hydrocarbons, coal and sedimentary ores discussed. The labs provide practical experience of techniques used in facies analysis.

INSTRUCTOR(S): D. Scott

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 2203.03, 2205.03

**ERTH 3303.03: Stratigraphy.**

Stratigraphy is the backbone of the geological sciences; it brings together sedimentology, paleontology, petrology and structural geology to reconstruct Earth history. We survey the impact of sea-level change, tectonics and climate on sediment accumulation, with emphasis on seismic and sequence stratigraphy. Case studies focus on sedimentary basins across Canada, and practical work includes laboratory and class exercises, as well as field excursions.

INSTRUCTOR(S): G. Wach

FORMAT: Lecture 3 hours, lab 3 hours, field trips

PREREQUISITE: EARTH 2203.03, 2205.03

**ERTH 3400.03: Fundamentals of Hydrogeology.**

The availability of clean water is absolutely essential for the development and maintenance of modern societies. This class deals with the mathematical description of groundwater movement, geophysical and geological methods for groundwater exploration, regional occurrence and chemical quality of groundwater, and the effects of waste disposal on chemical quality. Laboratory

work stresses familiarity with techniques employed in the assessment and exploration of groundwater resources, as well as the analysis and interpretation of water quality data.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 2001.03, 2002.03, 2203.03 or permission of instructor

### ERTH 3402.03: Practical Hydrogeology.

This class is designed to build on EARTH 3400.03 to familiarize the student with the practical aspects of groundwater resources development and monitoring system installation, including drilling methods, well design, well hydraulics and aquifer analysis, slug testing, data interpretation, and introduction to groundwater modelling. Actual case history data and problem assignments with practical applications are emphasized.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab/tutorial

### ERTH 3410.03: Environmental Geology II.

The topics are similar to those of EARTH 2410.03. However, this class is designed specifically for students with a strong background in geology, equivalent to that of a third year Earth Sciences major. Selected topics are explored at greater depth using the accumulated geologic knowledge of the participants.

NOTE: This class is not offered every year. Please consult department in the spring for further information. EARTH 3410.03 is the recommended environmental geology course for Earth Science majors.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture/lab/tutorial 3 hours

PREREQUISITE: EARTH 2002.03 and EARTH 2203.03

EXCLUSION: EARTH 3410.03 is the recommended environmental geology course for Earth Science Majors. Credit can only be given for EARTH 2410 or EARTH 3410

### ERTH 3420.03: Geochemistry of Aquatic Environments.

Given the abundance of water at the earth's surface and the wide use both humans and other organisms make of aqueous environments, it becomes imperative for environmentally-oriented scientists to understand the chemistry of natural bodies of water. In particular, we need to comprehend the processes that lead to the observed composition of groundwaters, lakes, rivers and oceans. We also need to be aware of how man's activities can alter these natural systems. Water is also an agent for geologic and environmental change, both on short and long time-scales. Earth and environmental scientists should have an appreciation of these processes (sources, sinks and transport mechanisms) and the resulting geological cycles.

This class is an introduction to the governing principles and processes of aquatic geochemistry. Specific topics will include physical chemistry of natural waters, kinetics (mechanisms & rates) of geochemical reactions, the hydrologic cycle, the dissolved carbonate system and pH controls, redox reactions and the influence of life, rainwater and acid rain, weathering and the formation of soils, mineral-solution equilibria, controls on the composition of rivers, lakes and oceans, sediments and their after-burial changes, and the global cycles of carbon, nitrogen, and sulfur. Students will be taught to approach problems quantitatively through the principles of mass action (Eh-pH and activity-diagrams) and of mass balance (box models and conservation equations).

INSTRUCTOR(S): M. Kienast (Oceanochemistry)

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent and EARTH 1080/1090 or EARTH 1010/1020

CROSS-LISTING: OCEA 3420.03

### ERTH 3440.03: Geomorphology.

Geomorphology is the quantitative study of Earth's surface processes and landforms with applications geology, civil engineering, hydrogeology, and environmental management. We investigate slope stability, weathering and soils, sediment production, wind-driven and coastal environments, tectonic landforms, and river, glacial and permafrost processes.

INSTRUCTOR(S): Plug, L.

FORMAT: Lecture 3 hours, lab 3 hours including mandatory field trips

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course: EARTH 1090 recommended; or SCIE 1502.21, 1504.27 or 1510.33 or permission of instructor AND completion or concurrent enrolment of a 1000-level mathematics class, a 1000-level physics class and a 1000-level chemistry class.

CROSS-LISTING: GEOG 3440.03

### ERTH 3500.03: Geoscience Information Management.

Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and pattern of processes is important. GIS plays a significant role a wide range of applications, from modeling, to analysis and predictions, to decision making. The class is aimed at a broad base of potential users and draws on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data.

Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS. Exercises draw on the diversity of GIS applications in a number of application areas.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Two years of university study or equivalent or instructor's permission

CROSS-LISTING: EARTH 5600, GEOG 3500, ENVS 3500

EXCLUSION: Credit will only be given for one of EARTH 3500.03, EARTH 5600.03, GEOG 3500.03, SCIE 3600.03 or ENVS 3500

### ERTH 3601.03: Global Biogeochemical Cycles.

We currently face daunting environmental challenges at the global scale that are expected to worsen in the 21st century, including a global water crisis, climate change and pollution of our waters and atmosphere; this course examines the science behind these environmental issues from the multidisciplinary framework of global biogeochemical cycling. With the global scale as the focus, this course pulls together the many disparate fields that are encompassed by the broad reach of biogeochemistry. You will learn about the processes that drive the movement of carbon, water, nitrogen, phosphorus, and sulphur, through the earth system, and the residency of these elements in the atmosphere, soils, lithosphere, oceans and freshwaters. In the quantitative and analytical exercises you calculate and compare the effects of industrial emissions, land clearing, agriculture, and rising population on the processes driving the Earth's chemical cycles. Weekly journal readings for discussion in laboratory group cover the latest developments in this exciting and rapidly changing field. This course provides an excellent framework for those interested in the science of global change.

INSTRUCTOR(S): S. Sterling

PREREQUISITE: CHEM 1011.03/ CHEM 1012.03 or equivalent, and one of ENVS 1000.06, SUST 1001.06, EARTH 1080.03, or one of SCIE 1502XY.21/ SCIE 1504.27/ SCIE 1510XY.33, and completion of 2 years of an undergraduate degree.

### ERTH 3701.03: Fundamentals of Hydrology.

This course is an introduction to hydrology, emphasizing surface processes and watershed responses. In this course we learn about both the pure and applied uses of hydrology. The course is quantitative and introduces hydrologic processes in the atmosphere, on the land surface, in groundwater and in stream channels.

FORMAT: Lecture 3 hours, tutorial 1.5 hours

PREREQUISITE: MATH 1000.03 or MATH 1214.03 and one of ENVS 1000.06, SUST 1001.06, EARTH 1080.03, or EARTH 1090.03 or one of SCIE 1515X/Y.21, SCIE 1530.27, SCIE 1540X/Y.33 and completion of 2 years of an undergraduate degree. PHYC 1280 and PHYC 1290.03 (or PHYC 1300X/Y.06) and MaTH 1010.03 are recommended.

CROSS-LISTING: ENVS 3701.03

### ERTH 4001.15: Sponsored Geologic Experience.

These Field Trips &/or Laboratory Sessions Introduce students to some of the following: Practical exploration techniques, field and laboratory skills, familiarization with deposit models, related economic and environmental geology, and the business side of Earth-science industries.

FORMAT: At least 10 days in the field/lab. Student presents a report (written and oral presentation) after returning to Dalhousie.

### ERTH 4002.03: Advanced Field School.

This application of the principles of field geology is a comprehensive and intellectually challenging program designed to provide pre-professional field training for senior BSc geoscience students. Multiple field-based projects challenge students to synthesize field observations and solve geological and environmental geoscience problems to gain training that is otherwise difficult to obtain in the classroom or laboratory.

NOTE: The file camp is usually offered in May at selected international settings, and involves mapping exercises and camping over a wide range of climate and topography.

FORMAT: Off campus, four weeks

PREREQUISITE: EARTH 3000.03, EARTH 3140.03 or permission from instructor

### **EARTH 4100X/Y.06: Research Project.**

This class allows students who are not in an Honours program to do a research project.

See class description for EARTH 4200X/Y.06.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): M. Gibling

FORMAT: Lecture 3 hours

### **EARTH 4110.03: Geological Oceanography.**

This class is intended to give a broad survey of topics in marine geology and geophysics. The class content covers recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered are: plate tectonics and seismic, heat flow, gravity, and magnetic methods, patterns and processes of sediment transport and deposition.

NOTE: Some laboratory exercises augment the lectures, including a field cruise to local beaches. Third year and honours undergraduates will be admitted by consent of the instructor. No previous background in Geology or Geophysics is required.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

CROSS-LISTING: OCEA 5110.03, OCEA 4110.03

### **EARTH 4131.03: Advanced Petroleum Geoscience.**

This is an advanced class in petroleum geoscience applications and interpretations for basin/prospect evaluation. Students work in a team interpreting industry data, including well logs and reflection seismic, in a competitive environment. The team submits its findings and recommendations in written and oral presentations.

FORMAT: Lecture/group research project

PREREQUISITE: EARTH 3303.03, EARTH 4153.03, or permission of the instructor

CROSS-LISTING: EARTH 5131.03

### **EARTH 4141.03: Applied Geology, Mineralogy and Geochemistry.**

This class is an introduction to various concepts and techniques used by geoscientists in the search for and evaluation of mineral concentrations, in mining and metallurgy, as well as in environmental aspects of these activities. The successive stages of a mineral exploration project are analyzed, from reconnaissance through exploration geochemistry, claim staking, drilling, mining, estimation of reserves, grades and tonnage, economic aspects, to mine site rehabilitation. Fundamentals of applied ore microscopy are introduced, with emphasis on metallurgy, and acid rock drainage (ARD) prevention. The syllabus varies somewhat from year to year to reflect the interests and backgrounds of the students, and the availability of visiting lecturers. The labs consist of hands-on exercises, visits to analytical labs, problem solving, report writing, and seminar presentations by the students.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 2001.03, EARTH 2002.03, EARTH 2110.03, EARTH 2000.015

CROSS-LISTING: EARTH 5141.03

### **EARTH 4151.03: Mineral Deposits.**

This class is an introduction to the geology of metallic ore and some industrial mineral deposits. Emphasis is given to the ore formation processes that lead to the economic concentrations of commodities. The class integrates many Earth Science disciplines. Laboratory work introduces ore study in reflected light microscopy.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3010.03, 3140.03

CROSS-LISTING: EARTH 5151.03

### **EARTH 4153.03: Petroleum Geology.**

The course provides an introduction to petroleum geology (gas and oil) with some discussion of alternative energy sources. The course provides an introduction to

petroleum geology and petroleum systems with discussion of basin analysis, source rock evaluation, seismic and well log sequence stratigraphy, core and outcrop description, depositional facies analysis, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics.

INSTRUCTOR(S): G. Wach

FORMAT: Lecture 3 hours, Lab 3 hours, field trips

PREREQUISITE: EARTH 2270.03, EARTH 3140.03, EARTH 3303.03

### **EARTH 4156.03: Petroleum Geology - Field Methods and Economic Evaluation.**

The course provides an advanced-level overview of petroleum systems. The course includes petroleum geology, basin analysis, source rock evaluation, seismic and well log sequence stratigraphy and depositional facies analysis. The course comprises lecture, presentations, and a one week field seminar.

INSTRUCTOR(S): G. Wach

FORMAT: Field Seminar and lectures

### **EARTH 4200.06: Honours Thesis.**

This class deals with many aspects of written and oral communication of scientific and technical material. In particular, it covers the scientific method, the elements of scientific style (clarity, precision, conciseness, and objectivity), the logical organization and development of ideas and arguments, and the acceptable formats for scientific writing. Attention is also given to techniques of oral presentation.

NOTE: This is a compulsory class for students writing an Honours thesis in Earth Sciences, but is open to students from other disciplines. Field work may be part of thesis research. Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): M. Gibling

FORMAT: Lecture 3 hours

### **EARTH 4350.03: Tectonics.**

This is a required class for Earth Sciences honours students. It is intended to synthesize the various aspects of geology covered in the third year core program. The focus of the class is on tectonic processes and the ways in which these processes create and modify the Earth's crust. We cover the fundamental geological, geophysical, and geochemical controls that operate today, including plate tectonics, and the ways in which these might have differed in the geological past. The tectonic evolution of specific orogenic belts is discussed, including both modern and ancient examples in Canada and other parts of the world.

INSTRUCTOR(S): N. Culshaw

FORMAT: Lecture 3 hours

PREREQUISITE: EARTH 2270.03, 3140.03

CROSS-LISTING: EARTH 5350.03

### **EARTH 4400.03: Advanced Metamorphic Petrology.**

This class deals with selected topics in metamorphism and microtectonics, chosen to reflect current topics of interest in the disciplines and/or specific interests of participants. The focus is on the interaction of metamorphism and deformation, and on the constraints provided by microstructural and metamorphic data on tectonic processes in general. Examples of topics that might be covered include: porphyroblast-matrix relationships in metamorphic rocks; quantitative P-T methods in metamorphism; geochronology of metamorphic rocks; construction and interpretation of metamorphic P-T-t paths; intracrystalline deformation, recrystallisation, and deformation mechanisms in some common rock-forming minerals; origin and interpretation of lattice-preferred orientation; natural microgauges. The class is offered as number warrant (4 students minimum). It is suitable for students who are doing honours or graduate work in the general areas of metamorphic and/or structural geology and/or tectonics.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): R. Jamieson, D. Grujic

FORMAT: Lecture 3 hours

PREREQUISITE: EARTH 3020.03, EARTH 3140.03 (or equivalent), or permission of instructors

CROSS-LISTING: EARTH 5400.03

### **EARTH 4440.03: Geomorphology and Landscape Evolution.**

Ripple-to mountain range-scale landforms evolve under predictable internal and external forces that are modulated by the physical and chemical properties of the rock. The purpose of this course is to provide a thorough examination of the development of landscapes by tectonics and surficial processes involving weathering, mass wasting, streams, and glaciers. The concepts of equilibria, climate and vegetation change, and rock character are recurring themes

throughout the course. Dating and thermochronology methods are discussed in the context of rates of landscape change. Early classic viewpoints of landform development are contrasted with the latest numerical simulations of landscape evolution. The labs are mostly field-oriented with emphasis on Quaternary stratigraphy, describing and interpreting soils, local geomorphology, and geomorphometrics.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: EARTH 1080 and any 1st year EARTH class; EARTH 1090 recommended. Must be a 4th year Science student familiar with Excel, or with instructor's permission

CROSS-LISTING: EARTH 5440.03, GEOG 4440.03

### **ERTH 4450.03: Introduction to Landscape Simulation.**

We examine different approaches to numerical modelling of earth-surface processes such as erosion and landslides, melting permafrost, and braided rivers. Using class and/or individual projects as examples, the selection of variables, sensitivity testing, and methods for testing models against nature are discussed. We use Matlab; programming experience is very useful but not essential.

INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours

PREREQUISITE: EARTH 3440.03, MATH 1010 or 1400, PHYC 1280.03/1290.03X/Y and three courses at the 3000-level in the physical sciences (chemistry, earth science, physics) or with consent of instructor

CROSS-LISTING: EARTH 5450, GEOG 4450

### **ERTH 4470.3: Introduction to Seismic Imaging.**

This class teaches the basic techniques of the reflection seismic method for imaging of earth structures such as those used in hydrocarbon exploration. Lectures introduce concepts and techniques that are applied in computer lab to the processing of a multi-channel seismic dataset. Concepts covered include: source and receiver geometry, digital filtering, deconvolution, velocity analysis, stacking, and migration.

INSTRUCTOR(S): M. Nedimovic and K. Loudon

FORMAT: Lecture/lab

PREREQUISITE: EARTH 3270.03 or consent of instructor

CROSS-LISTING: EARTH 5470.03, OCEA 4470.03, PHYC 4470.03, PHYC 5470.03

### **ERTH 4480.03: Advanced Seismic Imaging.**

This class teaches more advanced techniques of seismic imaging of earth structures. Lectures introduce techniques that will be applied in the computer lab to the processing of multi-channel reflection and wide-angle refraction seismic datasets. Concepts covered include: multiple removal, pre-stack migration in time and depth, amplitude analysis, velocity modeling and inversion.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): M. Nedimovic

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 4470.03 or consent of instructor

CROSS-LISTING: EARTH 5480.03, OCEA 4480.03, PHYC 4480.03, PHYC 5480.03

### **ERTH 4502.03: Micropaleontology and Global Change.**

This class provides a systematic study of major groups of microfossils (principally foraminifera, ostracoda and calcareous nanoplankton). Particular emphasis is placed on the distribution and ecology of recent microfossils, and on laboratory techniques for sampling and studying them. Quaternary paleo-oceanography and faunal distribution is examined based on knowledge of the tolerances of the living organisms.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): D. Scott

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3302.03/3303.03

CROSS-LISTING: EARTH 5502.03, OCEA 4115.03

### **ERTH 4510.03/4511.03: Directed Reading.**

This class is intended to permit further study of a specific topic of interest, or to correct a deficiency in a student's program. The class should be supervised by a regular faculty member and the class content and marking scheme must be submitted to and approved by the chairperson in the first week of classes. Further

guidelines for directed reading classes are available from the undergraduate advisor or the Earth Sciences office.

FORMAT: As required

PREREQUISITE: Permission of Department

### **ERTH 4520.03: GIS Applications to Environmental and Geological Sciences.**

Geographic information systems (GIS) provide a rich set of new tools to the geologist and environmental scientist, not only to solve conventional problems, but also to explore questions not readily answered by other means. This class builds on the fundamentals of GIS taught in EARTH 3500.03 to explore analytical tools that aid in decision-making processes encountered in mineral exploration, hydrogeology, site selection, environmental assessment, and global change analysis. The class concentrates on case studies and problem solving, including those requiring multi-criteria and multi-objective decision making processes.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: GEOG 3500.03, ENVS 3500, EARTH 3500.03; EARTH 5600, or SCIE 3600.03; STAT 1060.03

CROSS-LISTING: GEOG 4520.03, EARTH 5520.03

### **ERTH 4530.03: Environmental Remote Sensing.**

The goal of this class is to introduce students to the role of remote sensing as a technique provide environmental and geologic information. Particular emphasis will be placed on examining the potential and limitations of remote sensing methods and data in this context. The lectures discuss the fundamentals of remote sensing with an emphasis on multi-spectral satellite systems. In the lab, students use computerized techniques of digital image enhancement and thematic information extraction to process images derived from optical, radar, and hyperspectral remote-sensing systems. The integration of remote-sensing information with GIS (Geographic Information Systems) is stressed in both the labs and lectures.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3500.03, GEOG 3500.03, ENVS 3500.03 or EARTH 5600.03 or SCIE 3600.03

CROSS-LISTING: GEOG 4530.03, EARTH 5530.03

## **VI. Co-op Workterms**

Each work-term is a prerequisite of the succeeding work-term.

### **ERTH 8891.00: Work-Term I.**

### **ERTH 8892.00: Co-op Work-Term II.**

### **ERTH 8893.00: Wo-op Work-Term III.**

### **ERTH 8894.00: Co-op Work-Term IV. (optional)**

# Economics

Location: 6206, 6214 and 6220 University Avenue  
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Halifax, NS B3H 4R2  
Administrative Offices: 6214 University Avenue  
Telephone: (902) 494-2026

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## Chairperson of Department

Osberg, L., BA (Hons) (Queen's), MPhil, PhD (Yale)

## Faculty Advisors

Cyrus, T., Undergraduate Coordinator, Co-op Academic Advisor  
(494-6992)

Cross, M., Graduate Coordinator (494-6867)

## Professor Emeritus

Sinclair, A., BA (Dalhousie), MA, BPhil (Oxon), PhD (Harvard)

## Professors

Burton, P., BSc (Saskatchewan), MA, PhD (UBC)

Dasgupta, S., BA (Calcutta), MA (Delhi), MA, PhD (Rochester)

Iscan, T., BA (Middle East Tech.), MA, PhD (Cornell)

Lesser, B., BComm (Dalhousie), MA, PhD (Cornell)

Osberg, L., BA (Hons) (Queen's), MPhil, PhD (Yale), McCulloch Professor of  
Economics

Phipps, S. A., BA (Hons) (Victoria), MA, PhD (UBC), Maxwell Chair of  
Economics

Xu, K., Dip. (Beijing Teachers' Univ.), MBA, PhD (Concordia)

## Associate Professors

Cross, M. L., AA (Dawson College), BA (Montana), MA (SFU), PhD (Texas  
A&M)

Cyrus, T., BA (UCLA), PhD (Berkeley)

Kotlyarova, Y., Dip. Software Eng (Lviv Poly. Inst.), MSc (U of Illinois - Urbana),  
PhD (McGill)

## Assistant Professors

Akbulut-Yuksel, M., BS (Middle East Tech.), MA, PhD (Houston)

Giusto, A., Laurea in Economics (Bologna), PhD (Oregon)

Rosenblum, D., BA (Williams College), MA, MPhil, PhD (Yale)

Ward, C., BA (Saskatchewan), MA (Queen's), PhD (Toronto)

Warman, C., BA (Combined Hons), MA, PhD (Carleton)

Yuksel, M., BSc (METU), MA, PhD (Houston)

## Adjunct Professors

Amirkhalkhali, S. I., BA Hons (Shiraz), MA, PhD (Dalhousie), SMU

de Lamirande, P., BA, MA (Laval), PhD (Montreal)

Dufour, M., PhD (Massachusetts), MA (UBC)

Hoddinott, J., BA (Hons) (Toronto), MA (York), MA, DPhil (Oxon)

Huber, P. B., BA, MA, PhD (Yale)

MacDonald, M., BA (Dalhousie), PhD (Boston College), SMU

Marfels, C. T., Diplom-Volkswirt, Dr.Rer.Pol. (Berlin)

McAllister, R. I., MA (Oxon), MA (Cantab)

Rankaduwa, W., BA, MSc (Sri Lanka), MA, PhD (Dalhousie), UPEI

Sinclair, A. M., BA (Dalhousie), MA, BPhil (Oxon), PhD (Harvard), Professor  
Emeritus

## Instructors

Aleem, A., PhD (Universite Paris 13)

Boulaltoff, C., MS (Université Catholique de l'Ouest), PhD (Utah State)

Forsdyke, R., BSc (Hons) Biochemistry, BEd, MA (Queen's), PhD (Simon Fraser)

## Cross-Appointed Faculty

Clark, S., BA (Guelph), MSc (Saskatchewan), PhD (North Carolina), Faculty of  
Agriculture

Yiridoe, E. I., BSc (Univ Science and Tech Ghana), MSc, PhD (Guelph), Faculty  
of Agriculture

Zhao, Y., MSc (Western Kentucky), PhD (British Columbia), Professor of  
Finance, Faculty of Management

## I. Introduction

Economics is a social science - a science because it involves a rigorous intellectual effort to derive logical conclusions from basic facts and propositions; a social science because it has human beings and their welfare as its ultimate concern. The basic facts of Economics cannot be knowable and measurable with the same precision as those of the physical sciences - human society and its motivations are far too complex to permit this - but none of the sciences surpasses economics in its relevance to our needs, problems and goals.

Economics analyzes the equity, efficiency, and sustainability of human behavior in the production, distribution, and consumption of commodities. Economics is not an easy science; indeed, it is one of the most complex, difficult (and fascinating) areas of study when you pursue it beyond its elementary levels, but some basic knowledge of economics is essential for any educated person. A more extensive knowledge of the subject is an invaluable complement to other fields of specialization such as law, commerce, politics and other studies in social sciences or humanities, and a specialization in the field can lead to a variety of interesting career opportunities.

## II. Degree Programs

The department offers BA and BSc programs, described below. A student may graduate with either a BA or a BSc degree, but not both. In all programs, the student must ensure that the classes selected satisfy the overall faculty requirements for the relevant general degree (BA or BSc).

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. General Principles

Two principles have particular weight: (a) students should strike a balance between breadth of coverage among disciplines and depth of specialization in economics; (b) students taking economics as a minor or as a component of another specialization should be allowed a reasonable degree of flexibility in their choice of economics classes.

### B. BSc (20 credit) Honours Degree in Economics

#### Departmental Requirements

##### 1000 level

- ECON 1101.03
- ECON 1102.03

##### 2000 level

- ECON 2200.03
- ECON 2201.03

##### 3000 level

- ECON 3338.03
- ECON 3339.03
- ECON 3700.03
- One half credit in ECON 3310.03 or ECON 3349.03 or ECON 2233.03 or 2239.03

##### 4000 level

- ECON 4200.06
- ECON 4420.03
- ECON 4421.03

- 3.5 other Economics credits at or above the 2000 level for a minimum of nine advanced Economics credits.

### Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2030.03
- MATH/STAT 2080.03 (ECON 2280.03)
- An Honours Thesis is also required

For current deadlines, requirements, and application forms, see the department's website (<http://economics.dal.ca>)

## C. BA (20 credit) Honours Degree in Economics

### Departmental Requirements

#### 1000 level

- ECON 1101.03
- ECON 1102.03

#### 2000 level

- ECON 2200.03
- ECON 2201.03

#### 3000 level

- ECON 3338.03
- ECON 3339.03
- ECON 3700.03
- One half credit in ECON 3310.03 or ECON 3349.03 or ECON 2233.03 or ECON 2239.03

#### 4000 level

- ECON 4200.06
- ECON 4420.03
- ECON 4421.03
- 3.5 other Economics credits at or above the 2000 level for a minimum of nine advanced Economics credits

### Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2030.03
- MATH/STAT 2080.03 (ECON 2280.03)
- An Honours Thesis is also required

For current deadlines, requirements, and application forms, see the department's website (<http://economics.dal.ca>)

## D. Combined Honours

Combined honours programs, BA or BSc, may be arranged with other departments such as Biology, Earth Sciences, History, Journalism, Mathematics, Political Science, Statistics, or Sociology. For combined Honours programs with Economics, students must also consult the other departments concerned.

If Economics is the primary field in the combined honours, the student is required to take all the classes that are required for single honours. If Economics is the secondary field in the combined honours, the student must take at least five credits beyond the introductory level, including ECON 3338.03 and 2.5 additional credits beyond the 2000 level.

## E. BSc (20 credit) Major in Economics

### Departmental Requirements

#### 1000 level

- ECON 1101.03
- ECON 1102.03

#### 2000 level

- ECON 2200.03
- ECON 2201.03
- One other economics credit at or above the 2000 level

#### 3000 level

- ECON 3338.03
- 2.5 other economics credits at or above the 3000 level, for a minimum of five advanced credits in Economics

### Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2030.03
- MATH/STAT 2080.03 (ECON 2280.03)

A student who wants the option of converting a Major to an Honours degree should select classes in accordance with the list of honours core classes given above and should consult regulations 11.4 and 22. Besides additional core classes, the Honours program requires an honours thesis and a higher academic standing than the Major. An Honours program can be converted to a Major at the student's discretion. The Major, however, allows a maximum of only 10 credits in economics while the Honours program allows a maximum of 11.

## F. BA (20 credit) Major in Economics

### Departmental Requirements

#### 1000 level

- ECON 1101.03
- ECON 1102.03

#### 2000 level

- ECON 2200.03
- ECON 2201.03
- One other credit in Economics at or above the 2000 level

#### 3000 level

- Three credits in Economics at or above the 3000 level, for a minimum of five advanced credits in Economics

### Other required classes

- MATH 1000.03
- STAT 1060.03

While the total number of credits required for the Major is the same as for an Honours degree, the honours program in economics requires an honours thesis and includes a larger core of classes in economics. In addition, the Honours program requires a *higher academic standing* than does the Major. However, the Major provides a comprehensive program not available with the 15 credit minor. Major students are strongly encouraged to consult with members of the department to ensure an integrated and coherent program.

A student who wants the option of converting a Major to an Honours degree should select classes in accordance with the list of honours core classes and should consult regulations 11.4 and 22. An Honours program can be converted to a Major at the student's discretion. The Major allows a maximum of nine or 10 credits in economics while the honours program allows a maximum of 11.

Combined programs may also be arranged with economics as the major or minor subject in association with other fields such as political science, sociology, history, earth sciences, biology, mathematics, statistics - and possibly others.

## G. BSc or BA (20 credit) Double Major

Economics is available as part of a BSc or BA double major program. All of the requirements for a single major apply. The student must complete a minimum of 10 advanced credits in the two subjects together.

## H. BSc or BA(15 credit) Minor in Economics

### Departmental Requirements

#### 1000 level

- ECON 1101.03
- ECON 1102.03

#### 2000 level

- Minimum of three, maximum of six credits at the 2000 level or above.

Students who wish to keep open the option of transferring into the Honours or Majors programs should select classes consistent with the requirements of these programs.

## I. Co-op Education in Economics

Co-operative Education in Science (Science Co-op) combines academic study with paid career-related work experience. The program integrates eight academic terms with three to four work terms. On completion of a Science Co-op program, a student graduates with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op by August 1st. before their second year of study. If accepted into the Science Co-op program, students are required to register for, and attend, the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

The co-operative education program begins in the second year of study, and a GPA of 3.0 is required for admission. In addition to completing three to four work terms, a student must fulfil the requirements of either a 20 Credit BSc Major program while maintaining at least a B average, or a 20 Credit BSc Honours Program. Departmental approval and Science Co-op Program approval is required to obtain admission to the Co-operative Education Program in Economics. Interested students should inquire about the program before beginning their second year of study.

See the “Co-operative Education in Science” section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

## J. Minors and Interdisciplinary Opportunities

Minor programs allow students to develop subject specialities, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Economics, minor programs are available in the following subject areas.

### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Environmental Studies (BA or BSc)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA only)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 134, as well as the particular subject area of the calendar.

### Minor in Economics

A minor in Economics requires a minimum of any three credits in Economics above the 1000 level.

### BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

### Diplomas, Certificates, and Language Proficiency Certificates

In combination with a BA or BSc there are certificates or diplomas that can be obtained to emphasize areas of proficiency. For a complete list and details refer to the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

## K. Graduate Studies

The Department offers a graduate program leading to the MA, MDE and PhD degrees. Details of these programs, including a list of graduate classes, are given in the Calendar of the Faculty of Graduate Studies. Senior undergraduates may be admitted to some graduate classes at the discretion of the instructors concerned.

## III. Class Descriptions

Not all classes are offered on a regular basis. Please consult the department for details. Recent class outlines are available on the department's website (<http://economics.dal.ca>)

### ECON 1101.03: Principles of Microeconomics.

How do you decide whether or not to go to university? Why does the price of pizza change so much less than the price of oil? What will better help prevent climate change: a carbon tax, or a cap-and-trade system? Microeconomic analysis, which considers the behaviour of individuals and businesses, can answer questions like these.

FORMAT: Lecture 3 hours

### ECON 1102.03: Principles of Macroeconomics.

Why are some countries rich and others poor? If high oil prices cause the loonie to rise, how are Ontario manufacturers affected? Why were mortgage interest rates above 20% in 1981 but below 5% in 2011? Macroeconomic analysis, which considers the behaviour of the entire economy, can answer questions like these. NOTE: ECON 1101.03 is not required before taking ECON 1102.03.

ECON 1101.03 and 1102.03 (together) satisfy the Principles of Economics requirement for Economics majors and for Bachelor of Commerce and Bachelor of Management students.

FORMAT: Lecture 3 hours

### ECON 2200.03: Intermediate Microeconomics.

This course covers consumer behaviour, the theory of the firm, factor markets, and general equilibrium welfare analysis. The course serves as the microeconomic prerequisite for higher-level classes in economics.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 (grade of C- or better)

EXCLUSION: ECON 2220.03

### ECON 2201.03: Intermediate Macroeconomics.

An extension of macroeconomic theory of income, unemployment, the exchange rate, inflation and financial markets that satisfies the minimum macroeconomic theory requirement for majors in economics. Serves as the macroeconomic prerequisite for higher-level classes in economics.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1102.03 (grade of C- or better)

### ECON 2213.03: Emerging Giants: The Economic Rise of China and India.

This course examines the economic history, current issues, and future trends of China and India, answering such questions as: What explains China's and India's growth? How is climate change affected by this growth? How are global labour markets affected? Must growth lead to rising inequality? Is democracy required for development?

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

CROSS-LISTING: CHIN 2290.03

### ECON 2216.03: Economics of Global Warming.

This course uses economic principles to investigate such questions as: What are the benefits and costs of various time paths for abating emissions? How do we value the well-being of future generations? How do we balance helping the poor with environmental sustainability? What policies can align incentives with environmental sustainability?

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03

EXCLUSION: ECON2850.06, PHYC2850.06

### ECON 2217.03: Women and the Economy.

This class studies questions such as: Have economic conditions improved for women in Canada over the past 30 years? Is there gender discrimination in the Canadian labour market? What are the economic consequences of divorce? Are women more likely than men to be poor? Are there inequalities within families? NOTE: Approved with Canadian Studies.

FORMAT: Lecture 3 hours



PREREQUISITE: ECON 1101.03, ECON 1102.03 (grade of C- or better)  
CROSS-LISTING: GWST 2217.03

### **ECON 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates.**

Canada's economy today faces many problems: unemployment, productivity, income distribution, environmental protection, trade relations, federal-provincial fiscal relations, maintenance of social programs, etc. What are the most important economic policy issues that Canada now faces? What is the appropriate policy role for government?

NOTE: Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

CROSS-LISTING: CANA 2218.03

### **ECON 2219.03: Euros and Cents: From Common Market to European Union.**

The European Union is a grand experiment to unite countries in a single market. The stepwise evolution from customs union to common market to economic and monetary union with a single currency, the Euro, is reviewed and analyzed. Learn more about an economic integration that is unparalleled in history.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03 or permission of instructor

### **ECON 2220.03: Microeconomic Theory.**

This course covers the economic behaviour of individual decision makers, such as a consumer, a worker or a firm. Emphasis is on theoretical ideas, while applications of these ideas are also considered. Of particular interest to those planning to major or to do honours in economics.

NOTE: Students may not receive credit for both 2200.03 and 2220.03.

FORMAT: Lecture 3 hours

PREREQUISITE: Econ 1101.03 (grade of C- or better), MATH 1000.03 (or equivalent)

### **ECON 2231.03: Health Economics.**

This course introduces students to the role of economics in health, health care, and health policy. It comprises a survey of major topics in health economics and an introduction to the ongoing debate over health care policy. Topics include the economic determinants of health, the market, the market for medical care, the market for health insurance, the role of government in health care, and health care reform.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

### **ECON 2233.03: Canadian Economic History.**

An examination of the economic history of Canada from the time of Confederation to WWI. Major topics explored include: the economic reasons for Confederation, the building of the CPR, the Wheat Boom, foreign trade and investment and the roots of regional disparities.

NOTE: Approved with Canadian Studies. The student is recommended to have some knowledge of history prior to taking this class.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

CROSS-LISTING: CANA 2233.03

### **ECON 2239.03: The European Economy Since 1900.**

This class applies economic theories to interpret quantitative economic changes in major European countries during the turbulent 20th century. Issues addressed include sources of growth and unevenly improved welfare, war, inflation, depression; Nazi economy; Communism's nature, success, and ultimate failure; reparations and the transfer 'problem'; and the 'transition.'

NOTE: Approved with Canadian Studies

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

### **ECON 2260.03: Statistics I.**

See class description for MATH 2060.03, in Mathematics section of this calendar.  
PREREQUISITE: MATH 1000.03 or MATH 1215.03 and either MATH 1010.03 or 2030.03 or DISP

CROSS-LISTING: MATH 2060.03, STAT 2060.03

EXCLUSION: ENGM 2032.03

### **ECON 2280.03: Statistics II.**

See class description for MATH 2080.03, in Mathematics section of this calendar.  
PREREQUISITE: STAT 1060.03 or Equivalent

CROSS-LISTING: MATH 2080.03, STAT 2080.03

### **ECON 2334.03: Globalization and Economic Development: Current Debates.**

Economists have long debated whether the task of development should be entrusted largely to market forces, or whether there was role for the state in directing a nation's economic affairs. These debates over development continue. We assess critiques of the economic analysis of development. Students will be encouraged to debate these issues and come to their own conclusions.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03, ECON 1102.03

### **ECON 2400.03: Economics of Retirement.**

This course aims to explain how households save for retirement and manage their finances once retired. It applies a modified version of standard economic theory of shed light on the adequacy of households discussion-making. It appraises defined benefit and defined contribution pensions, and proposes ways of mitigating their shortcomings.

FORMAT: Lecture

PREREQUISITE: ECON 1101.03 and ECON 1102.03

### **ECON 2850.06: The Science and Economics of Climate Change.**

This course examines how climate change will impact the environment and human activities, and how to formulate and implement economically realistic solutions. It integrates the physical and biological science with economics in order to analyze the response options as we move towards a carbon-neutral society.

FORMAT: Lecture

CROSS-LISTING: PHYC 2850.06

EXCLUSION: PHYC 2800.03, ECON 2216.03

### **ECON 3310.03: Economic Growth in Historical Perspective.**

This course examines the sources of long-run economic growth and development in a historical perspective. Topics covered include invention, innovation, culture, legal institutions governing access to resources, demography, fertility, mortality, and alternative modes of production.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 2201.03

### **ECON 3315.03: Labour Economics.**

This course considers the theory, evidence and policy of labour economics from a Canadian perspective. Topics include: How does EI affect the Canadian labour market? Do minimum wages reduce employment? What is economic discrimination and does it exist in Canada? How well do immigrants fare in the Canadian labour market?

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or ECON 2220.03, and ECON 2201.03

### **ECON 3317.03: Poverty and Inequality.**

Why are some people poor, while others are rich? Why do some nations have more poverty or inequality than others? What can or should be done? This course examines the extent of poverty and inequality in contemporary societies, and the theories underlying alternative measures and explanations.

NOTE: Approved with Canadian Studies. The student is advised to take ECON 3315 before taking ECON 3317.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or ECON 2220.03, and ECON 2201.03

### **ECON 3319.03: Industrial Organization.**

The course provides an overview of the organization of production. Market structure, firm conduct, and performance affect each other in complex ways; the degree of horizontal and vertical integration affects the ability to set prices, for example. Governments regulate firms in order to reduce socially harmful anticompetitive behaviour.

NOTE: Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or 2220.03

### **ECON 3326.03: Money and Banking.**

The class concerns the nature and operation of the financial system, with particular reference to Canadian experience. It treats financial instruments (including money) and institutions and the social control of the supply of money and credit.

NOTE: Approved with Canadian Studies.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2201.03

### **ECON 3330.03: International Trade.**

This course examines the theory and empirics of international trade, including standard historical trade theories, more recent theories, and evidence regarding these theories. The course investigate factor movements, the welfare effects of trade policies in both industrial and developing countries, and the institutions that have developed to regulate those policies.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03

### **ECON 3331.03: International Finance.**

This course covers the theory and empirics of international macroeconomics. It examines the determination of exchange rates, international capital flows, and risk; the effectiveness of fiscal and monetary policy in an open economy; modern international policy coordination; and the determination of the current account and net foreign assets.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2201.03

### **ECON 3332.03: Resource Economics.**

This class focuses on intertemporal economics and the economics of market failure as they pertain to the use of natural resources. A selection of resource sectors will also be discussed. Fisheries, agriculture, forestry, and energy represent possibilities, but this will vary from year to year.

NOTE: Approved with Canadian Studies.  
FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03, MATH 1000.03 or equivalent

### **ECON 3333.03: Theories of Economic Development.**

This class surveys current applications of economic theory to the problem of economic development. Topics covered include recent advances in theory of economic growth, theories of poverty and inequality and their relation to economic performance, theories of fertility and population growth, and the microeconomics of peasant agriculture.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or 2220.03, ECON 2201.03

### **ECON 3335.03: Environmental Economics.**

This class serves as an introduction to environmental economics. Topics include social decision making, externalities and public goods, regulatory approaches (standards, charges, tradable permits), forms of value derived from the environment and measurement techniques.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or 2220.03

### **ECON 3338.03: Econometrics I.**

The theory of some quantitative methods commonly used by economists is discussed in the context of the classical linear model. Estimation problems caused by violations of the assumptions of the classical model are studied including heteroscedasticity and autocorrelation.

FORMAT: Lecture 3 hours  
PREREQUISITE: MATH 1000.03 (or equivalent) and ECON 2280.03/MATH 2080.03/STAT 2080.03

### **ECON 3339.03: Econometrics II.**

This class is an extension of ECON 3338.03 and covers a range of econometric methods that are used in economic research. The topics for this class include: Logit, Probit, Tobit, Distributed Lags, Panel Data, Simultaneous Equations and Time Series.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 3338.03

### **ECON 3344.03: Public Finance.**

This class studies the economics of public expenditure, tax and transfer programs in a federal state such as Canada. The core issue addressed is when and how public policy can (or cannot) improve equity and efficiency.

NOTE: Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take ECON 2201.03 before taking ECON 3344.03  
FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03

### **ECON 3349.03: History of Economic Thought.**

This course will examine theories of value, production, distribution, and growth as developed in classical political economy and neoclassical economics. Theories of equilibrium and stability, the links between classical political economy and macroeconomic theory, and reactions to classical and neoclassical economics will be considered as time permits.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 2201.03

### **ECON 3350.03: Social Cost Benefit Analysis.**

Social cost benefit analysis is used to evaluate public projects and private sector regulations. It is similar to the revenue cost accounting used by firms but takes into account external costs and benefits such as environmental damages. This course explains the methodology in the context of case studies after which students apply the method to evaluate a public policy problem.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or 2210.03

### **ECON 3360.03: Ethics, Justice, and Economics.**

Assumptions of Neoclassical economic theory are critically examined, with a focus on the ethical and distributional consequences of using markets as an allocation mechanism. We discuss the major conceptions of economic justice, including utilitarianism and social choice theory, Rawlsian egalitarianism, Nozickian libertarianism, Sen's capabilities approach, and equality of opportunity.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03, ECON 2201.03  
CROSS-LISTING: PHIL 3361.03

### **ECON 3500.03: Public Economics.**

Analyzes the role of government in problems of resource allocation due to market failure. Concentrates on theories of public goods, collective choice, potential of conflict and cooperation in individually-motivated actions, incentive structures capable of realizing rational, cooperative, group outcomes. Provides theoretical underpinnings of many applied fields. Involves mathematical methods.

NOTE: While a background of ECON 3700 is helpful, it is not a prerequisite.  
FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03, MATH 1000.03 or instructor permission

### **ECON 3600.03: Strategic Behaviour in Economics.**

Many economic questions (such as price competition, tax policy, research and development decision, bargaining) can be interpreted as games, in which each player's action affects payoffs of other players. The students learn how to recognize various strategic interactions in economics, and how to evaluate the outcomes of such interactions.

FORMAT: Lecture  
PREREQUISITE: ECON 2200.03 or ECON 2200.03, MATH 1000.03 or equivalent

### **ECON 3700.03: Mathematics for Economists.**

This course presents mathematical methods used in modern economics. The lectures concentrate on the basic concepts of analysis, comparative statics and optimization theory. Topics include an introduction to set theory and matrix algebra, the implicit function theorem, unconstrained optimization, constrained optimization with equality and inequality constraints, and intertemporal choice.

FORMAT: Lecture  
PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 2201.03, MATH 1000.03 or permission of the instructor  
CROSS-LISTING: MATH 3700.03

### **ECON 3800.03: Financial Economics.**

This class is an introduction to decision making by investors under uncertainty, portfolio theory, asset pricing, financial markets, and instruments. The course covers both the theoretical and practical aspects of investment, surveys the techniques available for economists, and emphasizes "hands-on" learning using Canadian and international case studies.

FORMAT: Lecture 3 hours  
PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 2201.03  
CROSS-LISTING: MATH 3800.03

### **ECON 3900.03: Financial Mathematics.**

See class description for MATH 3900.03 in the Mathematics section of this calendar.

PREREQUISITE: MATH 2060.03 and (MATH 2120.03 or MATH 3110.03) or instructor's permission  
CROSS-LISTING: MATH 3900.03

### **ECON 4002.03: Experiential Learning (in Economics).**

Experiential learning recognized the learning experience relevant to the program outside the scheduled curriculum. Students are responsible for drafting a learning agreement with the class coordinator and supervisor to specify learning outcomes, activities designed to accomplish these outcomes, a quantifiable assessment strategy and timetable.

PREREQUISITE: ECON 1101.03, ECON 1102.03, ECON 2200.03 or ECON 2220.03, ECON 2201.03, ECON 3338.03, ECON 3339.03. To be eligible, students should have a minimum average GPA of 3.0 in Economics.

EXCLUSION: Scheduled classes at a learning institution, study that would qualify for co-op work terms and paid work. Only one experiential learning class per degree is permitted.

### **ECON 4200.06: Honours Thesis.**

This course is required for honours students, and helps students define, research, and write an original research project under the supervision of an economics faculty member. Students develop a topic, critique current literature, run statistical tests, and present their results in a public conference. Attendance at weekly department seminars is mandatory.

FORMAT: Seminar 1.5 hours for both terms

PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 2201.03, ECON 3338.03, ECON 3339.03 and permission of instructor

### **ECON 4420.03: Microeconomic Theory.**

In-depth study of outcomes of decision-making by agents, individually, collectively or as an interdependent system. Selects topics from: linear and non-linear optimization and applications to theory of consumers and firms, general equilibrium, game theory, alternative solution concepts, comparative statics, stability, welfare, market failures, collective choice, intertemporal economics, uncertainty.

NOTE: Students who have taken courses which are adjudged to be equivalent to the prerequisites, and/or who plan to take such courses during the same term (as co-requisites), may be allowed to take this class, at the discretion of the instructor. Students may find that some background in elementary Matrix Theory/Linear Algebra, at the level of MATH 2030.03 for example, is useful.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or ECON 2220.03, ECON 3700.03, MATH 1000.03 (or equivalent) and MATH 1010.03

### **ECON 4421.03: Macroeconomic Theory.**

Students are introduced to contemporary issues in macroeconomics including aggregate growth accounting; neoclassical growth models; monetary policy, inflation and unemployment; theories of consumption and investment; and trade and exchange rates. Mathematical methods are applied extensively and their application to economic problems will be stressed at both the theoretical and intuitive levels.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2201.03, ECON 3700.03, MATH 1000.03 (or equivalent), MATH 1010.03

### **ECON 4426.03: Monetary Policy.**

Assuming a basic knowledge of monetary institutions and macroeconomics, a critical analysis of the objectives and effectiveness of monetary policy is developed. Particular attention is given to the Canadian experience and the effectiveness of Canadian policy. Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2201.03 and ECON 3326.03

### **ECON 8891.00: Co-op Work-Term I.**

### **ECON 8892.00: Co-op Work-Term II.**

### **ECON 8893.00: Co-op Work-Term III.**

### **ECON 8894.00: Co-op Work-Term IV.**

## **Environmental Science**

Location: Life Sciences Centre, Room 822  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-7117  
Fax: (902) 494-1123  
Website: <http://www.dal.ca/environment>

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Susan Gass

### **Administrative Assistant**

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### **Supporting Faculty**

Environmental Science draws on faculty from the departments below:

Biology  
Chemical Engineering  
Chemistry  
Earth Sciences  
Economics  
Environmental Engineering  
International Development Studies  
Mathematics  
Oceanography  
Philosophy  
Physics and Atmospheric Science  
Political Science  
School for Resource and Environmental Studies  
School of Planning  
Sociology and Social Anthropology  
Statistics

NOTE: This field is rapidly expanding. Students interested in these types of programs should ask about classes related to the environment, other than those listed on the following pages, through the departmental contacts noted above.

## I. Introduction

Environmental Science in the Faculty of Science offers several programs. These include a BSc Honours/Major in Environmental Science, a Minor in Environmental Studies, a Double Major in Environmental Science and Community Design, and a BSc or BA Double Major or Combined Honours in Environmental Science and any Major/Honours subject in the Faculty of Arts and Social Sciences (FASS) or with Environment, Sustainability & Society (ESS). The Faculty of Arts and Social Sciences (FASS), the Faculty of Science, the Faculty of Computer Science and the Faculty of Architecture and Planning offer a Minor in Environmental Studies which is administered through Environmental Science.

Environmental Science applies the findings and principles from multiple disciplines to environmental questions and problems. Environmental Science, by nature, is multidisciplinary and interdisciplinary. Most environmental scientists develop expertise in a particular discipline, and work co-operatively with specialists in other disciplines to solve environmental problems. They work in a variety of institutions in both the public and private sectors: municipal, provincial and federal government departments, consulting and engineering companies, development aid organizations in the non-governmental sector and activist community organizations. In all of these institutions they must integrate their scientific knowledge into the prevailing political, economic and legal systems.

The classes required for the BSc Environmental Science stress the links among the fields of study that the students acquire. Thus, students graduate with a combination of depth and breadth of knowledge and the ability to solve problems in the real world.

## II. Degree Programs

A strong high school background in science (mainly Biology, Chemistry, Physics) is an asset, as are senior high school classes in Geography, Mathematics and English. For those considering these programs it is important to keep a number of options open as long as possible by taking the appropriate classes in Year 1. In each of the Science degree programs outlined below, the **Dalhousie Integrated Science Program (DISP)** is highly recommended.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar. SCIE 1111.03 is recommended to satisfy the writing requirement in all programs.

### A. BSc (20 credit) Major and Honours in Environmental Science

#### Departmental Requirements

##### 1. 1000 Level

- DISP (SCIE 1515.36, 1520.30, 1530.27, 1540.27)

OR

- BIOL 1010.03 or BIOL 1020.03
- MATH 1000.03 or MATH 1215.03
- STAT 1060.03 or MATH 1010.03 or MATH 2030.03
- CHEM 1011.03
- CHEM 1012.03
- EARTH 1080.03
- ENVS 1000.06
- SCIE 1111.03\*

\*An alternative writing class may be taken - see list on page 131 of this calendar. Students are encouraged to take one half of their language/humanities requirement (which is one credit in total) in their first year.

The classes listed above should be taken in the first year, if possible, if ENVS 1000.06 is not taken in the first year, it should be taken in the second year.

Also required but usually taken in the second year.

- ECON 1101.03 or ECON 1102.03

##### 2. Common Core Classes

Completed at various times over a four year degree program, the Common Core Classes introduce students to the scope and magnitude of environmental science

and are designed to provide students with an appreciation of the scientific, cultural, economic, historic, legal and social aspects of environmental issues.

- STAT 2080.03 or STAT 2060.03\*
- BIOL 2060.03
- PHIL 2480.03\*\*
- PHYC 2310.03
- ENVS 2000.03
- ENVS 2100.03
- ENVS 3001.03
- ENVS 3200.03
- ENVS 3500.03
- ENVS 3501.03
- ENVS 3502.03
- ENVS 3601.03
- ENVS 4001.03

\*STAT 2080.03 and ECON 1101.03 or ECON 1102.03 together satisfy the degree requirements for one credit in social science.

\*\*PHIL 2480.03 satisfies half of the degree requirement of one full credit in Language and Humanities.

### 3. Area of Emphasis (AOE) - four Credits

After completing the first year, students must choose an Area of Emphasis within the Faculty of Science. Students may choose from:

- Earth Sciences
- Environmental Economics
- Marine Biology
- Biology
- Ecology
- Chemistry and the Environment
- Statistics and the Environment
- Atmospheric Science
- Oceans and Global Change - First year and core class requirements differ from those listed above. See Section 5 for specific requirements.

A listing of the required classes for each Area of Emphasis is available from the Environmental Science Undergraduate Advisor or from the Environmental Science website (<http://www.dal.ca/environment>).

### 4. Electives

By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core and Area of Emphasis classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

### 5. Specific departmental requirements for Area of Emphasis in Oceans and Global Change.

#### a. 1000 level

- BIOL 1010.03 or BIOL 1020.03
- BIOL 1011.03 or BIOL 1021.03
- MATH 1000.03
- MATH 1010.03
- CHEM 1011.03
- CHEM 1012.03
- EARTH 1080.03
- EARTH 1090.03
- PHYC 1100XY.06 OR PHYC 1300XY.06

#### b. Core requirements

- OCEA 2000XY.06
- OCEA 2800.03
- STAT 1060.03
- STAT 2080.03
- ECON 1101.03 or ECON 1102.03\*
- PHIL 2480.03 \*\*
- ENVS 2100.03
- ENVS 3001.03
- ENVS 3501.03
- ENVS 3502.03
- ENVS 3200.03
- ENVS 4001.03
- ENVS 4901.03
- ENVS 4902.03

\*This class satisfies one half credit of the degree requirement of one full credit in a Social Science. One more half credit in Social Science must be taken as an elective.

\*\*This philosophy class satisfies the degree requirement of half a credit in Languages and Humanities

### c. Area of Emphasis Requirements (four credits)

Honours students are required to complete an honours thesis. The thesis is conducted in association with two required classes:

- ENVS 4901.03
- ENVS 4902.03

The Honours Qualifying Exam is determined as a pass or fail in the honours thesis presentation.

- OCEA 3001.03
- OCEA 3002.03
- OCEA 3003.03
- OCEA 3004.03
- OCEA 4000.03
- OCEA 4335.03
- OCEA 4380.03
- PHYC 4520.03

## 6. Honours Program

Students must have a minimum of nine and maximum of 12 credits of required ENVS classes above the 1000 level. Students who have not fulfilled this requirement in their Common Core and Area of Emphasis Credits must choose enough electives from the list of Approved Environmental Science Equivalent Classes to meet this requirement (classes do not have to have an ENVS designation, but must be picked from a list of approved electives to count toward the minimum and maximum requirements for the program). A list of approved Environmental Science Equivalent Classes is available from the Director of Environmental Programs or online (<http://www.dal.ca/environment>). Each ENVS, ENVS-equivalent and Area of Emphasis class above the 1000 level must be passed with a grade "C" or better, and the average GPA for these classes must be at least 3.0. A cumulative GPA of 3.5 in the first two years is required to enter the Honours Program.

## 7. Major Students

Students must have a minimum of seven and maximum of 10 credits of ENVS classes above the 1000 level. Students who have not fulfilled this requirement in their Common Core and Area of Emphasis credits must choose enough electives from the list of Approved Environmental Science Equivalent Classes to meet this requirement (classes do not have to have an ENVS designation, but must be picked from a list of approved electives to count toward the minimum and maximum requirements for the program). A list of approved Environmental Science equivalent classes is available from the Director of Environmental Science Programs or online (<http://www.dal.ca/environment>).

## B. BSc (20 credit) Double Major or Combined Honours in Environmental Science

Students may complete a BSc Double Major/Combined Honours in Environmental Science and any Major/Honours subject from the Faculty of Arts and Social Science (FASS), or Environment, Sustainability and Society (ESS). See section C for combinations with ESS. Beside the general requirements for all BSc programs, students must meet the Faculty degree requirements for the BSc with Double Major, which includes 10-14 full credits in the major subjects beyond the 1000 level, with no more than nine nor fewer than five in either subject. Students must complete at least two full credits at the 2000 level in each major subject. Combined honours require 11-14 credits in the honours subjects beyond the 1000 level, with no more than nine nor fewer than five in either subject.

### Departmental Requirements

#### 1. 1000 Level

- DISP (SCIE 1515.36, 1520.30, 1530.27, 1540.27)
- OR
- BIOL 1010.03 or BIOL 1020.03 (C- or better)
  - MATH 1000.03 or MATH 1215.03
  - STAT 1060.03 or MATH 1010.03 or MATH 2030.03
  - EARTH 1080.03
  - CHEM 1011.03

- CHEM 1012.03
- ENVS 1000.06
- SCIE 1111.03\*

\*This constitutes the writing class. An alternative writing class may be taken - see list on page 131 of this calendar. Students are encouraged to take one half of their language/humanities requirement (which is one credit in total) in their first year.

The classes listed above should be taken in the first year, if possible. If ENVS 1000.06 is not taken in the first year, it should be taken in the second year.

Also required but normally taken in the second year:

- ECON 1101.03 or ECON 1102.03

## 2. Common Core Classes

In addition to the Common Core Classes listed in Section A.2, one additional full credit of ENVS is required

## 3. Subject B Classes

Chosen from any Major/Honours subject in the Faculty of Arts and Social Sciences. A minimum of five and maximum of seven credits above 1000-level are required. See Subject B department academic advisor for specific requirements.

## 4. Electives

By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

## C. 20 Credit BSc Double Major and Combined Honours in Environmental Science (ENVS) and Environment, Sustainability and Society (ESS)

ENVS as (A) subject, ESS as (B) subject

### Departmental Requirements

#### 1. 1000 Level

- ENVS 1000.06
- BIOL 1010.03 or BIOL 1020.03
- MATH 1000.03 or MATH 1215.03
- STAT 1060.03 or MATH 1010.03 or MATH 2030.03
- CHEM 1011.03
- CHEM 1012.03
- EARTH 1080.03
- SUST 1000.06\*

\*This class also serves as the writing class.

Also required but usually taken in the second year:

- ECON 1101.03 or ECON 1102.03

## 2. Common Core Classes

In addition to the ENVS classes listed in A2:

- SUST 2000.06 or SUST 2001.06
- three credits taken from the list of approved ESS electives (page 46 of this calendar), not including required ENVS classes.

Honours students also require:

- ENVS 4901.03
- ENVS 4902.03

Area of Emphasis classes in ENVS are not required.

ESS as (A) subject, ENVS as (B) subject

### Departmental Requirements

#### 3. 1000 Level

- ENVS 1000.06
- BIOL 1010.03 or BIOL 1020.03
- STAT 1060.03
- EARTH 1080.03

- SUST 1000.06\*
- SUST 1001.06

\* This class also serves as the writing class.

### Common Core Classes

- STAT 2080.03
- ENVS 2000.03
- ENVS 2100.03
- ENVS 3501.03
- ENVS 4001.03
- 1.5 credits of other ENVS classes, 1.0 above the 2000 level
- SUST 2000.06
- SUST 2001.06
- SUST 3000.03
- SUST 3502.03
- SUST 4000.06
- three credits taken from the list of approved ESS electives (page 44 of this calendar), not including required ENVS classes.

### D. BSc (20 credit) Double Major in Environmental Science and Community Design

Space in this program is limited. Students must receive approval from the School of Planning Undergraduate Coordinator for admission to this program.

#### Departmental Requirements

##### 1. 1000 Level

- DISP (SCIE 1515.36, 1520.30, 1530.27, 1540.27)
- ECON 1101.03 or ECON 1102.03
- PLAN 1001.03 and 1002.03

OR

- BIOL 1010.03 and 1011.03 or 1020.03 and 1021.03
- MATH 1000.03 or MATH 1215.03
- MATH 1010.03 or MATH 2030.03 or STAT 1060.03
- EARTH 1030.03
- PLAN 1001.03
- PLAN 1002.03
- ECON 1101.03\* or ECON 1102.03\*
- one full credit in a first year single subject chosen from chemistry, physics, environmental science OR one additional half-credit in Earth Sciences.

\*This class satisfies one half credit of the degree requirement of one full credit in a Social Science. One more half credit in Social Science must be taken as an elective.

##### 2. Common Core Classes

In addition to the Common Core Classes listed in Section A.2, one additional full credit in ENVS is required.

##### 3. Community Design Classes (four credits)

- PLAN 2001.03
- PLAN 2002.03
- PLAN 2005.03
- PLAN 3001.03
- PLAN 3002.03
- PLAN 3005.03
- PLAN 3006.03
- One additional half-credit in PLAN

##### 4. Electives

By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

### E. BA (20 credit) Double Major or Combined Honours in Environmental Science

Students may complete a BA Double Major/Combined Honours in Environmental Science and any Major/Honours subject from the Faculty of Arts and Social Sciences (FASS), or Environment, Sustainability and Society (ESS).

Beside the general requirements for all BA programs, students must meet the Faculty degree requirements for the BA with Double Major, which include 10-14 full credits in the major subject beyond the 1000 level, with no more than eight nor fewer than five in either subject. Students must complete at least two full credits above the 2000 level in each major subject.

Combined Honours requires 11-14 credits in the honours subjects beyond the 1000 level, with no more than eight nor fewer than five in either subject.

For the BA Double Major/Combined Honours in Environmental Science and Faculty of Arts and Social Sciences (FASS), the following are required:

#### Departmental Requirements

##### 1. 1000 Level

- ENVS 1000.06 (B or better)
- One credit in a first-year science subject chosen from BIOL, CHEM, PHYC, EARTH, ECON
- STAT 1060.03

##### 2. 2000 Level

- ENVS 2000.03
- ENVS 2100.03

##### One credit chosen from:

- BIOL 2003.03
- BIOL 2004.03
- BIOL 2060.03
- GEOG 2800.03
- CHEM 2505.03
- OCEA 2000.06
- ECON 2216.03
- EARTH 2410.03

##### 3. 3000 and 4000 Level

- ENVS 3200.03
- ENVS 3501.03
- ENVS 3502.03\*
- ENVS 4001.03

##### 4. At least one credit from:

- ENVS 3000.03
- ENVS 3001.03
- ENVS 3210.03
- ENVS 3225.03
- ENVS 3226.03
- ENVS 3301.03
- ENVS 3400.03
- ENVS 3500.03
- ENVS 3801.03
- BIOL 3060.03
- BIOL 3061.03
- BIOL 4160.03
- CHEM 4203.03

\* If ESS is the A subject, this requirement is waived.

##### 5. Subject B Classes

Chosen from any Major/Honours subject in the Faculty of Arts and Social Sciences. A minimum of five and maximum of seven credits above 1000 level are required. See Subject B department academic advisor for specific requirements.

##### 6. Electives

By presenting a wide range of topics inherent in the theme of human-environment relationships in the Common Core classes, students will be encouraged to assess their own interests and learning goals. Through the selection of electives, students can prepare themselves for learning experiences and careers that will meet their individual needs.

For the BA Double Major/Combined Honours in Environmental Science and Environment, Sustainability and Society (ESS), with either subject as (A) or (B), the requirements are the same as for the BSc program (section C) with the exception that the only required MATH or STAT class is STAT 1060.03.

## F. BA, BSc, BCD, BCSc (20 credit) Minor in Environmental Studies

Students in the following 20 credit degree programs may do a Minor in Environmental Studies:

- Major or Honours Bachelor of Science, except Environmental Science
- Major or Honours Bachelor of Arts
- Honours Bachelor of Community Design
- Major or Honours Bachelor of Computer Science, with/without Co-op
- Double Major or Combined Honours in any two departments in the Faculty of Arts and Social Science or the Faculty of Science, except Environmental Science.

Students doing a Minor in Environmental Studies must get approval of their class selections from the Environmental Science Undergraduate Advisor. The rules governing the selection of classes are given below.

### 1. BA with Minor in Environmental Studies

See listing in Faculty of Arts and Social Sciences section of this calendar (page 187).

### 2. BSc with Minor in Environmental Studies

BSc students must take three full credits of required classes, plus two full credits from the approved list of elective classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- No class can fulfil a requirement of both the Major or Honours subject and the Minor.
- A maximum of one half-credit class in the Major/Honours subject (i.e., a class beyond those required for the Major/Honours) can count toward the Minor.
- At least one half credit beyond the required classes must be at the 3000 level or above.

Additions to the Electives list will be made as relevant classes become available.

#### Required Classes:

- ENVS 1000.06: Intro to Environmental Science OR Dalhousie Integrated Science Program, SCIE 1515.36, 1520.30, 1530.03, 1540.27
- PHIL 2480.03: Environmental Ethics
- ENVS 3501.03: Environmental Problem Solving I
- ENVS 3502.03: Environmental Problem Solving II
- ENVS 3200.03: Introduction to Environmental Law

#### Electives (two full credits from the list)

- BIOL 2601.03: The Flora of Nova Scotia
- BIOL 2605.03: Introduction the Marine Life of Nova Scotia
- BIOL 3063.03: Resource Ecology
- BIOL 3225.03: Plants in the Human Landscape
- BIOL 3226.03: Economic Botany, Plants and Civilization
- BIOL 3601.03: Nature Conservation
- BIOL 3xxx.03: Any ecology-related class at 3000-level or above
- BIOL 4065.03: Sustainability and Global Change
- BIOL 4104.03: Environmental Microbiology
- BIOL 4160.03: Political Ecology
- CHEM 2505.03: Environmental Chemistry I
- CHEM 4203.03: Environmental Chemistry II
- CHEM 4595.03: Atmospheric Chemistry
- CTMP 3210.03: Intersecting Bodies, Selves and Environment
- CTMP 3220.03: The Aesthetics of Nature
- EARTH 2203.03: Sediments and Sedimentary Rocks
- EARTH 2410.03: Environmental and Resource Geology I
- EARTH 3302.03: Quaternary Sedimentary Environments
- EARTH 3400.03: Fundamentals of Hydrogeology
- EARTH 3402.03: Practical Hydrogeology
- EARTH 3410.03: Environmental Geology 2
- EARTH 3420.03: Geochemistry of Aquatic Environments
- EARTH 3440.03: Geomorphology
- EARTH 3500.03: Geoscience Information Management
- EARTH 4450.03: Introduction to Landscape Simulation
- EARTH 4502.03: Micropaleontology and Global Change
- EARTH 4520.03: GIS Applications to Environmental and Geological Sciences

- EARTH 4530.03: Environmental Remote Sensing
- ECON 2210.03: Emerging Giants: the Economic Rise of China and India
- ECON 2216.03: Economics of Global Warming
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- ENVS 2100.03: Environmental Informatics
- ENVS 3000.03: Environmental Science Internship
- ENVS 4210.03: Administrative Environmental Law: Natural Justice and Unnatural Acts
- ENVS 3220.03: International Law for Environmental Scientists
- ENVS 3225.03: Plants in the Human Landscapes
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Contaminated Site Management
- ENVS 3301.03: Enterprise Sustainability
- ENVS 3400.03: Human Health and Sustainability
- ENVS 3500.03: Geoscience Information Management
- ENVS 3615.03: Methods in Ecology
- ENVS 3632.03: Applied Field Methods in Fish Ecology
- ENVS 3801.03: Directed Readings in Environmental Science
- ENVS 4001.03: Environmental Impact Assessment
- GEOG 2800.03: Climate Change
- HIST 3370.03: North American Landscapes
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- INTD 3304.03: Sustainable Development in Cuba
- MICI 4104.03: Environmental Microbiology
- OCEA 2000.06: The Blue Planet
- OCEA 2800.03: Climate Change
- OCEA 4110.03: Introduction to Geological Oceanography
- OCEA 4120.03: Introduction to Physical Oceanography
- OCEA 4130.03: Introduction to Chemical Oceanography
- OCEA 4140.03: Introduction to Biological Oceanography
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2485.03: Technology and the Environment
- PHYC 2310.03: Energy and the Environment
- PHYC 2451.03: Astronomy I: The Sky and Planets
- PHYC 2800.03: Climate Change
- PLAN 2001.03: Landscape Analysis
- PLAN 3001.03: Landscape Ecology
- PLAN 3002.03: Reading the City
- PLAN 3005.03: Cities and the Environment in History
- PLAN 3010.03: Urban Ecology
- PLAN 3020.03: Landscape Design
- PLAN 4106.03: Transportation Planning
- POLI 3380.03: Politics of Climate Change
- POLI 3385.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea I
- POLI 3590.03: Politics of the Sea II
- SOSA 2100.06: Environment and Culture
- SOSA 3211.03: Continuity and Change in Rural Society
- SOSA 3220.03: Coastal Communities in the North Atlantic

### 3. Bachelor of Community Design (BCD) with Minor in Environmental Studies

See listing in Faculty of Architecture and Planning section of this calendar (page 124).

### 4. Bachelor of Computer Science (BCSc) with a Minor in Environmental Studies

BCSc students must take three full credits of required classes, plus two full credits from the approved list of elective classes below. Note: In planning their programs students must take into account the prerequisites which apply to many of the elective classes listed below. The following rules apply to the selection of classes for the Minor:

- No class can fulfill a requirement of both the Major or Honours subject and the Minor.
- At least one half credit beyond the required classes must be at the 3000 level or above.
- Additions to the following lists will be made as relevant classes become available.

**Required classes:**

- ENVS 1000.06: Introduction to Environmental Science OR DISP (SCIE 1515.36, 1520.30, 1540.27)
- ENVS 2480.03: Environmental Ethics
- ENVS 3501.03: Environmental Problem-Solving I
- ENVS 3502.03: Environmental Problem-Solving II
- ENVS 3200.03: Introduction to Environmental Law

**Electives (two full credits from the list):**

- BIOL 2605.03: Introduction to Marine Life of Nova Scotia
- BIOL 3063.03: Resource Ecology
- BIOL 3225.03: Plants in the Human Landscape
- BIOL 3226.03: Economic Botany, Plants and Civilization
- BIOL 3601.03: Nature Conservation
- BIOL 4065.03: Sustainability and Global Change
- CHEM 2505.03: Environmental Chemistry I
- CHEM 4203.03: Environmental Chemistry II
- CHEM 4595.03: Atmospheric Chemistry
- CTMP 3210.03: Intersecting Bodies, Selves and Environments
- ECON 2213.03: Emerging Giants: The Economic Rise of China and India.
- ECON 2216.03: Economics of Global Warming
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- EARTH 2410.03: Environmental Issues in Earth Sciences
- EARTH 3440.03: Geomorphology
- EARTH 4450.03: Introduction to Landscape Simulation
- EARTH 4520.03: GIS Applications to Environmental and Geological Sciences
- EARTH 4530.03: Environmental Remote Sensing
- ENVS 2100.03: Environmental Informatics
- ENVS 3000.03: Environmental Science Internship
- ENVS 3220.03: International Law for Environmental Scientists
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Contaminated Site Management
- ENVS 3301.03: Enterprise Sustainability
- ENVS 3400.03: Human Health and Sustainability
- ENVS 3500.03: Geoscience Information Management
- ENVS 3801.03: Directed Readings in Environmental Science
- ENVS 4210.03: Administrative Environmental Law: Natural Justice and Unnatural Acts
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- OCEA 2000.06: The Blue Planet
- OCEA 2800.03: Climate Change
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2485.03: Technology and the Environment
- PHYC 2310.03: Energy and the Environment
- PHYC 2800.03: Climate Change
- PLAN 3010.03: Urban Ecology
- POLI 3380.03: Politics of Climate Change
- POLI 3385.03: Politics of the Environment
- POLI 3589.03: Politics of the Sea I
- SOSA 2100.06: Environment and Culture
- SOSA 3211.03: Continuity and Change in Rural Society
- SOSA 3220.03: Coastal Communities in the North Atlantic

## G. Co-operative Education Program in Environmental Science

Co-operative Education in Environmental Science (Co-op) is a program that combines academic study with career-related work experience. Students complete three workterms and graduate with a BSc, Co-op. The program requires a minimum of three workterms. A fourth workterm is optional.

A student in the co-op program must complete SCIE 2800.00, a mandatory non-credit interdisciplinary seminar in the fall semester of their second year. The student must also register each workterm as ENVS 8891.00, ENVS 8892.00, ENVS 8893.00, or ENVS 8894.00, depending on how many workterms have already been completed. At least one workterm must not be during the summer term.

Co-op begins in the second year of study. A GPA of at least 3.0 for the first year of study is required for admission. In addition to completing at least three workterms,

a student in the co-op must fulfill the requirements of either a 20 Credit BSc Major/Honours or a 20 Credit BSc Combined Honours or Double Major in Environmental Science while maintaining a minimum GPA of 3.0. Departmental and Science Co-op Office approval is required to be admitted to Co-op in Environmental Science. Interested students should inquire about the program before beginning their second year of study. Application deadline is August 1st.

Additional information may be found in the calendar under the heading “Co-operative Education in Science” or visit <http://www.science.coop.dal.ca>

## H. Other programs

### Minors

Minor programs allow students to develop subject specialties, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Environmental Science, minor programs are available in the following subject areas.

#### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Geography (BA or BSc)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA only)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 135, as well as the particular subject area of the calendar.

### BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

## I. Diplomas, Certificates, and Language Proficiency Certificates

In combination with a BA or BSc there are certificates or diplomas that can be obtained to emphasize areas of proficiency. For a complete list and details refer to the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

Certificates that may be of particular interest to students in Environmental Science include:

- Certificate in Environmental Impact Assessment
- Certificate in Geographic Information Science

(see Biology Department entries)

Lists of requirements and checklists can also be found on the Environmental Science website (<http://www.dal.ca/environment>).

Students should enrol in these certificates by contacting C. Wells or D. Rainham (for GIS Certificate), P. Lane (for EIA Certificate), or the Environmental Science Advisor. Students can enrol when in their second, third or fourth year of the BSc program, however; early enrolment is advised because it may otherwise be difficult to meet the requirements within four years.

## J. Minor programs in Environmental Science

(available for students not registered in that particular department)

Any three full credits above the 1000 level in Environmental Science (ENVS classes).



## K. Minor programs available to students enrolled in a Major or Honours in Environmental Science

(see appropriate Calendar entries)

- Minors in other Faculty of Science programs
- Minors offered by the Faculty of Arts and Social Sciences
- Minors in other Faculties

## III. Class Descriptions

### ENVS 1000X/Y.06: Introduction to Environmental Science.

This full year class introduces numerous topics including biogeochemical cycles, food webs, biodiversity, human population growth, soil, agriculture, climate, pollution, toxicology, energy, water, forests, oceans, minerals, law, waste management and urban issues. Tutorials reinforce and supplement lectures and allow small group discussion and debate.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): S. Gass

FORMAT: Lecture 3 hours, tutorial

EXCLUSION: ENVI 1100X/Y.06

### ENVS 2000.03: Urban Field School.

This field class offers an introduction to urban environmental science by examining the role of humans in ecosystems and how humans change ecosystem processes and functions within urban areas. Students gain hands-on experience in environmental science techniques during excursions in different urban settings with the Halifax Regional Municipality.

NOTE: Offered in early May. Daily field trips and/or labs. An auxiliary fee is charged to cover field expenses.

INSTRUCTOR(S): S. Gass

FORMAT: Field intensive, labs, lectures

PREREQUISITE: ENVS 1000.06 and open only to students in the BSc Environmental Science Program

### ENVS 2100.03: Environmental Informatics.

Environmental Informatics is the knowledge skills and tools which enable information to be collected, managed and disseminated to support research in environmental science. Students develop skills for the analysis, evaluation and synthesis of knowledge in environmental science. Information systems, tools, and techniques are introduced and applied to current environmental challenges.

INSTRUCTOR(S): D. Rainham

FORMAT: Lecture 3 hours and labs

PREREQUISITE: ENVS 1000X/Y.06

### ENVS 2410.03: Environmental Issues in Earth Sciences.

Geology underlies many of the environmental problems facing humanity today. Topics include environmental aspects of energy and mineral resource, geologic hazards, geologic connections to pollution and waste disposal, and the role that water plays in its various guises. Canadian examples are incorporated where appropriate. Approved with Canadian Studies.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: One of: EARTH 1080, EARTH/GEOG 1030, EARTH/GEOG 1060, ENVS 1000, SUST 1001, or DISP with Earth Sciences

CROSS-LISTING: CANA 2410, EARTH 2410

EXCLUSION: This class is not available for Earth Sciences Majors

### ENVS 3000.03: Environmental Science Internship.

This class allows students to gain hands-on experience while addressing a question of personal and academic interest relevant to the field of environmental science by working as interns for 8 hours a week over a twelve-week period on a specific project at a sponsoring agency.

NOTE: It is the student's responsibility to consult with Environmental Program at least 3 weeks prior to the term in which the internship will take place to arrange for a placement and to make sure that the details of the internship are in accordance with university standards.

INSTRUCTOR(S): P. Mushkat

FORMAT: Internship

PREREQUISITE: Open ONLY to students in Minor in Environmental Studies, Honours/Major/Double Major/Combined Honours in Environmental Science

### ENVS 3001.03: Environmental Science Field School.

Daily field trips introduce methods used in environmental science and environmental processes at diverse sites within Nova Scotia. Involves full-day trips from Halifax and a multi-day camping trip away from Halifax. Offered during the last 2 weeks before Labour Day.

INSTRUCTOR(S): S. Gass and Staff

FORMAT: Full-day and overnight field trips.

PREREQUISITE: Open ONLY to students in BSc or BA Environmental Science

### ENVS 3200.03: Introduction to Environmental Law.

This class will take a look at how environmental law operates in Nova Scotia within the Federal framework and it will illustrate some of the multi-disciplinary aspects which make this area of law part science, part art and part soothsaying.

INSTRUCTOR(S): P. Mushkat

FORMAT: Lecture 3 hours

PREREQUISITE: Must be a third year student

### ENVS 3225.03: Plants in the Human Landscape.

The use of plants for human recreation and aesthetic purposes in gardens, public parks, suburban and urban landscapes. Topics include: history of gardens, garden design, plant materials, edible landscaping, plants and human health. The course includes field trips and group work and students complete a design project.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better) or DISP or PLAN 2001.03

CROSS-LISTING: PLAN 3225, BIOL 3225

### ENVS 3226.03: Economic Botany, Plants and Civilization.

The story of the human use of plants for food, fibre and fuel including the botany, domestication, development, distribution, production, processing, history, economic and social impacts of the major world crops (cereals, fruits, vegetables, flowers and industrial crops) and the development of novel plant based bioproducts (bio-fuels, etc).

INSTRUCTOR(S): Staff

FORMAT: Lecture/lab

PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (B- or better) and BIOL 1011.03/BIOL 1021.03 (B- or better)

CROSS-LISTING: BIOL 3226.03

### ENVS 3300.03: Contaminated Site Management.

Scientists, engineers and planners should have a basic understanding of the issues surrounding environmental site assessment given the potential environmental and socio-economic impacts. Topics include phased assessments, risk assessment, remediation and monitoring. Case studies, projects, guest speakers and field trips augment the class. Class offered in alternate years.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, occasional field trips

PREREQUISITE: CHEM 1011.03/1012.03; EARTH 1010.03/1020.03; OR permission of the instructor

### ENVS 3301.03: Enterprise Sustainability.

Integration of sustainability into corporate environment is reviewed from perspectives of practical application of pollution prevention (P2). Tools for data collection, communication, analysis, and presentation will be taught. Field trip(s) will provide practical experience and form foundation for major project. Guest speakers will supplement the course. Class offered in alternate years.

INSTRUCTOR(S): J. Rod

FORMAT: Lecture/hands-on exercises and field trip.

PREREQUISITE: /CO-REQUISITES: ENVS 1000X/Y.06 or ENVS 2001.03

### ENVS 3400.03: Environment and Human Health.

This course examines the relationships between the health of populations and health determinants in the context of environmental sustainability. Weekly laboratory exercises will teach students how geomatics (GIS, GPS, and remote sensing technologies) and epidemiological tools can be used to assess the links between the health of human populations and the health of the environment, and how to use these tools for environmental health research.

INSTRUCTOR(S): D. Rainham

FORMAT: Lecture 3.0 hours, Lab 1.5 hours

PREREQUISITE: Must be a third year student or have permission of instructor

CROSS-LISTING: GEOG 3400.03

**ENVS 3500.03: Geoscience Information Management.**

See class description for EARTH 3500 in the Earth Sciences section of the calendar.

**ENVS 3501.03: Environmental Problem Solving I.**

This class introduces students to concepts and methods for analyzing environmental problems. Students will learn analytical approaches for problem solving that are appropriate for a wide range of environmental issues and apply these to the analysis of case studies.

INSTRUCTOR(S): T. Wright

PREREQUISITE: ENVS 1000.06 (with a grade of B or better) or ENVS 2001.03.

Must be a 3rd year student OR have permission of instructor

**ENVS 3502.03: Environmental Problem Solving II: The Campus as a Living Laboratory.**

In this course the campus serves as a living laboratory for identifying, evaluating and assessing indicators of progress toward greater campus sustainability. Working in groups, students apply problem solving models to case studies using qualitative and quantitative research methods and make recommendations for improvements on campus based on their analyses.

INSTRUCTOR(S): T. Wright

PREREQUISITE: ENVS 3501.03 or permission of instructor

**ENVS 3601.03: Global Biogeochemical Cycles.**

An interdisciplinary class that examines example global cycles of water, carbon, nitrogen, phosphorus, and sulphur, and human impacts on these cycles, as manifested in our atmospheric, soil, ocean and freshwater environments. This class involves discussion of the latest developments in this rapidly changing field and will provide a framework for those interested in global change.

INSTRUCTOR(S): S. Sterling

PREREQUISITE: An introductory Chemistry class and one of ENVS 1000.06,

SUST 1001.06, EARTH 1080.03, or EARTH 1090.03

CROSS-LISTING: EARTH 3601.03

**ENVS 3615.03: Methods in Ecology.**

See class description for BIOL 3615 in the Biology section of the calendar.

**ENVS 3623.03: Applied Coastal Ecology.**

See class description for BIOL 3623 in the Biology section of the calendar.

**ENVS 3624.03: Urban Freshwater Systems.**

See class description for BIOL 3624 in the Biology section of the calendar.

**ENVS 3632.03: Applied Field Methods in Fish Ecology.**

See class description for BIOL 3632 in the Biology section of the calendar.

FORMAT: Field intensive. Lecture and lab.

**ENVS 3633.03: Spatial Information and GIS in Ecology.**

A hands-on approach to understanding and using spatial information, this class introduces students to Geographic Information Systems (GIS) as a tool to answer ecological questions. Together, students conduct a major field project, collecting data, creating maps using GIS, and interpreting spatial patterns, to address and applied problem in ecology.

NOTE: Offered in the summer through DEASIDE. an auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: BIOL 3633.03, GEOG 3633.03

**ENVS 3664.03: Intertidal Ecology and Diversity.**

See class description for BIOL 3664 in the Biology section of the calendar.

**ENVS 3801.03: Directed Readings in Environmental Science.**

This class is intended for third and fourth-year students who wish to study in an area of environmental science not covered in other classes offered at the university. It involves independent study supervised by a faculty member. Class content and marking scheme must be approved by the Director of Environmental Programs during the first week of the academic term in which the credit is being sought. It is the student's responsibility to consult with Environmental Programs at least 2 weeks prior to the term in which the Directed Readings course will take place.

INSTRUCTOR(S): S. Gass

PREREQUISITE: ENVS 1000X/Y.06 or ENVS 2001.03 and third year student status.

**ENVS 4001.03: Environmental Impact Assessment.**

This class provides an opportunity to explore all aspects of environmental impact assessment (EIA) as practiced in Canada and in other countries. The class traces the development of EIA over the past 30 years and critically examines the scientific, procedural and political dimensions.

NOTE: All students taking BIOL 4001.03 or ENVS 4001.03 must have completed 90 credits and be in their fourth year of study or have permission of instructor.

INSTRUCTOR(S): P. Lane

FORMAT: Lecture 3 hours and lab 3 hours (winter only)

PREREQUISITE: ENVS 1000X/Y.06 or BIOL 2060.03 or EARTH 2410.03 or

GEOG 2100X/Y.06 or GEOG 2201.03 or GEOG 2202.03 or INTD 2001.03 or

INTD 2002.03 or OCEA 2000X/Y.06 (or OCEA 2001.03 and OCEA 2002.03)

or SUST 2000.06 or SUST 2001.06.

CROSS-LISTING: ENVE 4772.03 (winter session only), BIOL 4001.03

**ENVS 4002.03: The Science of Wetland Ecosystems.**

An interdisciplinary introduction to wetland ecosystems, with emphasis on the relationship between wetlands and the surrounding watershed. This relationship determines wetland type, function and in developed landscapes, wetland health. Inversely, wetland type, function and health can affect the developed landscapes. Students will gain an appreciation of the physical relationship through an examination of wetland hydrology, chemical cycling, and ecology. Management of wetlands in the landscape through policy and engineering will also be studied.

FORMAT: Lecture

PREREQUISITE: CHEM 1011.03/1012.03 or CHEM 1021.03/1022.03 and BIOL 2060.03

CROSS-LISTING: BIOL 4002.03

**ENVS 4210.03: Environmental Law: Natural Justice and Unnatural Acts.**

Environmental Science in Canada is largely defined by statutes and regulations.

The class will consider administrative processes, the role of legislation, the function of administrative boards and tribunals and the general principles of judicial review. Offered every odd winter term.

INSTRUCTOR(S): P. Mushkat

FORMAT: Lecture 3 hours

PREREQUISITE: ENVS 3200.03 with a grade of A-

**ENVS 4220.03: International Environmental Law for Scientists.**

The problems posed by environmental issues are global requiring solutions that are only achievable through multi-lateral collaboration. Over 20 years, there has been an explosion of international agreements intended to either redress or avoid environmental disasters. Some of these are based on sound science, some on politics. How do these two elements mix at the international level? Can international law accommodate the inherent uncertainty in scientific hypotheses? Offered every even winter term.

INSTRUCTOR(S): P. Mushkat

FORMAT: Lecture/seminar

PREREQUISITE: ENVS 3200.03 with a grade of A-

EXCLUSION: ENVS 3220.03

**ENVS 4901.03: Honours Thesis Part A.**

Mastery of the basic skills of problem definition, proposal preparation and project implementation is the key to dealing with a wide range of "real-life" situations, both on and off the career path. Includes lectures and tutorials on proposal writing, research design and methodologies, and an independent environmental science research project carried out under the supervision of an approved faculty member. Required for Honours Environmental Science.

INSTRUCTOR(S): S. Sterling

FORMAT: Lecture/seminar

PREREQUISITE: Fourth year Environmental Science and permission of Instructor/Director

**ENVS 4902.03: Honours Thesis Project Part B.**

Independent research project carried out under the supervision of an approved faculty member or affiliated research scientists.

Required for Honours Environmental Science.

INSTRUCTOR(S): S. Sterling

FORMAT: Independent research

PREREQUISITE: ENVS 4901.03

### ENVS 4950.03: Advanced Topics in Environmental Science.

This class will address current interdisciplinary issues in environmental science with topics varying each semester. Details as to the content of the class will be announced by Environmental Programs at least one month in advance of the course offering. The course will be taught by Dalhousie faculty, and/or visiting scholars.

FORMAT: Lecture/seminar

PREREQUISITE: This class is restricted to students in the Honours/Major/Double Major in Environmental Science, or permission of the Director of Environmental Programs.

### IV. Co-op Workterms

Each workterm is a pre-requisite of the succeeding workterm. See Environmental Programs Co-op Academic Advisor for details.

**ENVS 8891.00: Co-op Workterm 1.**

**ENVS 8892.00: Co-op Workterm 2.**

**ENVS 8893.00: Co-op Workterm 3.**

**ENVS 8894.00: Co-op Workterm 4. (optional)**

## Environment, Sustainability and Society

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Location:	College of Sustainability
Telephone:	(902) 494-4581
Fax:	(902) 494-8923
Email:	sustainability@dal.ca
Website:	www.ess.dal.ca

### I. Degree Programs

The College of Sustainability offers a BSc Double Major and Combined Honours with any major/honours subject in the Faculty of Science and the Faculty of Computer Science. For complete details about the College, its programs and classes please see the College of Sustainability section on page 44 of the Calendar.

#### BSc, Double Major/Combined Honours, Environment, Sustainability and Society

##### i. *Environment, Sustainability and Society as Subject A*

###### Subject A: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 (one full credit in fall term)
- SUST 2001.06 (one full credit in winter term)
- SUST 3000.03
- SUST 3502.03
- SUST 4000.06
- three full credits from the approved list (at least two credits outside subject B)

Additional requirements for Combined Honours:

- SUST 4900.06
- Cumulative GPA in Honours subject classes above 1000 level of 3.3, with no individual grade less than C

###### Subject B: Any Major/Honours subject in the Faculty of Science

For detailed requirements please consult the calendar and academic advisor for your allied subject.

##### ii. *Environment, Sustainability and Society as Subject B*

###### Subject A: Any Major/Honours subject in the Faculty of Science or the Faculty of Computer Science

For detailed requirements please consult the calendar and academic advisor for your allied subject.

Additional requirements for Combined Honours: Must comply with Honours requirements for Subject A.

###### Subject B: Environment, Sustainability and Society

- SUST 1000.06 (one full credit in fall term)
- SUST 1001.06 (one full credit in winter term)
- SUST 2000.06 or SUST 2001.06
- three full credits from the approved list (at least two credits outside subject A and at least two credits above 2000 level)

# Food Science

## I. Minor in Food Science for BSc Major or Honours

The Minor in Food Science is available to students registered in the BSc 20 Credit Major and Honours programs.

## II. Requirements

The requirements are as for the appropriate program with the completion of the following classes to fulfill the Food Science Minor:

- FOSC 1000.03: Concepts in Food Science
- Eight classes from the following list:
  - BIOE 3051.03: Principles of Food Engineering
  - BIOE 3241.03: Industrial Biotechnology
  - CPST 2000.03: Technical Communication
  - CPST 3030.03: Engineering in Society II
  - ENVE 3000.03: Fundamentals of Environmental Engineering
  - FOSC 2010.03: Food Commodities
  - FOSC 3010.03: Food Chemistry
  - FOSC 3020.03: Food Analysis
  - FOSC 3030.03: Food Quality Assurance
  - FOSC 3070.03: Food Processing
  - FOSC 3080.03: Food Microbiology
  - FOSC 4020.03: Chemistry - Fats, Oils, Lipids
  - FOSC 4030.03: Food Product Development
  - FOSC 4081.03: Brewing Science
  - FOSC 4091.03: Food Safety and Biotechnology
  - FOSC 4500.03: Seminar in Food Science
  - FOSC 4250.03: Food Product Development Project
  - HPRO 2250.03: Interdisciplinary Class in Human Nutrition
  - Other electives as approved by the Food Science Coordinator

# Geography

Location: School of Planning  
5410 Spring Garden Road  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3260  
Fax: (902) 423-6672  
Website: <http://archplan.dal.ca/planning>

There is no degree in Geography at Dalhousie University, however, it is possible to do a Minor in Geography through the Faculty of Science, Faculty of Arts and Social Science, and Faculty of Architecture and Planning. Classes in geography may be taken by students in any program, and if cross-listed with science courses, may be used to meet the life or physical science subject requirement of a BA degree. Similarly, classes in geography cross-listed in the Faculty of Arts and Social Sciences may be used to meet the Social Sciences and Humanities requirement of a BSc degree.

Geography at Dalhousie University is overseen by the Faculties of Architecture and Planning, Arts and Social Sciences and Science, and each Faculty has a Geography Coordinator.

## Deans

Macy, C., BA (Arch) (Calif. At Berkeley), MArch (MIT)  
Moore, C., BA (Hons), PhD (Cambridge) Professor, Psychology  
Summerby-Murray, R., ATCL Dip (Trinity College, London), BA, MA (Canterbury), PhD (Toronto)

## Geography Coordinators

Architecture and Planning: Manuel, P., BA (Carleton), MSc (McGill), PhD (Dalhousie), MCIP, LPP ([patricia.manuel@dal.ca](mailto:patricia.manuel@dal.ca))

Arts and Social Sciences: Sommerby-Murray, R., ARCL Dip (Trinity College, London, BA, MA (Canterbury), PhD (Toronto) ([fassdean@dal.ca](mailto:fassdean@dal.ca))

Science: Ryan, A. M., BSc (Univ College Dublin), MSc, BEd (Acadia), MEd (MSVU), PhD (Dalhousie) ([amryan@dal.ca](mailto:amryan@dal.ca))

## I. Minor in Geography

The minor in Geography is available to students registered in the BA, BSc or BCD (20 credit) degree programs. To fulfill the requirements for a Minor in Geography, students must complete the following:

- GEOG 1030.03: Introduction to Physical Geography (cross-listing EARTH 1030.03)
- GEOG 1035.03: Introduction to Human Geography
- GEOG 2000.03: Cartography

Additional seven half credits from the following list: at least four of which must be at the 3000 level or higher.

**NOTE: Students in the BCD program may not select PLAN cross-listed courses that are required courses for their degree program**

- GEOG 2001.03: Landscape analysis (cross-listing: PLAN 2001.03)
- GEOG 2006.03: Space, Place, and Geographic Information Systems (cross-listing: PLAN 2006.03)
- GEOG 2070.03: Area Studies on Mexico and Central America (cross-listing HIST 2070.03)
- GEOG 2100X/Y.06: Environment and Culture (cross-listing: SOSA 2100.06)
- GEOG 2201.03: Introduction to Development (cross-listing: INTD 2001.03)
- GEOG 2202.03: Introduction to Development II (cross-listing INTD 2002.03)
- GEOG 2206.03: Africa: An Introduction (cross-listing INTD 2106.03)
- GEOG 2336.03: Regional Development (cross-listing ECON 2336.03)
- GEOG 2800.03: Climate Change (cross-listing PHYC 2800.03)
- GEOG 3001.03: Landscape Ecology (cross-listing PLAN 3001.03)
- GEOG 3002.03: Reading the City (cross-listing PLAN 3002.03)

- GEOG 3005.03: Cities and the Environment (cross-listing PLAN 3005.03)
- GEOG 3006.03: Reading the Landscape (cross-listing PLAN 3006.03)
- GEOG 3110.03: Migration and Development (cross-listing INTD 3110.03)
- GEOG 3114.03: Environment and Development (cross-listing INTD 3114.03)
- GEOG 3165.03: Peoples and Cultures of the World: Selected Area Studies (cross-listing SOSA 3165)
- GEOG 3210.03: Canadian Cultural Landscapes (cross-listing HIST 3210.03 and CANA 3020.03)
- GEOG 3220.03: Coastal Communities in the North Atlantic (cross-listing SOSA 3220.03)
- GEOG 3284.03: Living in cities (cross-listing SOSA 3284.03)
- GEOG 3370.03: North American Landscapes (cross-listing HIST 3370.03)
- GEOG 3400.03: Human Health and Sustainability (cross-listing ENVS 3400.03)
- GEOG 3440.03: Geomorphology (cross-listing EARTH 3440)
- GEOG 3500.03: Exploring Geographic Information Systems (cross-listing EARTH 3500, ENVS 3500, EARTH 5600)
- GEOG 3633.03: Spatial Information and GIS in Ecology (cross-listing ENVS 3633.03, BIOL 3633.03)
- GEOG 4440.03: Geomorphology and Landscape Evolution (cross-listing EARTH 4440.03)
- GEOG 4450.03: Introduction to Landscape Simulation (cross-listing EARTH 4450.03)
- GEOG 4520.03: GIS Applications to Environmental and Geological Sciences (cross-listing EARTH 4520.03)
- GEOG 4530.03: Environmental Remote Sensing (cross-listing EARTH 4530.03)

## II. Class Descriptions

### GEOG 1030.03: Introduction to Physical Geography.

This non-lab science course examines the nature of weather and climate, earth's surface features and processes, and internal processes that contribute to landform development. An integral component of the course is an exploration of the representation and interpretation of physical geographic data through the examination of a variety of maps.

NOTE: There are no pre-requisites for this course and students may take this class in addition to any other first year Earth Sciences class.

INSTRUCTOR(S): A.M. Ryan, L. Plug

FORMAT: Lecture-class 3 hours each week, and 1 hour tutorial weekly. Some classes may include map work

CROSS-LISTING: EARTH 1030.03

### GEOG 1035.03: Introduction to Human Geography.

Human geography examines the ways that people perceive, use, and alter the landscapes they occupy. Two themes run throughout the class. One theme deals with the aspects of culture that characterize different social groups. These are matters of material culture as well as group behaviour, and belief systems. The second theme has to do with the systems of production, livelihood, spatial organization, and administration that societies erect. Interwoven with these themes is the interaction of human societies with each other and their environments. The class introduces the principal tools of human geographers: maps, demography, and analysis of cultural patterns.

NOTE: This class cannot be used to meet the life or physical science subject requirement for the BA degree.

INSTRUCTOR(S): J. Boxall

FORMAT: Lecture 3 hours

### GEOG 1060.03: Earthquakes, Volcanoes and Natural Disasters.

Earthquakes, meteorite impacts, rapid climate change, volcanic eruptions, hurricanes, landslides, solar flares, and floods are natural disasters that affect our economy, public policy, and safety. Where, why and how frequently do natural disasters occur? Are predictions possible? Are media portrayals of risk and damage realistic? This course, aimed at the nonspecialist, investigates these intriguing questions. Excerpts of "disaster films", in conjunction with lectures and discussions are used to identify the causes, consequences and sometimes erroneous perceptions of natural hazards. Examples from Atlantic Canada and contemporary disasters are used to assess local risk and real-time events worldwide.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours

CROSS-LISTING: EARTH 1060.03

### GEOG 2000.03: Cartography.

Maps, which are visual representations of our world, are essential aids to disciplines that span archaeology to zoology. Navigation is the art and science of finding one's way through both natural and built landscapes. This class primarily uses hands-on assignments to investigate how maps are constructed and interpreted (including concepts of spatial reference systems, scale, projections, symbols, and design), how maps can distort perceptions, and can influence one's decisions. Students also study navigation by compass, global positioning systems (GPS), and dead-reckoning.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours plus occasional field trips as appropriate

PREREQUISITE: EARTH/GEOG 1030, or EARTH 1080

### GEOG 2001.03: Landscape Analysis.

Designers and planners need to understand the influence of physical, biological, and cultural systems in landscape evolution, and the relevance of that information in analyzing land capability. Students develop inventory and analysis tools for understanding environmental processes and their implications for design and planning. There will be field trips and a lab component.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: EARTH 1030.03

CROSS-LISTING: PLAN 2001.03

### GEOG 2006.03: Space, Place and Geographic Information Systems.

Planners use Geographical Information systems (GIS) for data collection, coordination, and analysis. Properly interpreted, GIS data contribute to informed decision-making. This course explores the application of GIS in planning within a project-centred setting. Students learn to use GIS to address and use and site planning issues. The course also considers mapping standards used within the field of planning, and examines legal, privacy, and ethical implications of using GIS data in the public realm.

INSTRUCTOR(S): Rapoport, E.

FORMAT: Lectures/labs. Three hours weekly

PREREQUISITE: PLAN/GEOG 2001

CROSS-LISTING: GEOG 2006.03

### GEOG 2070.03: Area Studies on Mexico and Central America.

Following an examination of the indigenous heritage, and the colonial legacy of the conquistadors, the class deals principally with the contemporary period, examining the Mexican Revolution and its aftermath, the Somoza dynasty, Nicaragua under the Sandinistas, the U.S. role in the region, the human rights situation in Central America, and probable developments in the region. The class is designed to provide an understanding of the contemporary reality of this volatile region, in many ways a microcosm of the crucial situation of Latin America as a whole.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion 2 hours/conducted in English

PREREQUISITE: No prerequisites. Open to students in all departments. No

knowledge of Spanish necessary

CROSS-LISTING: HIST 2383.03

### GEOG 2100X/Y.06: Environment and Culture.

Concern about the environment is a widespread phenomenon as virtually everyone is confronted by environmental issues -- be they global warming, the depletion of the ozone layer or the continuing problems of water pollution and solid waste disposal. Furthermore, we are becoming increasingly aware of that environmental issues often have global implications. The efforts of cities in Canada to deal with environmental pollution, for example, may lead to conflicts with rural regions. Similarly, rural regions, in their use of various chemical agents, may find themselves affecting the lives of city dwellers. This class will explore key relationships between human culture and the physical environment. Topics to be examined include: historical, social, and legal aspects of contemporary environmentalism, food and agriculture, environmental ethics, health, traditional ecological knowledge, sustainable forestry, waste management, public participation and environmental movements.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200 X/Y.06

CROSS-LISTING: SOSA 2100.06

### **GEOG 2201.03: Introduction to Development I.**

Poverty, inequality and injustice are widespread throughout the contemporary developing world. This course will examine how this situation came to be. It begins by analyzing the different meanings of the term "development" and then examines the major approaches that have shaped practical development initiatives on the ground in the Global South over the past 60 years. The course also examines the legacies of history for contemporary development efforts in the Global South through specific case studies.

FORMAT: Lectures/ tutorial

PREREQUISITE: Completion of five full credits at the 1000 level or permission of the instructor

CROSS-LISTING: INTD 2001.03

### **GEOG 2202.03: Introduction to Development II.**

This course builds upon the core concepts and approaches studied in INTD 2001 (i.e. different theoretical approaches to development and the historical creation of underdevelopment). The course examines key contemporary issues in the field of development and analyses the connections between them: debt, global trade rules, foreign aid, hunger and malnutrition, rural and urban livelihoods, population growth. The course also examines the principle actors involved in development and the strategies they have used to promote and resist development, including: governments, non-governmental organizations (NGOs), the World Bank and IMF, and popular social movements in the Global South and North.

FORMAT: Lectures/tutorial

PREREQUISITE: Completion of five credits at the 1000 level or permission of the instructor

CROSS-LISTING: INTD 2002.03

### **GEOG 2206.03: Africa: An Introduction.**

This course will focus on contemporary Africa. Stereotypical portrayals of Africa will be examined and critiqued with the goal of emphasizing the immensity, diversity and complexity of the continent in order to better understand the opportunities and challenges of African development in the twenty-first century.

FORMAT: Lecture/tutorials

CROSS-LISTING: INTD 2106.03

### **GEOG 2336.03: Regional Development.**

Most countries have richer and poorer regions. Economic development issues, policies, and theories facing more industrialized nations are analyzed with particular focus on Canada (especially the Atlantic region), the European Economic Community, U.S.A., Japan, and Australia. Approved with Canadian Studies. In addition to the prerequisites, the student is advised to take one class in Political Science and one class in Canadian History before taking ECON 3336.

FORMAT: Seminar 2.5 hours/tutorials

PREREQUISITE: ECON 1101.03 and 1102.03

CROSS-LISTING: ECON 2336.03

### **GEOG 2800.03: Climate Change.**

Most models of the atmosphere predict that increasing concentrations of greenhouse gases will continue to warm the surface of the earth and the oceans in the twenty-first century. The magnitude of the warming and its consequences are still very controversial. This class will discuss, mainly from a nonmathematical viewpoint, the reasons for the greenhouse effect, the current warming in the context of the historical record of climate change, and sources of natural climate variability such as the El Nino Southern Oscillation. It will also review arguments that attribute the warming that has occurred in the Twentieth century to natural variability, and those that attribute the warming to increased human emission of greenhouse gases.

INSTRUCTOR(S): G. Lesins

FORMAT: 3 hours

CROSS-LISTING: PHYC 2800.03

EXCLUSION: ECON2850.06, PHYC2850.06

### **GEOG 3001.03: Landscape Ecology.**

Landscapes reflect the interaction of natural and cultural processes. This course introduces the principles of ecology to landscape analysis. It explores relationships between environmental components in the landscape to inform community design and land use planning applications.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: PLAN 2001.03 or GEOG 2001.03 or permission of the instructor

CROSS-LISTING: PLAN 3001.03

### **GEOG 3002.03: Reading the City.**

Any city reflects the history of its topography, cultural traditions, and design interventions. This course introduces the principles, theories, and methods of urban form analysis in the local urban context. Students explore the local urban environment to interpret what the city means, and how it comes to take the shape it does.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture/lab 3 or 4 hours

CROSS-LISTING: PLAN 3002.03

### **GEOG 3005.03: Cities and the Environment.**

The contemporary landscape reflects a long history of human activities on the land and design and planning interventions through time. Civilizations rise and fall, often because of their degradation of the ecosystems that support them. This course examines the relationship of cities with the environment to enhance our understanding of landscape change, urban form and patterns in human settlements through the ages.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture/seminar 3 hours

CROSS-LISTING: PLAN 3005.03

### **GEOG 3006.03: Reading the Landscape.**

Any landscape reflects its natural and cultural history. This course explores principles, theories, and methods of landscape interpretation. These approaches will be applied to community design problems in local landscapes.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture/lab 3 or 4 hours

PREREQUISITE: PLAN 3001.03, 3002.03, or GEOG 3001.03, 3002.03

CROSS-LISTING: PLAN 3006.03

### **GEOG 3110.03: Migration and Development.**

The purpose of this course is to explore and better understand the connections between migration and development in contemporary societies. Classes will introduce or further explore one main theme or issue, such as development-induced displacement, labour migration, and HIV/AIDS and migration. Each class will centre on one or more discussion questions, exchange insights from relevant experiences of class participants or focus on a case study

FORMAT: Lecture/seminar

CROSS-LISTING: INTD 3110.03

### **GEOG 3114.03: Environment and Development.**

This course will examine the interconnections between the natural environment and different forms of social and economic development with a specific focus on developing countries. Various perspectives will be used to analyze the links between environmental issues and poverty, inequality, wealth, economic globalization and the ways in which different cultures understand and interact with the environment.

FORMAT: Lecture/seminar

CROSS-LISTING: INTD 3114.03

### **GEOG 3165.03: Peoples and Cultures of the World: Selected Area Studies.**

This class examines a specific geographic and/or culture area. The class begins with background material on geography and history. Its focus is on the people themselves, their social organization and political, economic, and cultural systems. How they relate to globalization and development will also be examined. Consult the Department to find which region is to be covered in a particular year. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06; 1050X/Y.06; 1100X/Y.06; 1200X/Y.06

CROSS-LISTING: SOSA 3165.03

EXCLUSION: SOSA 2370.03

### **GEOG 3210.03: Canadian Cultural Landscapes.**

This course explores the origins of one "signature" landscape in each province. Contact with different geographies shaped distinctive regional histories; but at the same time, the story of each place is tied to the national narrative. These landscapes also illuminate how nature has been understood, used, and transformed since the fifteenth century.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture and Discussion

CROSS-LISTING: HIST 3210.03, CANA 3020.03

### **GEOG 3220.03: Coastal Communities in the North Atlantic.**

Coastal communities as a social/ecological type are examined as populations, and social structures (territorial, economic, occupational, political) as they have developed in response to particular ecological and social circumstances. Various perspectives which have been applied to coastal communities are examined with regard to the contribution they may make to understanding the dynamics of these communities. The focus is on North Atlantic communities.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: SOSA 3220.03

### **GEOG 3284.03: Living in Cities.**

2008 marked the first time in history that more of the global population lived in cities than in rural areas. What perspectives to anthropology and sociology offer on cities and their inhabitants? This course explores the social dynamics that constitute 'the city' and surveys how social scientists have studied and engaged with cities and city-dwellers. It approached 'the city' both as a whole and through its constituent parts: people landplaces. Examples may be drawn from cities large and small, near and far - including Halifax.

INSTRUCTOR(S): M. Radice

FORMAT: Lecture and Seminar

PREREQUISITE: One of SOSA 1000.06, SOSA 1050.06, SOSA 1100.06 SOSA 1200.06 FYP or PLAN 2005.06

CROSS-LISTING: SOSA 3284.03

### **GEOG 3370.03: North American Landscapes.**

Landscapes are the product of human culture ordering nature for economic, social, political, religious, recreational, and artistic purposes. Landscape history analyzes and interprets the use and design of such features as fields and woodlands, roads and waterways, settlements and buildings, towns and suburbs, and parks and cities. This class examines the use and meaning of the spatial environment among the various societies in North America from the sixteenth to the twentieth centuries. Among the topics are the meaning of area resources for indigenous peoples, the occupation and settlement of colonial populations, transportation and continental expansion, town planning, the politics of water and land in the West, preservation movements, scenic tourism, and the literary and artistic stylization of landscapes. The class welcomes non-history students with an interdisciplinary interest in issues regarding planning and design, cultural ecology, and the governance of resources.

INSTRUCTOR(S): C. Campbell

FORMAT: Lecture/discussion 3 hours

CROSS-LISTING: HIST 3370.03

### **GEOG 3400.03: Human Health and Sustainability.**

This course examines the relationships between the health of populations and health determinants in the context of environmental sustainability. Weekly laboratory exercises will teach students how geomatics (GIS, GPS, and remote sensing technologies) and epidemiological tools can be used to assess the links between the health of human populations and the health of the environment, and how to use these tools for environmental health research.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3.0 hours, Lab 1.5 hours

PREREQUISITE: Must be a third year student or have permission of instructor

CROSS-LISTING: ENVS 3400.03

### **GEOG 3440.03: Geomorphology.**

Geomorphology is the quantitative study of Earth's surface processes and landforms applies to geology, civil engineering, hydrogeology, and environmental management. We investigate slope stability, weathering and soils, sediment production, wind-driven and coastal environments, tectonic landforms, and river, glacial and permafrost processes.

INSTRUCTOR(S): L. Plug, J. Gosse

FORMAT: Lecture 3 hours, lab 3 hours including mandatory field trips

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course; 1090 recommended; or SCIE 1502.21, or 1503.21, or SCIE 1504.27, or SCIE 1510.33 or permission of the instructor AND completion or concurrent enrollment of a 1000-level mathematics class, a 1000-level physics class, and a 1000-level chemistry class.

CROSS-LISTING: EARTH 3440.03

### **GEOG 3500.03: Exploring Geographic Information Systems.**

Geographic Information Systems (GIS), as a tool for the management of georeferenced data, have become indispensable for disciplines where location of objects and pattern of processes is important. GIS plays a significant role a wide range of applications, from modeling, to analysis and predictions, to decision making. The class is aimed at a broad base of potential users and draws on examples of the role of GIS in global climate change, mineral exploration, preservation of biodiversity, coastal zone management, resource depletion, and many other present and future environmental issues. The course material will be of interest to those studying geoscience, environmental science, ecology, marine biology, oceanography, epidemiology, urban and rural planning, civil engineering, and any other field involving spatial data.

Laboratory exercises emphasize the principles of raster and vector GIS, and the integration of databases and GPS (global positioning systems) data into GIS.

Exercises draw on the diversity of GIS applications in a number of application areas.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Two years of university study or equivalent or instructor's permission

CROSS-LISTING: EARTH 3500, EARTH 5600, ENVS 3500

EXCLUSION: Credit will only be given for one of GEOG 3500, SCIE 3600, EARTH 3500, EARTH 5600, ENVS 3500

### **GEOG 3633.03: Spatial Information and GIS in Ecology.**

A hands-on approach to understanding and using spatial information, this class introduces students to Geographic Information Systems (GIS) as a tool to answer ecological questions. Together, students conduct a major field project, collecting data, creating maps using GIS, and interpreting spatial patterns, to address and applied problem in ecology.

NOTE: Offered in the summer through DEASIDE. an auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see [seaside.science.dal.ca](http://seaside.science.dal.ca).

INSTRUCTOR(S): Field intensive, labs, lectures

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: ENVS 3633.03, BIOL 3633.03

### **GEOG 4440.03: Geomorphology and Landscape Evolution.**

Ripple-to mountain range-scale landforms evolve under predictable internal and external forces that are modulated by the physical and chemical properties of the rock. The purpose of this course is to provide a thorough examination of the development of landscapes by tectonics and surficial processes involving weathering, mass wasting, streams, and glaciers. The concepts of equilibria, climate and vegetation change, and rock character are recurring themes throughout the course. Dating and thermochronology methods are discussed in the context of rates of landscape change. Early classic viewpoints of landform development are contrasted with the latest numerical simulations of landscape evolution. The labs are mostly field-oriented with emphasis on Quaternary stratigraphy, describing and interpreting soils, local geomorphology, and geomorphometrics.

INSTRUCTOR(S): J. Gosse

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course; 1090 recommended. Must be a 4th year Science student familiar with excel, or with instructor's permission

CROSS-LISTING: EARTH 4440.03

### **GEOG 4450.03: Introduction to Landscape Simulation.**

We examine different approaches to numerical modelling of earth-surface processes such as erosion and landslides, melting permafrost, and braided rivers. Using class and/or individual projects as examples, the selection of variables, sensitivity testing, and methods for testing models against nature are discussed. We use Matlab; programming experience is useful but not essential.

INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours, lab

PREREQUISITE: EARTH 3440.03, MATH 1010 or 1400, PHYC 1280.03/1290.03X/Y and three courses at the 3000-level in the physical sciences (chemistry, earth science, physics) or with consent of instructor

CROSS-LISTING: EARTH 4450

### **GEOG 4520.03: GIS Applications to Environmental and Geological Sciences.**

Note: This class is not offered every year. Please consult department in the spring for further information.

Geographic information systems (GIS) provide a rich set of new tools to the geologist and environmental scientist, not only to solve conventional problems, but also to explore questions not readily answered by other means. This class builds on the fundamentals of GIS taught in EARTH 3500.03 to explore analytical tools that aid in decision-making processes encountered in mineral exploration, hydrogeology, site selection, environmental assessment, and global change analysis. The class concentrates on case studies and problem solving, including those requiring multi-criteria and multi-objective decision making processes.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: GEOG 3500.03, ENVS 3500, EARTH 3500.03; EARTH 5600, or SCIE 3600.03; STAT 1060.03

CROSS-LISTING: EARTH 4520.03

### **GEOG 4530.03: Environmental Remote Sensing.**

The goal of this class is to introduce students to the role of remote sensing as a technique provide environmental and geologic information. Particular emphasis will be placed on examining the potential and limitations of remote sensing methods and data in this context. The lectures discuss the fundamentals of remote sensing with an emphasis on multi-spectral satellite systems. In the lab, students use computerized techniques of digital image enhancement and thematic information extraction to process images derived from optical, radar, and hyperspectral remote-sensing systems. The integration of remote-sensing information with GIS (Geographic Information Systems) is stressed in both the labs and lectures.

INSTRUCTOR(S): C. Walls

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 3500.03, ENVS 3500.03, or EARTH 5600.03 or SCIE 3600.03 or GEOG 3500.03

CROSS-LISTING: EARTH 4530.03

## **Humanistic Studies in Science**

Attention is drawn to the following classes, offered in several departments. All of these classes are concerned with the humanistic aspects of scientific thought and its development. For complete class descriptions please consult the appropriate department listing in this calendar.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

### **History of the Sciences**

- BIOL 3503.06, HSTC 2200.06, SCIE 2000.06: Introduction to the History of Science
- BIOL 4664.03/OCEA 4331.03/SCIE 4001.03/HIST 3073.03/HSTC 3331.03: History of Marine Sciences

### **Philosophy of the Sciences**

- PHIL 3420.03, BIOL 3580.03: Philosophy of Biology
- PHIL 2560.03: Minds & Machines: Introduction to cognitive Science
- PHIL 2660.03 Logic: Understanding Scientific Reasoning
- BIOL 3601.03: Nature Conservation
- PHIL 2130.03: Logic
- PHIL 3051.03: Epistemology
- PHIL 3670.03: Philosophy of Science



# Integrated Science Program

This program is under review. Please contact the Registrar's Office for more information.

Location: (See below for locations of the offices of the  
Director, Student Coordinator and Secretary.)  
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Email: disp@dal.ca  
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## I. Introduction

Dalhousie's Integrated Science Program is an alternative and unique way for a serious, well-prepared student to complete the first year of a BSc. In addition to learning the core material of several first-year science subjects, students gain an interdisciplinary perspective, develop transferable skills, and conduct research, all in their first year. The goals of the program are:

1. To introduce students to scientific methodology.
2. To provide sufficient background in the core of scientific knowledge to enter second-year classes.
3. To point out the interrelationships among the science disciplines.
4. To indicate how the history and philosophy of scientific thought helps us to understand science.
5. To indicate the relevance of science in students' lives and the links between science and society.

This first-year program exposes students to a broader range of science disciplines than is possible in regular classes and does so in an integrated way. Students learn from a team of instructors representing most of the departments in the Faculty of Science at Dalhousie University. Instructors meet weekly to coordinate their teaching efforts and track learning outcomes. While teaching the material from regular first-year science classes, Integrated Science instructors highlight the

natural links among their disciplines and help students to apply the scientific method and quantitative techniques to questions and problems across the sciences.

Integrated Science teaches components that are equivalent to regular first-year science classes in a given subject. As members of a small cohort (70-80 BSc students), Integrated Science students take all of their classes together, separate from other BSc students. The class schedule varies each week, to use the time available efficiently for organizing lectures and labs, and to allow flexibility to link particular subjects when appropriate. Most lectures are given in the afternoons and most labs given are in the mornings. For some subjects, students are split into smaller sections for lab activities. For example, students alternate between Biology and Chemistry labs on Friday mornings. The flexible schedule also allows field trips to be scheduled on certain days.

The four Integrated Science options (SCIE 1515.36, SCIE 1520.30, SCIE 1530.27, and SCIE 1540.27) provide students with some flexibility in preparing for second year science classes. Each option incorporates a slightly different suite of subjects and is designed to prepare students for a certain range of degree programs at Dalhousie (see Choosing an Integrated Science Option).

Emphasis on scientific research methods and communication skills, along with a broad introduction to science, makes Integrated Science an excellent foundation for an honours program, a combined honours, or a major or a double major in science. Particular options are excellent preparation for certain degree programs, certain professional programs, or a career in Medicine. Integrated Science is a good choice for students who are interested in many sciences but are unsure about a major, for students who want to major in more than one science, and for students who want a broad background in science in order to pursue a career, for example, in biomedical ethics, law, teaching, or scientific journalism.

Students concurrently take PHIL 1050.03 (Ethics in Science), a half-credit humanities class offered only to Integrated Science students. This class provides an introduction to ethical questions that arise in the practice of science and uses examples that link with topics they study in their science classes. Regular instruction, practice, and feedback in writing are integrated across PHIL 1050 and the Writing In Science component of Integrated Science. Students develop scientific writing skills through formal writing assignments in the Biology component in the fall and research project assignments in winter.

Integrated Science candidates should be highly-motivated and have a strong interest in science. They should find the idea of being immersed in science very stimulating; they should want to learn to think across the discipline boundaries as well as to master discipline-specific material at the first-year level; they should be enthusiastic about being part of a small cohort of students intent on learning how to work and think like scientists; they should want to be cooperative and effective team members; they should have good study, work, and time-management skills; and they should welcome challenges to work hard, to think critically, and to solve problems.

Integrated science students will have a heavier workload than regular first-year BSc students. A heavier workload is unavoidable considering the larger number of disciplines studied, the integrated writing class, and the research project component. The workload is managed, however, so students have less work than if taking all of the equivalent components as separate classes. The workload, including assignments and tests, is spread out as evenly as possible through the week and the term. Students should note that the heavier workload is excellent preparation for higher workloads in second year of the BSc. The workload differs among the Integrated Science options, with SCIE 1515 having the highest workload and SCIE 1540 having a more normal workload.

Students wishing to enter this program normally must have a minimum Grade 12 average of 80%, with a minimum of 80% in Calculus or Pre-calculus and 75% English, and a minimum of 75% in Grade 12 Chemistry. Grade 12 Biology is recommended but not required. The average high school marks of incoming students is around 90%. Students must apply for the program as well as be accepted to the BSc at Dalhousie.

Grade 12 Physics is highly recommended. Applicants lacking an appropriate Physics background should take a university preparatory class, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca/>). For other options, please contact the Integrated Science program office or email the program director. Applicants with the equivalent of Grade 12 Physics will have priority.

On their transcripts, students receive a single letter grade for the entire program. A breakdown of marks is provided, upon request, for the purpose of transferring to professional programs or other universities.

During the first term, students may switch between certain options with permission of the Director and the Dean's office.

## II. Choosing an Integrated Science Option

Each option includes a range of subjects, taught either as a full-year (full credit) or half year (half credit) component. Subjects common to all options are Biology, Chemistry, Mathematics, Physics, Statistics, and Writing. Some options are less Physics and Math-intensive, with only a half-credit of each. All options, however, do satisfy the first-year Math requirement for science students. Certain options include one or two terms of Earth Science. Three options include Psychology and these satisfy the Social Science requirement at Dalhousie.

All options satisfy the full-year Writing Class requirement at Dalhousie, through the Writing in Science component and the companion Philosophy class. The latter satisfies *half* of the full-credit Humanities or Language requirement at Dalhousie; this means students will need to take another half-credit of Humanities or Language (note: this does not need to be a writing class) anytime before they graduate with a B.Sc.

### First-year Prerequisites Satisfied by each Option (SCIE 15XX).

All are full-credit (full year) equivalents unless otherwise noted.

First-year equivalent component	Integrated Science SCIE 1515.36	Integrated Biomedical Science SCIE 1520.30	Integrated Physical Science SCIE 1530.27	Integrated Life Science SCIE 1540.27
<b>Biology</b>	BIOL 1010/1011	BIOL 1010/1011	BIOL 1030*	BIOL 1010/1011
<b>Chemistry</b>	CHEM 1011/1012	CHEM 1011/1012	CHEM 1011/1012	CHEM 1011/1012
<b>Earth Science</b>	ERTH 1080/1090	(none)	ERTH 1080/1090	ERTH 1090*
<b>Calculus</b>	MATH 1000/1010	MATH 1000/1010	MATH 1000/1010	MATH 1215 *
<b>Physics</b>	PHYC 1280/1290	PHYC 1300	PHYC 1280/1290	PHYC 1310 *
<b>Psychology</b>	PSYO 1011/1012	PSYO 1011/1012	(none)	PSYO 1011/1012
<b>Statistics</b>	STAT 1060 *	STAT 1060 *	STAT 1060 *	STAT 1060 *
<b>Writing in Science</b>	SCIE 1111 *	SCIE 1111 *	SCIE 1111 *	SCIE 1111 *
<b>Humanities</b>	PHIL 1050 *	PHIL 1050 *	PHIL 1050 *	PHIL 1050 *
<b>Number of 1st year credits**</b>	6.5	5.5	5.0	5.0

\* Half-credit components, equivalent to a one-term class.

\*\* Note that students register and pay for one full-credit less than the sum of full-credit components in any option. The rationale is that Integrated Science students spend less time in class and do less work than would a student who took separate classes in all of the different subjects included in an option. They do, however, get the same prerequisites.

The different options incorporate a different suite of subjects and are designed to prepare students for a range of degree programs at Dalhousie. The following table indicates which of the Integrated Science options gives the best preparation for specific programs.

### Recommended Integrated Science options for incoming first-year students:

Dalhousie Science Degree or Professional School Program	Integrated Science 1515.36	Integrated Biomedical Science 1520.30	Integrated Physical Science 1530.27	Integrated Life Science 1540.27
Atmospheric Science	+		+	
Biochemistry & Molecular Biology	+	+		+
Biochemistry & Microbiology (joint honours)	+	+		+
Biology	+	+		+
Chemistry	+	+	+	(+)
Computer Scie. (double major/ joint honours)	+	+	+	
Dentistry**	+	+		(+)
Earth Science	+		+	
Economics	+	+	+	
Environmental Science, <i>Area of Emphasis:</i>				
<i>Atmospheric Science</i>	+		+	
<i>Biology</i>	+	+		+
<i>Chemistry</i>	+	+	+	(+)
<i>Earth Science</i>	+		+	
<i>Ecology</i>	+	+	+	+
<i>Environmental Economics</i>	+	+	+	
<i>Marine Biology</i>	+	+		+
<i>Oceanography</i>	+	+		
<i>Statistics</i>	+	+	+	
Engineering	+		+	
Food Science	+	+		+
Law**	+	+	+	+
Marine Biology	+	+		+
Mathematics	+	+	+	
Medicine**	+	+		(+)
Microbiology & Immunology	+	+		+
Neuroscience	+	+		+
Oceanography (joint honours)	+		+	+
Occupational Therapy**	+	+	+	+
Pharmacy*				+
Physics	+	+	+	
Physiotherapy**	+	+	+	(+)
Psychology	+	+		+
Statistics	+	+	+	

+ recommended option (+) would need to take a second term of physics later

\*\* Graduate-level programs, require undergraduate degree or several years of study.

To prepare for any BSc program, students can take SCIE 1515. Students interested in majoring in *Environmental Science* should take SCIE 1515 or 1540, depending on their particular area of emphasis. In addition to a full-credit Biology component, both include an Earth Science component that allows students to continue in Environmental Science in lieu of taking ENVS 1000.

Students interested in majoring in one or more of the physical sciences (e.g., *Chemistry*, *Physics*, or *Engineering*) or obtaining a joint honours degree with *Oceanography*, should take SCIE 1515 or SCIE 1530. Note that SCIE 1530 includes only a half-credit Biology component, equivalent to Biology for Engineering students.

Students interested in majoring in *Biology*, *Biochemistry and Molecular Biology*, *Microbiology and Immunology*, *Marine Biology*, *Neuroscience*, or *Psychology* will need an option with a full year of biology. Those who want a full year of physics and calculus (e.g., to prepare for Medicine) should take SCIE 1520. Otherwise, they should take SCIE 1540.

The Integrated Science writing class will serve in lieu of ENGL 1000 for entry to Pharmacy.

### III. Class Descriptions

#### SCIE 1515X/Y.36: Integrated Science.

This full-time program provides comprehensive first-year preparation for any science major or honours degree. Concepts and techniques at the first-year introductory level are integrated across Biology, Chemistry, Mathematics, Physics, Earth Science, Psychology, and Statistics. This program is a full credit overload and includes a full-year writing class and a research project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture approx. 17 hours/lab and other activities approx. 12 hours/tutorials 4 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

#### SCIE 1520X/Y.30: Integrated Biomedical Science.

This full-time program provides comprehensive first-year preparation for major or honours degrees in the life sciences and Medicine, with full-years of physics and calculus. Introductory level concepts and techniques are integrated across Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics, a full-year writing class, and a research project in the winter term.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture approx. 15 hours/Lab and other activities approx. 8 hours/tutorials 4 hours (optional)

PREREQUISITE: Grade 11 or 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

#### SCIE 1530X/Y.27: Integrated Physical Science.

This full-time program provides comprehensive first-year preparation for any major or honours degree in the physical sciences. Introductory level concepts and techniques are integrated across four full-year components (Chemistry, Mathematics, Physics, Earth Science), two half-year components (Biology and Statistics), a full-year writing class, and a research project in the winter term.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture approx. 13 hours/Lab and other activities approx. 9 hours/Tutorials 4 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1030.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

#### SCIE 1540X/Y.27: Integrated Life Science.

This full-time program provides comprehensive first-year preparation for any major or honours degree in the life sciences. Introductory level concepts and techniques are integrated across three full-year components (Biology, Chemistry, and Psychology), four half-year components (Mathematics, Physics, Earth Science, and Statistics), a full-year writing class, and a research project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture approx. 12 hours/Lab and other activities approx. 8 hours/tutorials 2 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03, MATH 1000.03, PHYC 1190.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

# Marine Biology

Location: Biology Department, Life Sciences Centre  
1355 Oxford Street  
PO Box 15000  
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Telephone: (902) 494-3822  
Fax: (902) 494-3736  
Website: <http://marine.biology.dal.ca>

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## Undergraduate Program Co-ordinator

Pinder, A. ([pinder@dal.ca](mailto:pinder@dal.ca)) (494-3822)

## Program Advisors

Gass, G. (494-8445) ([gillian.gass@dal.ca](mailto:gillian.gass@dal.ca)), 20 credit majors  
Herbinger, C. (494-1397) ([christophe.herbinger@dal.ca](mailto:christophe.herbinger@dal.ca)), Regular Honours  
McAllister-Irwin, N. (494-3818) ([nancy.mcallister-irwin@dal.ca](mailto:nancy.mcallister-irwin@dal.ca)), Co-op  
Academic Advisor, Honours and 20 credit majors  
Pinder, A. (494-3822) ([alan.pinder@dal.ca](mailto:alan.pinder@dal.ca)), Regular Honours  
Scheibling, R. (494-2296) ([robert.scheibling@dal.ca](mailto:robert.scheibling@dal.ca)), 20 credit majors  
Schmidt, A. (494-1638) ([allison.schmidt@dal.ca](mailto:allison.schmidt@dal.ca)), 20 credit majors  
Worm, B. (494-2478) ([boris.worm@dal.ca](mailto:boris.worm@dal.ca)), 20 credit majors

## I. Introduction

The Marine Biology Program is an integral part of the Biology department at Dalhousie. Students obtain a basic grounding in Biology in their first two years, and use their third and fourth years to study in greater depth the diversity, ecology, physiology, and other aspects of marine animals and plants. Marine Biology students often also take classes in the biology, chemistry or physics of the ocean, offered through the Oceanography department. A Combined Honours in Marine Biology and Oceanography is available. "Ocean studies" is an area of special emphasis for Dalhousie University, and thus many faculty members have active research programs in marine science. In addition, many marine scientists at local research institutions, including the Bedford Institute of Oceanography and the Institute for Marine Biosciences are affiliated with us, and serve as supervisors of our Honours and graduate students. Our students thus participate in research on a broad range of marine-related topics; examples can be viewed on our website.

The Biology department is located adjacent to the sea in the Life Sciences Centre. All eight floors have running sea water, and we have a 15m pool tank and a 10m deep tower tank. Within a 30 km radius there are salt marshes, rocky shores, estuaries, and sand beaches for field work.

We offer Honours and 20 credit major degree programs in both a regular and Co-operative Education format in Marine Biology. The 20 credit major degree prepares students for technical positions in government laboratories, research institutes, scientific consultants, and aquaculture facilities. The Honours degree requires more Marine Biology credits, a GPA of 3.0 or higher, a research project and thesis in the final year, and should be taken by students wishing to continue on to graduate studies. The Co-operative Education degree provides an integrated program of eight academic terms with three to four workterms in industry, government or university laboratories, ecotourism, etc. The workterms, each of four months duration, enable students to apply their knowledge of marine biology while providing them with work experience for making informed career choices. The Co-op degree normally takes four and 1/3 years to complete.

## High School preparation

Students from Canadian high schools are recommended to take the following subjects in high school: Biology, Chemistry, Pre-calculus Math, English, plus Physics (optional) or other acceptable classes (see list in the Admissions section of the undergraduate calendar) and obtain an overall average of 75%, with 65% or higher in English and Math.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. Co-operative Education BSc (20 credit) Program in Marine Biology, Honours and Major

Co-op Academic Advisor in Marine Biology: N. McAllister-Irwin  
Email: [nancy.mcallister-irwin@dal.ca](mailto:nancy.mcallister-irwin@dal.ca)

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four workterms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op typically before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the "Co-operative Education in Science" section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

### Marine Biology Work-Study Program

Year	Fall	Winter	Summer
1	AT	AT	Free
2	AT	AT	WT1
3	AT	WT2	AT
4	WT3	AT	WT4
5	AT		

AT = Academic Term

WT = Work Term

The academic program and required classes for Co-op students are essentially the same as those for the non Co-op program (listed below). Students in the third and fourth year of their Science Co-op program will have difficulty taking full year classes during the academic year because of their work terms.

To ensure employment opportunities, Science Co-op students may include some classes (or minor) in biochemistry, business, computer science, environmental science, microbiology, or statistics as employers are often seeking expertise in these areas.

**ADMISSION** to the Marine Biology Science Co-op program should be sought in winter of first year. Applications must be submitted by August 1st.

Science Co-op application forms for Marine Biology are available from the Science Co-op website: <http://www.sciencecoop.dal.ca>. A limited number of students will be accepted into the program each year to reflect the current job market. Students must be eligible to work in Canada. Students wishing to apply for the Honours and Major Co-op programs should have at least an overall GPA of 3.00 or higher from all first year classes and a grade of B+ in BIOL 1010.03/1011.03 or equivalent. Successful applicants will be informed in late August before the beginning of the fall term.

For further information, please see <http://www.sciencecoop.dal.ca>.

### B. BSc (20 credit) Honours in Marine Biology

Program Advisors:

A. Pinder (494-3822) [alan.pinder@dal.ca](mailto:alan.pinder@dal.ca).

C. Herbinger (494-1397) [christophe.herbinger@dal.ca](mailto:christophe.herbinger@dal.ca)

Honours students must take a minimum of nine and a maximum of 11 credits in their honours subject (Marine Biology/Biology) above the 1000 level in addition to the general rules of the College of Arts and Science (see degree requirements in the College of Arts and Science section of this calendar).

It is the responsibility of all students to arrange for supervisors for their research. Honours theses may be supervised by a faculty member within the Biology department, or by an external scientific investigator, subject to the approval of the

honours committee. Students not in co-op should begin to search for a potential supervisor during their third year of study and should have completed arrangements by May of their third year. Co-op students will normally do their Honours research in the summer of their fourth year or in their fifth year and should consult with their advisor. If students wish to be supervised by someone external to the department, they must consult with their honours advisor to determine the potential supervisor's eligibility prior to starting their research.

For the standing required for Honours please see "Graduation Standing" section "Academic Regulations" given earlier in this calendar.

**PLEASE NOTE: A B average must be attained in the following 2000 and 3000 level required classes:**

- BIOL 2003.03
- BIOL 2004.03
- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03
- BIOL 2060.03
- MARI 3074.03/3076.03 or BIOL 3050.03

A maximum of two of these required classes may be repeated in an attempt to achieve this GPA.

## Departmental Requirements

### 1000 level

- BIOL 1010.03 or 1020.03 (C- or better)
- BIOL 1011.03 or 1021.03 (C- or better)
- CHEM 1011.03/1012.03
- COMM 1502.03 (recommended for students not fully familiar with microcomputers, but not required).
- MATH 1000.03 or MATH 1215.03
- STAT 1060.03

OR

- SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better)

### 2000 level

- BIOL 2003.03
- BIOL 2004.03
- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03
- BIOL 2060.03
- OCEA 2000.06 or 2001.03/2002.03
- STAT 2080.03

### 3000 and 4000 level

- MARI 3067.03
- MARI 3074.03/3076.03 or BIOL 3050.03
- MARI 3212.03 or 3221.03 (strongly recommended but not required)
- MARI 3301.03
- MARI 3761.03
- MARI 3626.03 or 4060.03 (recommended but not required)
- MARI 4900X/Y.06 or 4901.03/4902.03

In addition to the required Biology credits (3.0) and Marine Biology credits (3.5 - 4.5), students must select 1.5 - 2.5 more full credits from the list of Marine Biology (MARI) classes or BIOL classes with some marine emphasis to fulfill the university requirement of a minimum of nine credits beyond the 1000 level in the Honours subject.

Other Biology classes with some marine emphasis: BIOL 3042.03, 3102.03, 3326.03, 3615.03, 4061.03, 4063.03, 4074.03, 4661.03. Please speak with an advisor for a more comprehensive list of acceptable class.

## C. Honours Co-op BSc in Marine Biology

### Departmental Requirements

Same as for regular Marine Biology Honours as above in addition to the following:

- SCIE 2800.00 (Science Co-op Seminar Series)
- MARI 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Work terms)

Co-op students will normally do their Honours research in the summer of their fourth year or in their fifth year and should arrange this with the Honours co-op advisor. To obtain the Honours research and thesis credit, co-op students normally attend and register for MARI 4901.03 in the Winter term of their fourth year and MARI 4902.03 in the Fall term of their fifth year to accommodate their work-terms. If students wish to be supervised by someone external to the department, they must consult with the honours advisor, prior to starting the research, to determine supervisor and project's eligibility.

## D. Combined Honours BSc in Marine Biology and Another Subject

Students planning a Combined Marine Biology program should consult with a Marine Honours advisor before registering for their third year classes.

### Departmental Requirements

If Marine Biology is chosen as the **primary** subject in Combined Honours degree, at least six and no more than nine credits in Biology and Marine Biology beyond the 1000 level including the following classes:

#### 1000 Level

- BIOL 1010.03 and BIOL 1011.03 or BIOL 1020.03 and BIOL 1021.03, CHEM 1011.03/1012.03, MATH 1000.03 or MATH 1215.03, STAT/MATH 1060.03 or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (with a minimum grade of C-)

#### 2000 Level

- BIOL 2003.03, 2004.03, 2020.03, 2030.03, 2040.03 and 2060.03

#### 3000 and 4000 Level

Minimum of at least 2.5 full credits at or above the 3000 level in Marine Biology (MARI); normally including MARI 3067.03, MARI 3301.03 and MARI 3761.03. Classes that are strongly recommended, but not required, include MARI 3212.03 or MARI 3221.03, MARI 3626.03 or MARI 4060.03, MARI 3074.03/3076.03 and STAT 2080.03

If Marine Biology is the secondary area in a Combined Honours degree, the same requirements apply as when Marine Biology is the primary subject except that two full credits are required at or above the 3000 level.

A Combined Honours degree, with Oceanography as the second subject, is described in the Oceanography section of this calendar.

Please note: A B average must be attained in the same classes as listed for the 20 Credit Honours in Marine Biology (above) when those classes are included in a Combined Honours degree.

Please note: A double major in Marine Biology and Biology is not offered.

## E. BSc or BA (20 credit) Major in Marine Biology

Program Advisors:

R. Scheibling (494-2296) robert.scheibling@dal.ca

B. Worm (494-2478) boris.worm@dal.ca

G. Gass (494-8445) gillian.gas@dal.ca

A. Schmidt (494-1638) allison.schmidt@dal.ca

Major students are required to take a minimum of seven and a maximum of 10 credits above the 1000 level in their minor subject (Marine Biology) including four credits above the 2000 level, in addition to the general rules for Majors which are listed in the degree requirements section of the College of Arts and Science regulations in this calendar.

### Classes required in Major

#### 1000 level

- BIOL 1010.03 or 1020.03 (C- or better)
- BIOL 1011.03 or 1021.03 (C- or better)
- CHEM 1011.03/1012.03
- COMM 1502.03 (recommended for students not fully familiar with microcomputers)
- MATH 1000.03 or MATH 1215.03
- STAT 1060.03

OR

- SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (C- or better)

### 2000 level

- BIOL 2003.03
- BIOL 2004.03
- BIOL 2020.03
- BIOL 2030.03
- BIOL 2040.03
- BIOL 2060.03
- OCEA 2000.06

### 3000 and 4000 level

Minimum of four full credits, or an equivalent number of half credits, to be selected from Marine Biology (MARI) classes or any “marine emphasis” field class offered by our summer field class Institute, SEASIDE, or any other recognized field class institute/station in Canada or overseas.

## F. BSc (20 credit) Major Co-op in Marine Biology

### Departmental Requirements

Same as for regular Major in Marine Biology as above in addition to the following:

- SCIE 2800.00 (Science Co-op Seminar Series)
- MARI 8891.00, 8892.00, 8893.00, 8894.00 (Co-op Work terms)

## G. BSc (20 credit) Double Major in Marine Biology

### Department Requirements

#### 1000 Level

- BIOL 1010.03 and BIOL 1011.03 (or BIOL 1020.03 and 1021.03) and CHEM 1011/1012.03, MATH 1000.03 or MATH 1215.03, MATH/STAT 1060.03 or SCIE 1515.36 or SCIE 1520.30 or SCIE 1540.27 (with a minimum grade of C-)

#### 2000 Level

- BIOL 2003.03, 2020.03, 2030.03, 2040.03 and 2060.03

#### 3000 and 4000 Level

- Minimum of 2.5 full credits at or above the 3000 level from Marine Biology (MARI) classes

Please note: A double major in Marine Biology and Biology is not offered.

## H. BA or BSc (15 credit) Minor in Marine Biology

Departmental requirements for this program are described below. In addition to the departmental requirements, students must satisfy the requirements outlined in the Degree Requirements section of the calendar.

### Department Requirements

A minimum of three and a maximum of six full credits in Marine Biology (MARI) at the 2000 level or higher.

Please note that entry into upper level Biology (BIOL) classes requires completion of one full credit with a minimum grade of C- at the first year level (BIOL 1010.03 or BIOL 1020.03) and (BIOL 1011.03 or BIOL 1021.03) or DISP (SCIE 1515.36, SCIE 1520.30 or SCIE 1540.27) or equivalent and several prerequisite 2000 level classes.

## I. Minor in Marine Biology

Students in a 20 credit degree program other than Marine Biology may choose to complete a Minor Program in Marine Biology. A Minor in Marine Biology is offered to students enrolled in other programs within the Faculty of Science and to students from other faculties, provided they complete the requisite classes. NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor Program.

To obtain a Minor in Marine Biology, a student must successfully complete:

A minimum of three and a maximum of six full credits in Marine Biology at the 2000 level or higher.

Please note that entry into upper level Biology (BIOL) classes requires completion of one full credit with a minimum grade of C- at the first year level (BIOL 1010.03 or BIOL 1020.03) and (BIOL 1011.03 or BIOL 1021.03) or DISP (SCIE 1515.36, SCIE 1520.30 or SCIE 1540.27) or equivalent and several prerequisite 2000 level classes.

## J. Minor Programs available to students enrolled in a Major or Honours Marine Biology Program

Minor programs allow students to develop subject specialities, outside their main area of study. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor Program.

Combined with a four-year degree program in Marine Biology, minor programs are available in the following areas.

### 1. Minors in other Faculty of Science programs (see 5.a, page 135)

### 2. Minors offered by the Faculty of Arts and Social Sciences (see 5.a, page 135)

### 3. Minors in other Faculties (see 5.b, page 135)

## K. BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 credit BSc or 15 credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements on page 131 of the calendar.

## L. Diplomas, Certificates, and Language Proficiency Certificates

A number of certificate programs are available to students enrolled in an Honours, Major or Minor program in Marine Biology. Please see page 137 for a full listing of available certificates. Note: Classes counted toward a Major, Honours or Minor program may also be used to fulfill the requirements of a Certificate.

## III. Class Descriptions

The normal entry requirement for upper level classes in Biology and Marine Biology is a grade of C- or better in BOTH terms of first year Biology or in DISP. Students with extenuating circumstances may appeal to the departmental curriculum committee.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

### MARI 3003.03: Introduction to Field Oceanography.

See class description for OCEA 3003.03 in the Oceanography section of the calendar.

### MARI 3063.03: Resource Ecology.

This class considers the ecology, utilization, and management of natural resources in fisheries, wildlife and forest management, agriculture and aquaculture. Topics include population dynamics, community interactions, and ecosystem support of resources as well as the history of resource utilization, practices of controlling production, pests, and predators, and sustainable management strategies.

INSTRUCTOR(S): H. K. Lotze

FORMAT: Lecture 2 hours, tutorial 2 hours

PREREQUISITE: BIOL 2060.03, MATH 1010.03, (STAT 1060.03 or DISP)

CROSS-LISTING: BIOL 3063.03

### MARI 3067.03: Ecology and Evolution of Fishes.

This class will examine selected topics on the ecology and evolution of marine and freshwater fishes. Topics shall include systematics, functional morphology, evolutionary ecology, behaviour, life history strategies, population biology, fisheries science, and conservation biology.

INSTRUCTOR(S): J. Hutchings

FORMAT: Lecture 3 hours, lab 2.5 hours

PREREQUISITE: BIOL 2003.03, BIOL 2060.03

CROSS-LISTING: BIOL 3067.03

### MARI 3074.03: Physiology of Marine Animals, Part I.

Animals in a marine environment are quite different from those found in air or fresh water, but the “physiological principles” are similar. This class deals with the

same principles as BIOL 3078, but emphasizes the special characteristics of marine animals and the techniques necessary to study them in laboratories.  
 INSTRUCTOR(S): N. McAllister-Irwin, N. Hamacher  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: BIOL 2003.03, BIOL 2020.03  
 EXCLUSION: BIOL 3070X/Y.06, BIOL 3071X/Y.06, MARI 3071X/Y.06, BIOL 3078.03

### **MARI 3076.03: Physiology of Marine Animals Part II.**

Animals in a marine environment are quite different from those found in air or fresh water, but the “physiological principles” are similar. This class deals with the same principles as BIOL 3079, but emphasizes the special characteristics of marine animals and the techniques necessary to study them in laboratories.  
 INSTRUCTOR(S): N. McAllister-Irwin, N. Hamacher  
 FORMAT: Lecture 3 hours, Lab 3 hours  
 PREREQUISITE: BIOL 2003.03 and BIOL 2020.03  
 EXCLUSION: BIOL 3070.06, BIOL/MARI 3071.06, BIOL 3079.03

### **MARI 3101.03: Microbial Ecology.**

Lectures on the ecology of bacteria, viruses, protists. Community structure, food web nutrient cycling, biogeochemical cycles, competition, succession and symbiosis are discussed with examples from marine, fresh-water and soil habitats. There is an emphasis on marine organisms.  
 INSTRUCTOR(S): J. Laroche  
 FORMAT: Lecture 3 hours  
 PREREQUISITE: BIOL 2004.03 or MICI 2100.03, and BIOL 2060.03  
 CROSS-LISTING: BIOL 3101.03

### **MARI 3221.03: Diversity of Algae.**

This class is a taxonomic introduction to the major algal groups (macrophytic and microscopic) with an emphasis on the marine seaweeds. Basic taxonomic differences are covered, along with an introduction to macrophyte ecology, human uses and symbioses. Laboratory sessions focus on morphology and reproduction.  
 INSTRUCTOR(S): B. Hymes  
 PREREQUISITE: BIOL 2004.03 or equivalent  
 CROSS-LISTING: BIOL 3221.03  
 EXCLUSION: BIOL 3212.03, MARI 3212.03

### **MARI 3301.03: Invertebrate Biology.**

A survey of the diversity, ecology, and evolutionary history of the major invertebrate groups. Lectures will emphasize phylogenetics and diversity of body plans. Labs will emphasize identification and anatomy through field trips to local sites, computer aided learning, and group projects to construct food-webs for local invertebrate communities.  
 INSTRUCTOR(S): L.T. Romanuk  
 FORMAT: Lecture 3 hours, lab 3 hours  
 PREREQUISITE: BIOL 2003.03  
 CROSS-LISTING: BIOL 3301.03  
 EXCLUSION: BIOL 3321X/Y.06

### **MARI 3600.03: Aquaculture.**

Through lectures, laboratories and field trips (additional fees apply), this course offers an introductory overview of aquaculture, the culturing of aquatic plants and animals. The following topics are covered with both a Maritimes and global perspective: overview, physico-chemistry of water, engineering, culture techniques, health, nutrition, genetics, environmental and socio-economic considerations.  
 INSTRUCTOR(S): C. Herbinger  
 FORMAT: Lecture 3 hours, Lab 3 hours, Field trips (2 Sundays)  
 PREREQUISITE: BIOL 2003.03  
 CROSS-LISTING: BIOL 3600.03

### **MARI 3623.03: Applied Coastal Ecology.**

Impacts of anthropogenic inputs on the structure and function of coastal ecosystems. Through field trips and other classwork, students examine ecosystem health, e.g., in macroalgal communities on rocky shores, in seagrass beds on sedimentary shores, and learn basic experimental design, principles of environmental assessment and monitoring, and coastal habitat remediation.  
 NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see seaside.science.dal.ca. Not offered every year.  
 FORMAT: Field and Lab  
 PREREQUISITE: BIOL 2003.03 and BIOL 2060.03  
 CROSS-LISTING: BIOL 3623.03, ENVS 3623.03

### **MARI 3626.03: Field Studies of Marine Mammals.**

Hands-on introduction to research on marine mammals. Lectures provide an overview of marine mammal adaptations, evolution, population biology, social organization, conservation, and management. Labs include a necropsy and techniques of photographic identification of individuals. On a several-day camping trip, students observe marine mammals from whale-watch boats and conduct research projects.  
 NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see seaside.science.dal.ca.  
 FORMAT: Lab and field intensive  
 PREREQUISITE: BIOL 2060.03, BIOL 3062.03 (or BIOL 3630.03 or PSYO 2160.03), STATS 1060.03 (or equivalent)  
 CROSS-LISTING: BIOL 3626.03

### **MARI 3627.03: Biology and Conservation of Sharks, Skates and Rays.**

This class offers a combination of lectures, labs, and field trips that explore the elements of elasmobranch (shark, skate and ray) biology and conservation. Students are introduced to current methods used in shark research, such as tagging, and learn about the role of sharks in ecosystems.  
 NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see seaside.science.dal.ca  
 INSTRUCTOR(S): Staff  
 FORMAT: Lectures, labs and field trips  
 PREREQUISITE: BIOL 2020.03 and BIOL 2003.03

### **MARI 3632.03: Applied Field Methods in Fish Ecology.**

Practical experience conducting field research on fishes with field trips to streams and shallow water marine/freshwater habitats. Techniques include collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variability, quantifying temporal and spatial variation, planning for statistical analysis, and weighing tradeoffs between data quality, quantity, costs and ethical/environmental considerations.  
 NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see seaside.science.dal.ca.  
 FORMAT: Field intensive. Lecture and lab.  
 PREREQUISITE: BIOL 2060.03 or BIOL 2003.03 and STAT 1060.03 or their equivalents or permission of instructor (STAT 2080 recommended)  
 CROSS-LISTING: BIOL 3632.03, ENVS 3632.03

### **MARI 3664.03: Intertidal Ecology and Diversity.**

Hands-on, intensive introduction to ecological research on rocky shores, tidal flats, and sandy beaches. Relevant ecological concepts, sampling techniques for flora and fauna, and statistical skills are learned. Field sampling on day and camping trips is followed by lab work (e.g., identification of seaweeds, invertebrates), statistical analysis, and report preparation.  
 NOTE: Offered in summer through SEASIDE. An auxiliary fee is charged to cover field expenses. For dates, times and special registration procedures, see seaside.science.dal.ca.  
 FORMAT: Field and Lab intensive  
 PREREQUISITE: BIOL 2060.03 and BIOL 2003.03 and (MATH/STAT 1060.03 or DISP)  
 CROSS-LISTING: BIOL 3664.03, ENVS 3664.03  
 EXCLUSION: BIOL 3662.03, 3663.03

### **MARI 3680.03: Scientific Diving Methods for Marine Ecology.**

This class introduces students that are certified divers to the practice of underwater research using SCUBA. It combines lectures with supervised dives in various marine habitats to demonstrate the application of standard sampling and experimental procedures in marine ecology, with an emphasis on logistical considerations and diving safety.  
 NOTE: Offered every other summer through the SEASIDE program. An auxiliary fee is charged to cover costs of dive trips. For dates, times and special registration procedures, see seaside.science.dal.ca.  
 INSTRUCTOR(S): R. Scheibling, A. Pinder, J. Lindley  
 FORMAT: Field Lab and Lecture  
 PREREQUISITE: BIOL 2003.03, BIOL 2060.03, STAT 1060.03, internationally recognized diving certification, diving physical; recommended: BIOL 3212.03 or BIOL/MARI 3221.03, BIOL 3301.03  
 CROSS-LISTING: BIOL 3680.03

**MARI 3761.03: Marine Ecology.**

Building upon an understanding of basic ecological and evolutionary principles, and a familiarity with the major marine invertebrate and algal taxa, this class examines patterns and processes at the organismal, population and community levels that determine the diversity and distribution of life in the sea.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture/lab

PREREQUISITE: BIOL 2060.03 or BIOL 2003.03, and OCEA 2000X/Y.06 or (OCEA 2001.03 and OCEA 2002.03)

CROSS-LISTING: BIOL 3761.03

RESTRICTION: This class is restricted to 3rd and 4th year students.

**MARI 3800.03: Experiential Learning.**

Experiential Learning recognizes the learning experience relevant to the program outside the scheduled curriculum. Students are responsible for drafting a learning agreement with the class coordinator and supervisor to specify learning outcomes, activities designed to accomplish these outcomes, a quantifiable assessment strategy and a timetable.

NOTE: To register in this class, a student must first find a suitable supervisor and sign a learning agreement between the class coordinator, the student and the supervisor.

FORMAT: A minimum of 84 hours of work experience should be documented.

For example students could spend 7-8 hours per week throughout a regular term or complete the 84 hours in a more concentrated period during the summer. Grading is pass/fail.

PREREQUISITE: Students must be registered in a Biology or Marine Biology program, have completed a minimum of three full credits in Biology above the 1000 level and have a minimum cumulative GPA of 2.4 or permission of co-ordinator.

CROSS-LISTING: BIOL 3800.03

EXCLUSION: Scheduled classes at a learning institution, study that would qualify for a Special Topics class, an Honours project, co-op work terms and paid work. Only one experiential learning class per degree is permitted.

**MARI 3800.03: Experiential Learning.**

Experiential Learning recognizes the learning experience relevant to the program outside the scheduled curriculum. Students are responsible for drafting a learning agreement with the class coordinator and supervisor to specify learning outcomes, activities designed to accomplish these outcomes, a quantifiable assessment strategy and a timetable.

NOTE: To register in this class, a student must first find a suitable supervisor and sign a learning agreement between the class coordinator, the student and the supervisor.

FORMAT: A minimum of 84 hours of work experience should be documented.

For example students could spend 7-8 hours per week throughout a regular term or complete the 84 hours in a more concentrated period during the summer. Grading is pass/fail.

PREREQUISITE: Students must be registered in a Biology or Marine Biology program, have completed a minimum of three full credits in Biology above the 1000 level and have a minimum cumulative GPA of 2.4 or permission of co-ordinator.

CROSS-LISTING: BIOL 3800.03

EXCLUSION: Scheduled classes at a learning institution, study that would qualify for a Special Topics class, an Honours project, co-op work terms and paid work. Only one experiential learning class per degree is permitted.

**MARI 4060.03: Marine Mammalogy.**

The class examines the characteristics that mammals brought with them when they returned to the ocean, their evolution, special adaptations, and roles in oceanic ecosystems and general principles of the marine mammal population biology. The biology of marine mammals is used to explore conservation/management issues.

INSTRUCTOR(S): D. Austin, T. Wimmer

FORMAT: Lectures 3 hours

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: BIOL 5651.03, BIOL 4060.03

**MARI 4335.03: Environmental Impacts in Marine Ecosystems.**

See class description for OCEA 4335.03, in the Oceanography section of this calendar.

**MARI 4369.03: Fisheries Oceanography.**

See class description for OCEA 4160.03, in the Oceanography section of this calendar.

**MARI 4370.03: Deep Sea Biology.**

See class description for OCEA 4370.03, in the Oceanography section of this calendar.

**MARI 4661.03: Biological Oceanography.**

See class description for OCEA 4140.03, in the Oceanography section of this calendar.

**MARI 4662.03: Biology of Phytoplankton.**

See OCEA 4230.03 in the Oceanography section of the calendar.

**MARI 4664.03: History of Marine Sciences.**

This class describes the development of the marine sciences from biological, chemical, physical and geological knowledge going back to the 17th century or earlier. It includes the important voyages of exploration, the development of marine biology, ocean circulation and plate tectonics, also the importance of technological changes upon marine science.

INSTRUCTOR(S): E.L. Mills

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4664.03, OCEA 4331.03/5331.03, HIST 3073.03, HSTC 3331.03, SCIE 4001.03

**MARI 4666.03: Benthic Ecology.**

See class description for OCEA 4330.03, in the Oceanography section of this calendar.

**MARI 4667.03: Census of Marine Life.**

The Census of Marine Life recorded over 250,000 known species of eukaryotes in the world's oceans. In this class, the Senior Scientist for Census 2010 examines the diversity, distribution and abundance of marine biota globally, and reviews new approaches to discover new species and to monitor responses to climate change.

INSTRUCTOR(S): R. O'Dor

FORMAT: Lecture with discussions

PREREQUISITE: BIOL 2003.03 and BIOL 2060.03 and six half credits of BIOL, MARI, or OCEA classes.

CROSS-LISTING: BIOL 4667.03

**MARI 4806.03: Special Topics in Marine Biology.**

Independent study intended for students who wish to study an area of marine biology not covered in other classes. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be approved by the Biology Undergraduate Curriculum Committee Chair.

NOTE: For registration forms and further information go to: <http://biology.dal.ca/Undergraduate/index.htm>

**MARI 4807.03: Special Topics in Marine Biology.**

Independent study intended for students who wish to study an area of marine biology not covered in other classes. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be approved by the Biology Undergraduate Curriculum Committee Chair.

NOTE: This class is for students who have already completed one Special Topics Class. For registration forms and further information go to: <http://biology.dal.ca/Undergraduate/index.htm>

**MARI 4900X/Y.06: Honours Research and Thesis.**

This class is required of, and restricted to, all Marine Biology Honours programmes in which Marine Biology is the major area of study. Students conduct a research project supervised by a research scientist and attend weekly meetings of the class.

NOTE: The class grade is based on the results of the research which are submitted in April as an Honours Thesis, an oral presentation about the research to the class, and an oral or poster presentation at the Honours Cameron Conference. Co-op students attend this class by registering for Marine Biology 4901 and 4902. See details about selecting a supervisor for the honours research under the general requirements for Marine Biology honours programmes at the beginning of Marine Biology's calendar entry or on the honours page of Biology's website <http://biology.dal.ca/honours/index.htm>

INSTRUCTOR(S): G. Crossin, C. Herbinger

FORMAT: Weekly class meetings (1.5 - 3.0 hrs) and an independent research project

CROSS-LISTING: MARI 4901.03 AND MARI 4902.03, BIOL 4900X/Y and BIOL 4901.03 AND BIOL 4902.03

RESTRICTION: Honours students normally in their final year of study.



**MARI 4901.03: Honours Research and Thesis I.**

This is required of, and restricted to, all Marine Biology Co-op Honours programmes. The class description is the same as for MARI 4900X/Y. Students attend MARI 4901 in the Winter term of their 4th year and MARI 4902 in the Fall term of their 5th year to accommodate their work terms.

NOTE: 4901 and 4902 must be taken in consecutive winter/fall terms to get a grade for either class. No grade will be recorded for MARI 4901 until 4902 is also completed and the final Honours Thesis has been evaluated - usually in April following the fall class of 4902. Students normally give a poster presentation about their previous work term at the Honours Cameron Conference in February.

**MARI 4902.03: Honours Research Thesis II.**

This is the 2nd half of the required class for Marine Biology Co-op honours students. The class description is the same as for MARI 4900X/Y. Students attend 4902 in the fall of their 5th year.

NOTE: 4901 and 4902 must be taken in consecutive winter/fall terms to get a grade for either class. No grade will be recorded for MARI 4901 until 4902 is also completed and the final Honours Thesis has been evaluated - usually in April following the fall class of 4902.

**MARI 8880.00: Honours Qualifying Examination.**

This is an additional requirement of all Biology and Marine Biology Honours students. Students cannot register for this class but it appears at the end of students' transcripts after they have successfully completed and satisfied all the requirements for BIOL/MARI 4900X/Y, or BIOL/MARI 4901 AND 4902.

NOTE: The grade assigned is a Pass/Fail which is based on mandatory attendance at all weekly meetings of the honours class for two academic terms (attendance is recorded) and participation in the full day Honours Cameron Conference in February.

INSTRUCTOR(S): G. Crossin, C. Herbingier

FORMAT: Weekly seminars 1.5 - 3.0 hours

RESTRICTION: Honours students normally in their final year of study

**MARI 8891.00: Co-op Workterm I.**

PREREQUISITE: SCIE 2800.03

**MARI 8892.00: Co-op Workterm 2.**

PREREQUISITE: MARI 8891.00

**MARI 8893.00: Co-op Workterm 3.**

PREREQUISITE: MARI 8892.00

**MARI 8894.00: Co-op Workterm 4.**

PREREQUISITE: MARI 8893.00

## Mathematics & Statistics

Location: Chase Building  
PO Box 15000  
Halifax, NS B3H 4R2  
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Fax: (902) 494-5130  
Email: chair@mathstat.dal.ca  
Website: http://www.mathstat.dal.ca

**Dean**

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

**Chairperson of Department**

Dilcher, K., PhD (Queen's)

**Professors Emeriti**

Field, C. A., MSc, PhD (Northwestern)  
Fillmore, P. A., MSc, PhD (Minn), FRSC  
Grünenfelder, L., PhD (ETH Zurich)  
Paré, R., MSc, PhD (McGill)  
Radjavi, H., MA, PhD (Minn)  
Swaminathan, S., MA, MSc, PhD (Madras)  
Thompson, A. C., PhD (Newcastle upon Tyne)

**Professors**

Brown, J., MSc, PhD (Toronto)  
Coley, A. A., PhD (London)  
Dilcher, K., MSc, PhD (Queen's)  
Hamilton, D., MA, PhD (Queen's) (Graduate Advisor Stats)  
Janssen, J. C., PhD (Lehigh)  
Milson, R., PhD (McGill) (Director of Mathematics) (Co-op Academic Advisor)  
Nowakowski, R. J., MSc, PhD (Calgary)  
Selinger, P., PhD (U. Pennsylvania)  
Smith, B., MA (Calgary), PhD (Berkeley)  
Susko, E., PhD (Waterloo)  
Taylor, K., BSc (St. FX) PhD (Alberta)  
Thompson, K., PhD (Liverpool) (CRC Chair) (jointly with Oceanography)  
Wood, R. J., MSc (McMaster), PhD (Dalhousie)

**Associate Professors**

Beiko, R., PhD (Ottawa) (jointly with Computer Science)  
Bielawski, J., MA, PhD (Texas A & M Univ) (jointly with Biology)  
Dowd, M., MBA, PhD (Dalhousie)  
Faridi, S., MA (Brandeis), PhD (Michigan)  
Fraser, A., MSc (Toronto), PhD (Princeton)  
Gu, H., MSc (Peking), PhD (Hong Kong) (Director of Stats)  
Herbingier, C., MSc (Paris), PhD (Dalhousie) (jointly with Biology)  
Iron, D., MSc, PhD (UBC) (Honors Advisor Math)  
Johnson, K. P., MSc (Toronto), PhD (Brandeis) (Graduate Advisor Math)  
Kolokolnikov, T., MSc, PhD (UBC)  
Mills-Flemming, J., MSc (TUNS), PhD (Dalhousie)  
Mitnitski, A., PhD (Leningrad Inst. Mech. Eng.) (cross appointment with Dept. of Medicine)  
Pronk, D., PhD (Utrecht)  
Smimov, R., BSc (Kyiv), PhD (Queen's)  
Zhao, Y., MSc (Western Kentucky), PhD (British Columbia) (cross appointment with Management)

**Assistant Professor**

Kenney, T., PhD (Cambridge)

**Lecturers**

Barger, J., BSc, (Pace NY), BEd, MA (Dalhousie)  
Sarhan, A., PhD (Ghansk)  
Surovell, A., MA (U. Mass), AB (Boston)

## Postdoctoral Fellows

Wang, H., PhD (Ottawa)  
Xu, Ximing, PhD (Toronto)

## Learning Centre Director

Stevens, P., MSc (Delft)

## Statistical Consultant

Jones, C., MSc (Dalhousie)

## Adjunct Professors

Beattie, M., PhD (Queen's) Mount Allison  
Bonato, A., PhD (Waterloo) Ryerson  
Borwein, J., PhD (Oxford) FRSC, Univ. of Newcastle  
Brunner, H., PhD (ETH Zurich) Memorial  
Clarke, N., PhD (Dalhousie) Acadia  
Clements, J., PhD (Toronto) Dalhousie  
Cole, D., PhD (McGill) Toronto  
Cruttwell, G., PhD (Dalhousie) Mount Allison University  
Curry, E., PhD (Rutgers) Acadia  
Dawson, R., PhD (Cambridge) St. Mary's  
Finbow, S., PhD (Victoria) St. Francis Xavier University  
Fitzpatrick, S., PhD (Dalhousie) University of Prince Edward Island  
Grant McLoughlin, J., PhD (SUNY at Buffalo) UNB (Fredericton)  
Gupta, R. P., PhD (Delhi) Dalhousie  
Hartnell, B., PhD (Waterloo) St. Mary's  
Haynes, R., PhD (Simon Fraser) Memorial  
Hervik, S., PhD (Cambridge) Stavanger Norway  
Hines, P., PhD (Bath), DRDC Atlantic  
Hofmann, G., PhD (TU Darmstadt) Flagstone RE  
Irving, J., PhD (Waterloo) Saint Mary's  
MacNeil, M. A., PhD (Newcastle) Austral. Inst. of Marine Science  
Mastnak, M., PhD (Dalhousie) St. Mary's  
McLenaghan, R., (Cambridge) Waterloo  
Messinger, M. E., PhD (Dalhousie) Mount Allison  
Millar, M., PhD (Dalhousie) Mount St. Vincent  
Muir, P., PhD (Toronto) St. Mary's  
Ottaway, P., PhD (Dalhousie) Thompson River University  
Piccinini, R., PhD (Wisconsin) Dalhousie University  
Pralat, P., PhD (Adam Mickiewicz, Poland) Ryerson  
Ranjan, P., PhD (Simon Fraser) Acadia University  
Rosebrugh, R., PhD (Dalhousie) Mount Allison  
Sarhan, A., PhD (Gdansk, Poland) Dalhousie  
Sastri, C. C. A., PhD (New York) Dalhousie  
Sneddon, G., PhD (Dalhousie) Mount Saint Vincent Univ.  
Stewart, C., PhD (Dalhousie) UNB Saint John  
Sutherland, W. R. S., PhD (Brown) Dalhousie  
Tan, K. K., PhD (UBC) Dalhousie  
Traves, W., PhD (Toronto) U.S. Naval Academy  
Valiquette, F., PhD (Minnesota)  
Van den Hoogen, R., PhD (Dalhousie) St. Francis Xavier  
Wang, Xu, PhD (Waterloo) St. Francis Xavier University  
Wolfe, D., PhD (Berkeley) SheepDog Inc  
Yung, W., PhD (Carleton) Statistics Canada

## Research Associate

Piccinini, R. (Milan)

Information concerning programs and classes in Mathematics follows immediately below. For Statistics, please refer to the Statistics section on page 584.

# Mathematics

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Website: <http://www.mathstat.dal.ca>

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## Chairperson of Department

Dilcher, K., PhD (Queen's)

## Director of Division

Milson, R., PhD (McGill) (Co-op Academic Advisor)

## Faculty Advisors

Iron, D., PhD (UBC) (Honours)  
Milson, R., PhD (McGill)

## I. General Interest Classes

The Division offers several classes for non-majors who would like to know something about Mathematics.

- MATH 1000.03/1010.03: These core calculus classes are the starting point for any degree program in the sciences.
- MATH 1001.03/1002.03: This class is designed especially for BA students and others who wish to know about the historical and cultural aspects of mathematics.
- MATH 1060.03: This class serves as an introduction, through examples drawn from a wide variety of disciplines, to the basic ideas of statistics.
- MATH 1115.03: Linear algebra and calculus are arranged to meet the needs of commerce students, but of interest to anyone wishing a brief introduction to either of these topics.
- Math 1215.03: This class emphasizes the application of calculus to the life sciences.
- MATH 2112.03: Whereas calculus deals with continuous phenomena, this class deals with discrete objects, especially varieties of ways to count.
- MATH 2030.03/2040.03: These classes serve as introductions to matrix theory, linear equations and linear algebra, topics of importance in many fields.

## II. Degree Programs

One full credit in Mathematics is required for a BSc degree but none of the following classes may be used to satisfy this requirement:  
MATH 1001.03, 1002.03, 1003.03, 1115.03

Students in any Mathematics program are strongly urged to include CSCI 1100.03, 1101.03.

Note that many programs include MATH 2060.03/2080.03. These classes may also be taken as STAT 2060.03/2080.03 and can then count as electives.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

## III. Student Advising

For general advising and career information, students are encouraged to visit the department website: <http://www.mathstat.dal.ca> and click on "Student Advising."

## A. BSc (20 credit) Honours in Mathematics

In addition to satisfying the Faculty of Science regulations for Honours Programs, all Honours programs in mathematics must include the following classes.

### Departmental Requirements

#### 2000 level

- MATH 2001.03/2002.03
- MATH 2030.03/2135.03 and 2505.03
- Two other credits in mathematics at or above the 2000 level - not including classes listed below

#### 3000 level

- MATH 3030X/Y.06
- MATH 3500X/Y.06

#### 4000 level

- MATH 4950.03/Honours Research Project
- Two other credits at or above the 4000 level

Students may choose programs with a concentration in Applied Mathematics or Mathematics. Students wishing to include Computer Science should consider Combined Honours in Mathematics and Computer Science. Students wishing to include Statistics should consider Combined Honours in Mathematics and Statistics. All Honours programs must be approved by the Honours advisor.

Students interested in applied mathematics are advised to select a program that includes, in addition to the required classes above, classes from among the following:

- MATH 2300.03
- MATH 2120.03/MATH 3120.03
- MATH 3210.03
- MATH 3260.03
- MATH 3300.03
- MATH 3330.03
- MATH 3360.03
- MATH 3400.03

Students interested in pure mathematics are advised to select a program that includes, in addition to the required classes above, classes from among the following:

- MATH 2051.03
- MATH 3070.03
- MATH 3080.03
- MATH 2120.03/3120.03
- MATH 3045.03

### Honours Comprehensive Examination

The Honours Comprehensive Examination in mathematics consists of a written paper of about 20-30 pages researched and prepared by the student. The topic is decided on in conjunction with the Honours advisor. The paper is also presented to the honours seminar. The work for this paper also constitutes the work for the required class MATH 4950.03.

## B. BSc Combined Honours

A combined honours program may be appropriate for many students wishing to have a broad range of expertise.

Students interested in taking honours in mathematics and another subject as a combined program should consult the Mathematics Honours advisor. Combined programs in areas such as Mathematics and Statistics, Mathematics and Computer Science, Mathematics and Physics, Mathematics and Chemistry and Mathematics and Economics are common, but combined programs with Mathematics and any subject in the Faculty of Science, Faculty of Arts and Social Science, and Faculty of Computer Science can be arranged. These programs must satisfy University Regulations, but are designed to satisfy the interests and needs of the student.

Students contemplating a combined honours program in Mathematics and another subject should bear in mind that the work in either subject would probably be insufficient for admission to a regular graduate program. A qualifying year would usually be necessary.

## C. BSc or BA (20 credit) Major in Mathematics

### Departmental Requirements - Major

#### 2000 level

- MATH 2001.03 and 2002.03
- MATH 2030.03 and 2040.03 (or 2135.03)
- At least one of MATH 2112.03, 2051.03 or 2505.03
- One additional half credit at or above 2xxx level
- One STAT class at or above 2xxx level

#### 3000 level

- Four other mathematics credits at or above the 3000 level. This selection may not include MATH 3700, MATH 3800.

Students wishing to concentrate in Applied Mathematics should choose the extra mathematics classes from

- MATH 2060.03/MATH 2080.03
- MATH 2300.03
- MATH 2120.03/MATH 3120.03
- MATH 3210.03
- MATH 3260.03
- MATH 3300.03
- MATH 3330.03
- MATH 3400.03

Students wishing to concentrate in Pure Mathematics should choose the extra mathematics classes from

- MATH 2060.03/MATH 2080.03
- MATH 3030X/Y.06
- MATH 3070.03
- MATH 3080.03
- MATH 2120.03/MATH 3120.03
- MATH 3045.03

Students contemplating a career in Mathematics Education should choose the extra mathematics classes from

- MATH 2051.03
- MATH 2060.03/MATH 2080.03
- MATH 2112.03/MATH 2113.03
- MATH 2300.03
- MATH 3030X/Y.06
- MATH 3070.03
- MATH 3080.03
- MATH 3140.03
- MATH 3150.03
- MATH 3300.03
- MATH 3330.03
- MATH 3400.03

## D. BSc Double Major in Mathematics and another Science subject, Double Major in Mathematics and a BA Subject

Student completing a double major with Mathematics can fulfil the Mathematics requirements by following one of two programs below. In both cases, students are advised to consult with the department.

### Pure Mathematics

#### 2000 level

- MATH 2001.03 and 2002.03
- MATH 2030.03 and 2040.03 (or 2135.03)
- At least one of MATH 2112.03, 2051.03, 2505.03

#### 3000 level

- Two other mathematics credits at or above the 3000 level. This selection may not include MATH 3700, MATH 3800.

### Applied Mathematics

#### 2000 level

- MATH 2001.03
- MATH 2030.03, 2040.03
- MATH 2120.03

- At least one of MATH 2060.03 or 2080.03

### 3000 and 4000 level

- MATH 3120.03
- At least three of MATH 3080.03, 3210.03, 3260.03, 3300.03, 3330.03, 3400.03, 3900.03, 4190.03, 4220.03, 4230.03, 4250.03, 4320.03, 4540.03

## E. Co-op Education in Mathematics

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the “Co-operative Education in Science” section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

There are three Major and three Honours Co-op programs available within the Department, in the areas of:

- Mathematics
- Statistics
- Combined programs

A Combined Honours Co-op degree, combining Mathematics or Statistics and Computer Science or another appropriate subject, is possible and may be appropriate for many students. Students interested in such a program should consult the Mathematics Co-op Academic Advisor or the Science Co-op office.

For further information, please see <http://www.sciencecoop.dal.ca>

Co-op Academic Advisor in Mathematics:  
Dr. Milson (494-6366) [rmilson@dal.ca](mailto:rmilson@dal.ca)

## F. Minors and Other Programs

### Minors

Minor programs allow students to develop subject specialities, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Mathematics, minor programs are available in the following subject areas:

#### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Environmental Studies (BA or BSc)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA only)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 131, as well as the particular subject area of the calendar.

### Minor in Mathematics

The minor in Mathematics is available to students registered in the BA, BSc and BCS 20 credit major, honours or 15 credit minor programs. The requirements are as for the appropriate program with the completion of the following classes:

- MATH 1000
- MATH 1010
- MATH 1500 X/Y (this replaces the requirement for MATH 1000/1010)

- MATH 2001
- MATH 2030
- MATH 2120
- One and one half additional MATH credit at or above the 2000 level

## BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements on page 131 of the calendar. The departmental requirements for this program are as outlined above for the 15 Credit BSc with Minor in Mathematics.

Alternatively, eligible students can complete the following departmental requirements:

- ENGM 2021, ENGM 2022, ENGM 2062
- MATH 2300.03
- At least one of MATH 2135.03, 2112.03, or 2051.03
- Any two full MATH credits at the 3000 or 4000 level, except MATH 3110.03, 3700.03, and 3800.03

(All ENGM require a minimum grade of B-.)

## Certificate in Actuarial and Financial Mathematics

This program addresses many of the learning objectives and fundamental mathematical and statistical skills required to complete the first two classes (and examinations) of the Society of Actuaries accreditation program. This program also prepares students for employment in general financial institutions where modeling, quantitative risk analysis, management of investment instruments, asset and liability management, life contingencies and insurance assessment, and other complex financial calculations are required. You must register your intent to complete the requirements with the department before graduation. The requirements are:

1. Completion of the 20 Credit Major or Honours program in Mathematics and/or Statistics.
2. Completion of the following mathematics classes: MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2120 or MATH 3110, MATH 2600, MATH 3300 and MATH 3900;
3. Completion of the following four statistics classes: STAT 2060, STAT 2080, STAT 3340 and STAT 3360.

## Certificate in Applied and Computational Mathematics

This program is concerned with the development of the core mathematical and computational skills required in science, government and industry. Areas of application include everything from mathematical modeling to operations research to cryptography to software development. You must register your intent to complete the requirements with the department before graduation. The requirements are:

1. Completion of the 20 Credit Major or Honours program in Mathematics or an equivalent program;
  2. Completion of the following mathematics classes:
    - MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2040, MATH/CSCI 2112, MATH 2120;
  3. Completion of at least four of:
    - MATH 3120, MATH 3210, MATH 3260, MATH 3300, MATH 3330, MATH 3400;
  4. Completion of at least two of:
    - MATH 4116, MATH 4220, MATH 4230, MATH 4250, MATH 4320
- Additional recommended classes: MATH 2300, STAT 2060, STAT 2080.

## IV. Class Descriptions

Class descriptions for Statistics can be found in the calendar under Statistics.

Credit may not be obtained twice for the same class even if the numbers have been changed.

Classes with the designation (MLC) are supported by the tutorial services of the Math Learning Centre.

Not all classes are offered every year. Please consult the current timetable for this year's offerings.

The following three classes below the 1000 level are offered by the College of Continuing Education. Students register and pay for them at the College of continuing Education located at 1220 LeMarchant Street, 2nd Floor or by calling

(902) 494-2375 (see page 40, College of Continuing Education, for more details).

### **MATH 0009.00: Academic Math.**

This non-credit grade 12 math class is intended for students who want to upgrade their math skills for admission to the Bachelor of Commerce, Management or Nursing programs or the pre-calculus plus math course. The course contains a thorough investigation of elementary functions. Probability and geometry topics round out this course.

FORMAT: Class 3 hours, tutorial 1 hour

PREREQUISITE: At least grade 10 academic math or equivalent

### **MATH 0010.00: Pre-Calculus Mathematics (NS Grade 12 Pre-Calculus Math).**

This fast paced 1 term course has been designed for calculus bound students who have a firm grasp of grade 11 and 12 math skills. Focus is placed on key pre-calculus concepts, such as derivative and limit. Composite, Inverse, Polynomial and Rational functions, exponential functions with base  $e$ , and trigonometry using radian measure are studied.

FORMAT: Class 3 hours, tutorial 1 hour

PREREQUISITE: Recommend at least 75% in grade 11 advanced and 12 advanced math

### **MATH 0011.00: Pre-calculus Plus ( NS Grade 12 pre-calculus).**

This full year course has been designed for the majority of students, either requiring Pre-calculus for admittance to the Dalhousie BSc program or as preparation for Calculus 1000. In addition to a more in depth coverage of the pre-calculus topics presented in Math 0010.00, a review of the relevant math 11 and 12 material is provided.

FORMAT: Class 3 hours, tutorial 1 hour

PREREQUISITE: Solid understanding of Grade 11 and 12 math or equivalent

### **MATH 1000.03: Differential and Integral Calculus I.**

This class offers a self-contained introduction to differential and integral calculus. The topics include functions, limits, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, integration by substitution. A sequel to this class is MATH 1010.03.

The XY version of this class covers the same material, but the course duration is spread over the Fall and Winter term. The format of the XY course (1.5 hour workshops twice a week, and the smaller class size) allows for a more interactive learning environment than in a regular lecture format.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus.

Pre-calculus is highly recommended.

EXCLUSION: MATH 1215.03, MATH 1280.03, MATH 1500X/Y.06

### **MATH 1001.03: Mathematics for Liberal Arts Students I.**

For students who wish to become acquainted with mathematics as an art rather than as a tool for the sciences. A selection of elementary topics will be discussed with a view to illuminating historical and cultural aspects of the subject. Required work will include a series of written reports on assigned readings and a major essay. This class cannot be used to partially satisfy the BSc mathematics requirement.

FORMAT: Lecture 3 hours, MLC

### **MATH 1002.03: Mathematics for Liberal Arts Students II.**

Same as 1001.03 above, but with a different set of topics. Either one or both of 1001.03 and 1002.03 may be taken for credit. This class cannot be used to partially satisfy the BSc mathematics requirement.

FORMAT: Lecture 3 hours, MLC

### **MATH 1010.03: Differential and Integral Calculus II.**

A continuation of the study of calculus with topics including: Riemann sums, techniques of integration, elementary differential equations and applications, parametric equations and polar coordinates, sequences and series, Taylor series.

FORMAT: Lecture 3 hours, tutorial 1 hour, MLC

PREREQUISITE: MATH 1000.03

### **MATH 1060.03: Introductory Statistics for Science and Health Sciences.**

See class description for STAT 1060.03 in the Statistics section of this calendar.

### **MATH 1115.03: Mathematics for Commerce.**

An introduction to matrices, linear programming, mathematics of finance, probability and differential calculus. All topics are taught with an emphasis on applications to business.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: Nova Scotia Advanced Mathematics 11 or 12 or equivalent

EXCLUSION: MATH 1110.03, MATH 1120.03

\* This class may not be used to partially satisfy the BSc Mathematics requirements

### **MATH 1215.03: Life Sciences Calculus.**

This course emphasizes the application of calculus to the life sciences. The concepts and content studied include derivatives, techniques of differentiation, logarithmic and exponential functions, optimization, basic ordinary differential equations, integration, and techniques and applications of integration.

NOTE: Students who have already received credit for MATH 1215.03 cannot subsequently receive credit for MATH 1115.03.

FORMAT: Lecture/tutorial

PREREQUISITE: Nova Scotia Mathematics 11 and 12 or pre-calculus is highly recommended.

EXCLUSION: MATH 1000.03, MATH 1500X/Y.06

### **MATH 1280.03: Engineering Mathematics I.**

This forms an introduction to differential and integral calculus for Engineering students. All topics of Math 1000.03 are covered, but in greater depth. In addition, this course covers functions, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, Taylor series, antiderivatives and definite integrals, Riemann sums, polynomial approximations, and numerical approximations of integrals.

NOTE: Students who have already received credit for MATH 1280.03 cannot subsequently receive credit for MATH 1000.03 or MATH 1115.03

FORMAT: Lecture/tutorial 5hr.

PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus.

Pre-calculus is highly recommended.

EXCLUSION: MATH 1000.03, MATH 1215.03

### **MATH 1290.03: Engineering Mathematics II.**

This class is a sequel to MATH 1280. All topics of Math 1010.03 are covered, but in greater depth. This course also introduces the students to the application of mathematics in engineering problems.

NOTE: 1: Students who have already received credit for MATH 1290.03 cannot subsequently receive credit for MATH 1010.03

NOTE 2: Due to the course format and content, Math 1010.03 is not equivalent to Math 1280.03

FORMAT: Lecture/tutorial 5hr.

PREREQUISITE: MATH 1280.03

### **MATH 1500X/Y.06: Calculus.**

This class is intended primarily for students who are considering a majors or an honours program in the physical or mathematical sciences. The topics of MATH 1000/MATH 1010 are covered, but in greater depth. MATH 1500 is equivalent as a credit to MATH 1000/MATH 1010.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture 3 hours

PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus.

Pre-calculus is highly recommended.

EXCLUSION: Credit can be given for only one of MATH 1000/MATH 1010 and MATH 1500.

### **MATH 1600.03: Spectrum of Mathematics.**

This course teaches basic mathematical reasoning, and highlights topics that are not part of the standard first year mathematics curriculum. Topics may include: logic and computers, symmetry in science, prime numbers and cryptology, finite fields and communication error, knots, surfaces and the shape of space.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1000.03, advanced placement in Calculus, or permission of instructor.

### **MATH 2001.03: Intermediate Calculus I.**

Topics include review of parametric equations, polar coordinates, conic sections, coordinate systems and vectors, dot product and cross product, vector functions, derivatives and integrals of vector functions, arc length and curvature, functions of

several variables and partial derivatives, directional and double and triple integrals.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1010.03

### **MATH 2002.03: Intermediate Calculus II.**

Topics include multiple integrals and changes of variables, and vector calculus, with an emphasis on Green's and Stokes' theorems. The course also includes an introduction to second order ordinary differential equations.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03

### **MATH 2030.03: Matrix Theory and Linear Algebra I.**

This class is a self-contained introduction to Matrix Theory and Linear Algebra. Topics include: subspaces, linear transformations, determinants, eigenvalues and eigenvectors, systems of linear equations. Students should note that this is a second-year class and, although it has no formal first-year prerequisites, certain mathematical maturity is expected.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: Nova Scotia advanced Mathematics 11 or 12

### **MATH 2040.03: Matrix Theory and Linear Algebra II.**

This class is a continuation of MATH 2030.03. Topics include: vector spaces and linear transformations, eigenvalues and eigenvectors, similarity and diagonalization, inner product spaces and orthogonal transformations, diagonalization of symmetric matrices and quadratic forms.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2030.03, and 1000.03 or 1500X/Y.06 or 1215.03

EXCLUSION: MATH 2135.03

### **MATH 2051.03: Problems in Geometry.**

This is a basic class for all students interested in geometry. Topics from Euclidean and non-Euclidean geometry may include: transformation geometry, symmetry groups, frieze groups, wallpaper groups and the crystallographic restrictions, similarities; projective geometry and the classical theorems of Menelaus, Ceva, Desargues, Pappus, Pascal; hyperbolic geometry.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1010.03 or 1500X/Y.06

### **MATH 2060.03: Introduction to Probability and Statistics I.**

See class description for STAT 2060.03 in the Statistics section of this calendar.

### **MATH 2080.03: Statistical Methods For Data Analysis & Inference.**

See class description for STAT 2080.03 in the Statistics section of this calendar.

### **MATH 2112.03: Discrete Structures I.**

This class together with MATH 2113.03 offers a survey of the following areas: set theory, mathematical induction, number theory, relations, functions, algebraic structures and introductory graph theory. The topics to be discussed are fundamental to most areas of Mathematics and have wide applicability to Computer Science.

FORMAT: Lecture 3 hours

PREREQUISITE: Nova Scotia Mathematics 441 or equivalent

CROSS-LISTING: CSCI 2112.03

### **MATH 2113.03: Discrete Structures II.**

This class continues CSCI2112.03/MATH2112.03. This class covers some basic concepts in discrete mathematics which are of particular relevance to students of computer science, engineering, and mathematics. The topics to be covered will include solution of recurrence relations, generating functions, number theory, chinese remainder theorem, trees and graphs, finite state machines, abstract algorithms, boolean algebra.

FORMAT: Lecture 3 hours

PREREQUISITE: CSCI 2112.03 or MATH 2112.03

CROSS-LISTING: CSCI 2113.03

### **MATH 2120.03: Methods for Ordinary Differential equations.**

A comprehensive introduction to the theory of ordinary differential equations (ODEs), which is a broad field in pure and applied mathematics with numerous applications in other sciences. The topics include: special types of ODEs of 1st order, homogeneous and inhomogeneous linear ODEs with constant coefficients, Laplace transforms, systems of ODEs.

PREREQUISITE: MATH 1010.03 or MATH 1500X/Y.06 or permission of the instructor

EXCLUSION: MATH 3110.03

CO-REQUISITE: MATH 2030.03

### **MATH 2135.03: Linear Algebra.**

This course is a continuation of Math 2030.03 with an emphasis on foundations and the theory of vector spaces and linear transformations. Additional topics include symmetric and orthogonal transformations, bilinear forms, inner product spaces, and various applications in mathematics, physics and computer science.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2030.03 and 1000.03

EXCLUSION: MATH 2040.03

### **MATH 2300.03: Mathematical Modelling I.**

By using fundamental calculus concepts in a modelling framework, the student investigates practical problems chosen from common experiences encompassing many academic disciplines, including the mathematical sciences, operations research, engineering and the management and life sciences. A significant part of the class is learning to use MAPLE as a mathematical tool.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: MATH 1000.03

CROSS-LISTING: STAT 2300.03

CO-REQUISITE: MATH 2030.03

### **MATH 2505.03: Introductory Analysis.**

This course is for honours students and other serious students of mathematics. Topics include: the axioms for the real number system, geometry and topology of Euclidean space, limits, continuity, differentiability, the inverse and implicit function theorems.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03

### **MATH 2600.03: Theory of Interest and Life Contingencies.**

Simple and compound interest are covered in detail. Topics include: nominal and effective rates of interest/discount, force of interest, annuities, perpetuities, and bonds.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: MATH 1010.03, 1115.03 or 1500X/Y.06

CROSS-LISTING: STAT 2600.03

### **MATH 3030X/Y.06: Abstract Algebra.**

In this first class in abstract algebra the following topics are treated: groups, subgroups, factor groups, homomorphisms, rings, ideals, Euclidean domains, polynomial rings, fields, unique factorization, irreducible polynomials, Sylow theorems, solvability of polynomial equations, Galois theory, and the Jordan canonical form.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2040.03 or 2135.03

### **MATH 3045.03: Curves and Surfaces.**

The course is designed as an introduction to differential geometry, the study of geometric objects by means of analysis. It presents a comprehensive study of curves and surfaces in Euclidean space. Topics include: Frenet frame and equations, curvature, torsion, first and second fundamental forms, shape operator, Gauss-Weingarten equations.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2002.03 and (MATH 2040.03 or MATH 2135.03) or consent of instructor

### **MATH 3070.03: Theory of Numbers.**

Topics include: congruences and residues; elementary properties of congruences, linear congruences, theorems of Fermat, Euler and Wilson, Chinese remainder theorem, quadratic residues, law of quadratic reciprocity, Legendre, Jacobi and Kronecker symbols, arithmetic functions, algebraic fields, algebraic numbers and integers, uniqueness of factorization, elementary properties of ideals, and class number.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2040.03 (or 2135.03)

**MATH 3080.03: Introduction to Complex Variables.**

An introduction to the basic elements of complex analysis. Topics include: complex numbers, functions, differentiation and integration in the complex plane, some special mappings, series in general, Taylor and Laurent Series, residues, some principles of conformal mapping theory.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2002.03

**MATH 3120.03: Differential Equations.**

The topics discussed are of great importance to any student interested in applied mathematics. Areas include Fourier series, orthogonal polynomials, Sturm-Liouville problems, the classical partial differential equations, and some applications to physics, chemistry and engineering.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2120.03 or MATH 3110.03 or PHYC 2140.03

**MATH 3140.03: Introduction to Wavelets.**

Wavelet analysis provides an extremely powerful and highly flexible tool for the compression, denoising, and recognition of both audio and image signals. This course will develop many of the essential mathematical ideas behind Fourier analysis and wavelets. Many applications will also be discussed and examined.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2002.03 and MATH 2030.03

**MATH 3210.03: Introduction to Numerical Analysis.**

This course covers the practice as well as theory of basic numerical techniques. Topics may include: root finding, interpolation, integration, initial value problems, linear and nonlinear fitting, boundary value problems. We will emphasize error analysis and stability of methods, as well as practical implementation on a computer.

PREREQUISITE: Math 2001 or (MATH 2120 and MATH 2030)

**MATH 3260.03: Mathematical Modelling II.**

The course looks at several different applications of differential equations. Each application is chosen to learn a basic mathematical technique. Topics include: dimensional analysis, phase plane methods, multiple scales, boundary layers, delay differential equations, synchronization, chaos.

PREREQUISITE: MATH 2120 or consent of the instructor

**MATH 3300.03: Optimization.**

An introduction to the concepts and applications of linear and nonlinear programming. Topics include the simplex method for linear programming, duality and sensitivity analysis, convex programming, Kuhn-Tucker and Lagrange multiplier conditions, numerical algorithms for unconstrained and constrained problems. Some of these topics are illustrated by means of interactive computer packages.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03 and MATH 2030.03

**MATH 3330.03: Applied Graph Theory.**

This course offers an introduction to graph theory, with an emphasis on applications and modelling. Topics include: paths and cycles, shortest route problem, connectivity and trees, minimum spanning trees, network flow, planar graphs, matchings, assignment problem, graph colouring and applications to scheduling, Hamilton cycles, and the Travelling Salesman Problem.

PREREQUISITE: MATH 2112.03 or MATH 2030.03

**MATH 3340.03: Regression and Analysis of Variance.**

See class description for STAT 3340.03 in the Statistics section of this calendar.

**MATH 3350.03: Design of Experiments.**

See class description for STAT 3350.03 in the Statistics section of this calendar.

**MATH 3360.03: Probability.**

See class description for STAT 3360.03 in the Statistics section of this calendar.

**MATH 3380.03: Sample Survey Methods.**

See class description for STAT 3380.03 in the Statistics section of this calendar.

**MATH 3400.03: Classical Game Theory.**

This course will cover the important concepts of classical game theory: game trees, dominance, zero-sum games, saddle points, utility theory, non-zero sum games, Nash equilibrium, non-competitive solutions, Prisoner's dilemma, Chicken, Newcomb's problem. There will be applications to many areas including anthropology, biology, business, economics and philosophy.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2030.03, or permission of the instructor

**MATH 3460.03: Intermediate Statistical Theory.**

See class description for STAT 3460.03 in the Statistics section of this calendar.

**MATH 3500X/Y.06: Intermediate Analysis.**

MATH 3500.06 continues the analysis sequence begun in MATH 2505.03. Topics include: number systems, metric spaces, compactness, continuous functions on metric spaces, Stone-Weierstrass theorem, Arzela-Ascoli theorem, sequences and series of functions and their properties, inverse and implicit function theorems, extrema, co-ordinate transformations.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2135.03, 2505.03

**MATH 3700.03: Mathematics for Economics.**

See class description for ECON 3700 in the Economics section of this calendar.

**MATH 3800.03: Financial Economics.**

See class description for ECON 3800.03 in the Economics section of this calendar.

**MATH 3900.03: Financial Mathematics.**

This class is an introduction to derivative pricing. Topics include: binomial tree model, stochastic calculus, Itô calculus, Black-Scholes model, market price of risk, log-normal models.

PREREQUISITE: MATH 2060.03 and (MATH 2120.03 or MATH 3110.03), or permission of the instructor

CROSS-LISTING: ECON 3900.03

**MATH 4010.03: Introduction to Measure Theory and Integration.**

A discussion of Lebesgue's theory of measure and integration. The topics include: the extended real number system, the definition of measurable sets, Lebesgue measure and the existence of non-measurable sets, the Lebesgue integral, differentiation of monotonic functions (e.g. the Cantor function), absolute continuity, the classical Lebesgue spaces.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3500X/Y.06

CROSS-LISTING: MATH 5010.03

**MATH 4020.03: Analytic Function Theory.**

Topics include: review of analytic complex functions including topological properties of the plane, Möbius mappings, exponential, logarithmic, trigonometric and related functions, integration and the Cauchy theorem. Cauchy's integral formula, residues, harmonic functions, analytic continuation, entire and meromorphic functions, some results of conformal mapping, including the Riemann mapping theorem.

PREREQUISITE: MATH 2002.03 (MATH 3080.03 recommended)

CROSS-LISTING: MATH 5020.03

**MATH 4025.03: Commutative Algebra I.**

This introduction to commutative algebra includes a selection of the following topics: prime and maximal ideals, primary decomposition, Noetherian rings, Hilbert's Basis Theorem and the Nullstellensatz.

FORMAT: Lecture/3 hours

PREREQUISITE: Math 3030X/Y.06 or equivalent

CROSS-LISTING: MATH 5025.03

**MATH 4045.03: Advanced Algebra I.**

Topics may include: Euclidean rings, principal ideal domains, unique factorization domains, polynomial rings, modules, classification of modules over principal ideal domains, and Jordan and rational canonical forms.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030X/Y.06

CROSS-LISTING: MATH 5045.03

**MATH 4055.03: Advanced Algebra II.**

Topics may include: groups, group actions, quotient groups, Sylow theorems, field theory and field extensions, and Galois theory.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030X/Y.06

CROSS-LISTING: MATH 5055.03

**MATH 4065.03: Algebraic Geometry.**

This is a first course in algebraic geometry and will introduce students to the basic properties of affine and projective varieties. Topics covered will include a selection from: local properties of plane curves, elliptic curves, Bezout's Theorem, Riemann-Roch Theorem.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030X/Y.06

CROSS-LISTING: MATH 5065.03

**MATH 4066.03: Advanced Statistical Theory I.**

This class, together with STAT 5067.03 provides a solid basis in the theory of statistical inference. After a review of some probability and distribution theory, the Bayesian and classical theories of estimation and testing are introduced.

PREREQUISITE: STAT 3460.03 or MATH 3460.03

CROSS-LISTING: MATH 5066.03, STAT 4066.03/5066.03

**MATH 4070.03: Topics in Number Theory.**

The course begins with a detailed discussion of quadratic reciprocity. The main topics from analytic number theory will be arithmetic functions and Dirichlet L-series, resulting in a proof of Dirichlet's theorem on primes in arithmetic progressions. Fundamental properties of algebraic number fields will be discussed, emphasizing quadratic and cyclotomic fields.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3070.03

CROSS-LISTING: MATH 5070.03

**MATH 4090.03: Probability.**

See class description for STAT 4090.03 in the Statistics section of this calendar.

**MATH 4116.03: Cryptography.**

This class is an introduction to modern cryptographic techniques and its mathematical foundations. The material covered includes: elementary number theory and algebra, classical cryptosystems, probability, the Data Encryption Standard, prime number generation and primality tests, public key cryptosystems, and further applications, such as digital signatures and identification.

PREREQUISITE: MATH 1000.03, 1010.03, 2030.03, and at least one full-year mathematics course beyond the first year or permission of the instructor

CROSS-LISTING: CSCI 4116.03

**MATH 4130.03: Analysis of Algorithms.**

See class description for CSCI 4113.03 in the Computer Science section of this calendar.

**MATH 4135.03: Introduction to Category Theory.**

Categories, functions, natural transformations and adjointness are introduced with emphasis on examples drawn from undergraduate Mathematics and theoretical Computer Science. The calculus of diagram chasing, limits, colimits and Kan extensions is explored in detail.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030X/Y.06 or permission of the instructor.

CROSS-LISTING: MATH 5135.03

**MATH 4136.03: Topics in Category Theory.**

Topics of current interest in category theory will be discussed with an emphasis on open problems. No previous knowledge of category theory is required. The necessary concepts will be discussed in the context of their applications. However, a certain familiarity with the basic concepts of modern abstract mathematics such as found in courses on algebra and topology would be an asset.

PREREQUISITE: Math 3030X/Y.06 and consent of instructor

CROSS-LISTING: MATH 5136.03

**MATH 4140.03: Introduction to Functional Analysis.**

An introduction to the basic principles of functional analysis including the following topics: infinite dimensional vector spaces, normed spaces, inner-product spaces, Banach and Hilbert spaces, linear and continuous linear functionals, the Hahn-Banach Theorem, the principle of uniform boundedness, dual spaces, weak\* topology, and the Alaoglu theorem, the open mapping and closed graph theorems, and consequences and applications.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2135.03 and 3500X/Y.06

CROSS-LISTING: MATH 5140.03

**MATH 4165.03: Mathematical Methods of Physics.**

Topics discussed include: complex variable theory, Fourier and Laplace transform techniques, special functions, partial differential equations.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3120.03, or permission of instructor.

CROSS-LISTING: PHYC 4160.03, PHYC 5160.03

**MATH 4170.03: General Topology.**

An introduction to topological spaces that includes the following topics: classification in terms of cardinality of bases, separation, etc., product spaces, Tychonoff theorem, compactness, compactifications, Tychonoff spaces, metrization.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3500X/Y.06

CROSS-LISTING: MATH 5170.03

**MATH 4175.03: Topics in Mathematical Physics.**

This class is a continuation of MATH 4165.03 and deals with special topics in mathematical physics selected from areas such as the green's function technique for solving ordinary and partial differential equations, scattering theory and phase shift analysis, diffraction theory, group theory, tensor analysis and general relativity.

PREREQUISITE: PHYC 4165.03

CROSS-LISTING: PHYC 4170.03, PHYC 5170.03

**MATH 4180.03: Introduction to Algebraic Topology.**

An introduction to algebraic topology including the following topics: the definitions, properties and methods of computation of the fundamental group of a topological space; simplicial, singular and cellular homology groups; basic properties and methods of computation of homology groups; a selection of application such as the classification of surfaces and fixed point theorems.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 4170.03

CROSS-LISTING: MATH 5180.03

**MATH 4190.03: Ordinary Differential Equations.**

A graduate-level introduction to ordinary differential equations. Topics covered include flows, existence and uniqueness theorems, continuity of solutions, coordinate transformations, symmetry methods and reductions, linearization of dynamical systems, and ODEs on manifolds.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3120.03 and MATH 2505.03 or permission of the instructor

CROSS-LISTING: MATH 5190.03

**MATH 4195.03: Topics in Topology and Functional Analysis.**

Topology is the mathematical subject that allows one to make precise the concept of continuity. Rudin defines functional analysis as the study of certain topological-algebraic structures and of the methods by which knowledge of these structures can be applied to analytic problems. He adds that the subject is huge and growing rapidly and, accordingly, we offer a "topics" class.

RECOMMENDED: MATH 3030X/Y.06

CROSS-LISTING: MATH 5195.03

**MATH 4200.03: Ordinary Differential Equations - Qualitative Theory.**

Qualitative theory is concerned determining the behaviour of solutions of differential equations without finding explicit solutions. Topics are selected from Liapunov stability theory, stable and unstable manifolds of singular points and periodic solutions, classification of plane singular points, structural stability and Hamiltonian systems. Other topics at the instructor's discretion.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 4190.03

CROSS-LISTING: MATH 5200.03

**MATH 4220.03: Introduction to Partial Differential Equations.**

This course is a basic introduction to the theory of partial differential equations. Topics covered include: modelling physical systems, method of characteristics, Laplace, wave and heat equations, separation of variables, eigenfunction expansions, integral transforms, maximum principles and Ritz Raleigh theory.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2120.03 or MATH 3110.03

CROSS-LISTING: MATH 5220.03



**MATH 4230.03: Partial Differential Equations.**

This course will provide students with an introduction to advanced topics in partial differential equations in a variety of settings. Topics may include: reaction diffusion systems, pattern formation, numerical methods, applications to physical sciences, variational methods, Sobolev Theory.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3120.03 or permission of the instructor

CROSS-LISTING: MATH 5230.03

**MATH 4250.03: Asymptotic Analysis.**

Most mathematical models of physical systems cannot be solved exactly. Often such systems have a naturally occurring small parameter which may be exploited using asymptotic analysis techniques. In this course, we will study a variety of physical systems which illustrate many of the common approaches used in asymptotic analysis. Focus will be on applications to ordinary and partial differential equations.

FORMAT: Lecture 3 hours

PREREQUISITE: (MATH 2002.03 OR MATH 2120.03) AND MATH 2030.03

**MATH 4320.03: Combinatorial Optimization.**

Various graph algorithms will be presented and analyzed. Specifically we will treat the algorithms for the problems: minimum spanning tree, shortest path, maximal flow, minimum cost flow, maximum matching. For each problem, various algorithms will be presented and compared. The link with Linear Programming, especially LP-Duality, will receive special attention.

PREREQUISITE: MATH 2030.03, some knowledge of linear programming and the theory of algorithms is recommended.

CROSS-LISTING: MATH 5320.03

**MATH 4330.03: Topics in Graph Theory.**

This class is intended for math and computer science students. Items to be selected from the following topics: graphs and matrices, graphs and groups, network analysis, extremal graph theory, enumeration problems, and algebraic methods in graph theory.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3330.03 or CSCI 3110.03 or permission of the instructor

CROSS-LISTING: MATH 5330.03, CSCI 4115.03

**MATH 4340.3: Discrete Random Structures.**

This course will cover basics of probability and stochastic processes, and then focus on areas where probability and combinatorics interact. Topics include: probabilistic method, stochastic graph models for complex networks, probabilistic algorithms. Probabilistic techniques include: expectation and concentration of random variables, stochastic processes, conditional expectation, Markov chains, martingales, branching processes.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 4330.03/5330.03 or MATH 2113.03 or permission from the instructor

CROSS-LISTING: MATH 5340.03

**MATH 4360.03: Combinatorial Modeling.**

This course introduces a common framework for combinatorial structures (graphs, digraphs, hypergraphs, posets, preorders, lattices, finite topologies, simplicial complexes), with an emphasis on how to model these structures with other fields of mathematics, such as matrix theory and linear algebra, commutative algebra, topology, analysis, probability and logic.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2060.03 and MATH 3030X/Y.06

CROSS-LISTING: MATH 5360.03

**MATH 4370.03: Combinatorics: Techniques and Structures**

We introduce counting techniques and combinatorial structures, and show their application and use in all branches of mathematics. Counting techniques include combinations and permutations, the pigeonhole principle, inclusion/exclusion. Advanced techniques include recurrence relations, generating functions and power series. Structures include partial orders, set systems and transversals, and finite geometries

FORMAT: Lecture

PREREQUISITE: MATH 2112.03 or MATH 2051.03 or MATH 3070.03 or MATH 3330.03

CROSS-LISTING: MATH 5370.03

**MATH 4410.03: Cosmology.**

A self-contained introduction to cosmology will be given and no prior knowledge of differential geometry or general relativity will be assumed (although some knowledge of elementary differential equations will be useful). A cosmological model is a model of the universe, as a whole, on the largest scales; the emphasis of the class will be on the modelling aspects of cosmology.

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's permission

CROSS-LISTING: MATH 5410.03, PHYC 4660.03/5660.03

**MATH 4500.03: Introduction to Harmonic Analysis.**

This course covers the basic elements of L-spaces, convolution, interpolation, maximal functions, Fourier analysis of functions, and the theory of generalized functions, or distributions. Further topics may include L2-Sobolev spaces, boundary values of harmonic functions, spherical harmonics, singular integral operators, or multipliers.

FORMAT: Lecture

PREREQUISITE: MATH 4010/5010, or MATH 3500 with permission of instructor

CROSS-LISTING: MATH 5500.03

**MATH 4530.03: Differential Geometry.**

This course is a self-contained introduction to manifold theory. Topics include: elements of surface theory, the tangent space, vector fields, differential forms and more general tensors, the Lie derivative, connections, Riemannian geometry, applications in mechanics and general relativity.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3045.03 or 3500.03 or permission of the instructor

CROSS-LISTING: MATH 5530.03

**MATH 4540.03: Applied Analysis.**

This course is an introduction to the methods of modern applied analysis. This course is suitable for advanced undergraduate and graduate students. The topics include classification of planar dynamical systems, nonlinear dynamics, and equilibria, global nonlinear techniques, closed orbits and limit cycles. Calculus of Variations: first and second variations, symmetries, conservation laws and Noether's theorem, Hamiltonian formalism. Time permitting, other topics in Applied Analysis such as tensor calculus will be covered.

FORMAT: Lecture

PREREQUISITE: MATH 3120.03 or consent of instructor

CROSS-LISTING: MATH 5540.03

**MATH 4650.03: General Relativity.**

A review of differential geometry will be given followed by an introduction to the general theory of relativity. Various topics will be discussed, including: linearized theory and gravitational radiation, spherically symmetric metrics and the Schwarzschild solution, gravitational collapse, black holes, and cosmology.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3045.03 or permission of the instructor

CROSS-LISTING: MATH 5650.03, PHYC 4650.03/5650.03

**MATH 4660.03: Automata and Computability.**

See class description for CSCI 4112.03 in the Computer Science section of this calendar.

**MATH 4680.03: Topics in Logic and Computation.**

This course covers topics of current interest in logic and/or the foundations of computation. Suitable topics include: formal logic, soundness and completeness, Gödel's incompleteness theorem, formal set theory, the Zermelo-Fraenkel axioms, non-standard models, independence of axioms, lambda calculus and foundations of functional programming languages, proof theory, semantics.

NOTE: Please consult the instructor for the topics offered in a particular year. This course is suitable for advanced undergraduates and graduate students from both mathematics and computer science.

FORMAT: Seminar

PREREQUISITE: MATH 3030X/Y.06 or MATH 3500X/Y.06, or CSCI 3110.03 and CSCI 3136.03, or permission of the instructor.

Suggested prerequisites for math students are algebra or analysis at honours undergraduate level. Students from computer science should be familiar with formal language theory and concepts of programming languages. All students should be comfortable with writing mathematical proofs. When in doubt about prerequisites, please consult the instructor.

CROSS-LISTING: MATH 5680.03

### **MATH 4800.03: Introduction to Mathematical Research.**

This class is intended to introduce students to the science and methodology of research in the mathematical sciences. The class will be organized around topics from a wide spectrum of mathematics from which students will be guided to investigate open problems. Conjectures will be formulated and evidence will be developed.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2002.03, 2040.03 or 2135.03; MATH 3030X/Y.06 or permission of the instructor

CROSS-LISTING: MATH 5800.03, CSCI 4800.03

### **MATH 4900.03: Combinatorial Game Theory.**

This course looks at 2-player games of strategy where there are no chance devices and both players have perfect information. The surprising mathematical structure underlying these games will be introduced along with the evaluation scheme and its application to specific games in the classes of hot, all-small and impartial games.

PREREQUISITE: MATH 2030.03/2040.03, 2001.03/2002.03

CROSS-LISTING: MATH 5900.03

### **MATH 4950.03: Honours Research Project.**

A requirement for the mathematics honours degree, this course consists of a supervised research project culminating in a written report and an oral presentation in the honours seminar. Enrollment must be approved by the mathematics honours coordinator.

NOTE: Students will be required to take two full 4000-level classes in addition to this one.

### **MATH 8891.00: Co-op Work-Term I.**

PREREQUISITE: SCIE 2700.03

### **MATH 8892.00: Co-op Work-Term II.**

PREREQUISITE: MATH 8891.00

### **MATH 8893.00: Co-op Work-Term III.**

PREREQUISITE: MATH 8892.00

### **MATH 8894.00: Co-op Work-Term IV.**

PREREQUISITE: MATH 8893.00

## **Microbiology & Immunology**

Location: Sir Charles Tupper Medical Building  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3587  
Fax: (902) 494-5125

### **Dean**

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

### **Head of Department**

Marshall, J. S.

### **Undergraduate Advisors**

Barnes, C. (494-2123) cabarnes@dal.ca

Murray, L. (494-6933) lois.murray@dal.ca

Stoltz, D. (494-2590) dstoltz@dal.ca

### **Co-op Academic Advisor**

Stoltz, D. (494-2590) dstoltz@dal.ca

### **Professors**

Anderson, R., PhD (Cologne), (Viral Pathogenesis)

Duncan, R., PhD (Guelph) Graduate Studies Coordinator (Molecular Virology)

Forward, K. R., MD (Memorial), FRCP(C), Pathology (Antimicrobial Resistance; Clinical Diagnostic Microbiology)

Hoskin, D. W., PhD (McGill), (Tumour Immunology; Cancer Biology)

Issekutz, T. B., MD (Dalhousie), FRCP(C), Prof., Pediatrics (Lymphocytes in Autoimmune Disease)

Johnston, G. C., PhD (York), (Molecular Genetics: Regulation of Proliferation)

Lee, P. W. K., PhD (Alberta), (Molecular Virology; Cancer Biology)

Lee, S. F., PhD (Guelph) (Oral Microbiology; Microbial Pathogenesis, Mucosal Vaccines)

Lee, T., PhD (Glasgow) (Immunoregulation, Transplantation Immunology)

Lin, T. -J., PhD (Peking) (Mechanisms of Host Defense Against Pathogen Infection)

Marshall, J. S., PhD (Manchester) (Mast Cells in Inflammation and Cancer)

Richardson, C. D., PhD (British Columbia) (Molecular Virology)

Stadnyk, A. W., PhD (McMaster) (Intestinal Inflammation; Cytokines)

Stoltz, D. B., PhD (McMaster) (Biology of Parasitic Insects; Polydnnaviruses)

### **Associate Professors**

Barnes, C., BA, PhD (Dalhousie), Molecular Genetics)

Davidson, R. J., PhD (Manitoba) (Antimicrobial Mechanisms of Action and Resistance)

Faulkner, G., PhD (Dalhousie) (Ultrastructural Analysis of Infection)

Garduno, R., PhD (Victoria) (Intracellular Pathogens)

Haldane, D. J. M., MBChB (Dundee), FRCP(C) (Medical Microbiology)

Issekutz, A. C., MD (Dalhousie), FRCP(C), Prof., Pediatrics (Inflammation)

Johnston, B., PhD (Calgary) (Inflammation and Immune Response)

Li, Y. H., PhD (Manitoba) (Bacteriology and Molecular Biology)

### **Assistant Professors**

Hatchette, T. F., MD (Memorial), Pathology (Clinical Virology and Influenza)

McCormick, C., PhD (British Columbia) (Viral Oncology)

Rohde, J., PhD (British Columbia) (Bacterial Pathogenesis and Ubiquitin)

Thomas, N., PhD (Queen's) (Molecular Bacterial Pathogenesis)

Wang, J., PhD (McMaster) (Host Defense Mechanisms Against Infection and Cancer and Vaccine Development)

### **Senior Instructor**

Murray, L. E., PhD (Dalhousie) (Molecular Genetics)

## I. Introduction

The Department of Microbiology & Immunology is involved in teaching and research in several vital areas of biomedical endeavour including molecular and medical microbiology, virology, immunology and microbial genetics.

The program is designed to familiarize students with the biology and pathogenesis of viruses, bacteria, yeast and multicellular parasitic organisms. Advanced classes deal specifically with selected aspects of virology, molecular mechanisms of pathogenesis, microbial genetics, cell and molecular biology.

A set of classes in molecular genetics has been identified to meet the needs of honours Microbiology or Biochemistry students who hope to pursue further study in molecular and genetic approaches to fundamental problems. These classes provide solid grounding in bacterial and eukaryotic gene structure and function, regulation and evolution, and both practical and theoretical presentations of recombinant DNA methods (genetic engineering).

They can be taken along with classes in metabolism, enzymology, bacteriology, virology and immunology and provide a good practical grounding for fields as diverse as genetic diagnosis and gene therapy, forensics, industrial microbiology and molecular evolution (see below and the Biochemistry listings and consult departmental advisors).

The Department also has a significant teaching program in Cellular and Molecular Immunology. The Immunology program is designed for students interested in fundamental questions in molecular immunology, tumor immunology, autoimmunity or inflammation, and defences against microbial infection.

These programs provide the education needed for graduate studies or for professional activities after graduation in microbiology and/or immunology.

## II. Degree Programs

There are 20 Credit Major and Double Major programs in Microbiology & Immunology but no 15 credit degree is offered. MICI 2100.03 is a prerequisite for most other microbiology classes offered in this Department. Students interested in an Honours program (see below) must consult a departmental advisor, preferably prior to registration for second year classes. Biology Majors are advised that many classes in Microbiology & Immunology do count toward a BSc in Biology even though they are not cross-listed with the Biology Department.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

The Department wishes to draw the attention of students to the class, SCIE 1111.03, which fulfills the writing class requirement for BSc students. However, the "subject groupings" requirements must still be met. The subject groupings are normally satisfied within the first term credits.

### A. BSc (20 credit) Honours in Microbiology & Immunology

This program is designed to give students the best possible preparation for future graduate work or a professional career in microbiology or immunology. Students applying for admission to this program must normally have obtained a grade of B or better in first year BIOL and CHEM and/or an above median grade in DISP (Dalhousie Integrated Science Program). Students must consult an undergraduate advisor.

#### Departmental Requirements

##### 1000 level

- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- MATH 1000.03 or MATH 1215.03 and MATH 1010.03 or STAT 1060.03

##### 2000 level

- MICI 2100.03
- BIOL 2020.03
- BIOL 2030.03
- BIOC 2300.03 and 2610.03
- CHEM 2401.03 and CHEM 2402.03

##### 3000 level

- BIOC 3400.03

- MICI 3114.03
- MICI 3115.03
- MICI 3119.03

##### 4000 level

- MICI 4900.06
- One half credit from a fourth year level MICI class
- One half credit from any of the fourth year level classes listed below

A minimum of one and a half additional credits (to make a total of nine) are to be taken from the list provided below (the classes listed are all considered to belong to the discipline of microbiology and/or immunology):

- MICI 2115.03, 3024.03, 3620.03, 4027.03, 4033.03, 4100.03, 4114.03, 4115.03, 4116.03, 4118.03, 4218.03, 4302.03
- BIOC 4010.03, 4403.03, 4404.03, 4501.03, 4835.03
- BIOL 2004.03, 3101.03, 3102.03, 3322.03
- PSYO/NESC 3180.03
- FOSC 3080.03, BIOE 3241.03

Notes:

1. In the following core classes, MICI 2100.03, 3114.03, 3115.03, 3119.03 and MICI 4900.06 -- you must achieve a minimum grade of B in five and a minimum grade of B- in the sixth class.
2. The honours research thesis (MICI 4900.06) for Microbiology and Immunology Honours students will normally be done under the supervision of a Microbiology and Immunology faculty member (including joint and cross appointments). Microbiology and Immunology Honours students who wish to undertake their honours research project in another department will need to first have the project approved by the Undergraduate Studies Committee. Microbiology and Immunology and Biochemistry and Molecular Biology Combined Honours students may undertake honours research in the Microbiology and Immunology or Biochemistry and Molecular Biology Departments.
3. Students should also note that certain advanced classes require that a particular grade be achieved in the prerequisite class and/or that permission of the instructor be obtained for registration in the class, or both.
4. If you do not meet the prerequisites listed for a class (or fail to obtain permission from an instructor), the Registrar's Office will be informed and your name will be deleted from the class list.
5. If Banner lists two or more tutorial sessions, sign up for only one of them.

### B. BSc with Combined Honours in Microbiology & Immunology and Biochemistry & Molecular Biology

Students in this program must complete 11 credits above the 1000 level in Microbiology & Immunology and Biochemistry & Molecular Biology.

#### Departmental Classes Required at Upper Levels

- CHEM 2401.03 and 2402.03
- BIOC 2300.03 and 2610.03
- MICI 2100.03
- BIOL 2020.03, 2030.03
- BIOC 3300.03, 3400.03, 3700.03
- MICI 3114.03, 3115.03, 3119.03
- BIOC 4603.03
- one credit from BIOC 40XX, 43XX, 44XX, 45XX, or 47XX
- half credit from MICI 4XXX

Either MICI 4900.06 or BIOC 4604.03 and BIOC 4605.03 (either of which, with approval, can be carried out in either department).

### C. BSc Combined Honours in Microbiology & Immunology and Biology

Students in this program must complete the core requirements of each department. Students are required to maintain an average grade of B in core classes with no grade lower than B- (see note 1 above). BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 or BIOL 1001.06 should be taken in year 1, and MICI 2100.03 in year two. Research thesis work can be carried out in either Department, subject to approval of the Undergraduate Studies Committee.

## D. 20 Credit Major and Double Major in Microbiology & Immunology

Students should consult a departmental Undergraduate Studies Advisor.

### Departmental Core Classes Required

#### 1000 level

- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- MATH 1000.03 or MATH 1215.03 and MATH 1010.03 or STAT 1060.03

#### 2000 level

- MICI 2100.03, BIOL 2020.03, BIOL 2030.0, BIOC 2300.03, BIOC 2610.03, CHEM 2401.03 and CHEM 2402.03.

#### 3000 level

- BIOC 3400.03, MICI 3114.03, MICI 3115.03 and MICI 3119.03 with a grade of C- or better.

#### 4000 level

- One half credit from a MICI 4th year level class (i.e. from MICI 4027.03, 4033.03, 4100.03, 4114.03, 4115.03, 4116.03, 4118.03, 4218.03, 4302.03)

Students in a major degree program are required to have a total of 3.5 credits in the discipline beyond the 2000 level.

Students in a double major degree program require two credits beyond the 2000 level in each of the two disciplines.

#### Notes:

Students should be aware that certain advanced classes require a particular grade to be achieved in the prerequisite class and/or permission of the instructor to be obtained for registration in the class or both.

## E. Co-op Education in Microbiology & Immunology

Co-operative Education in Science (Science Co-op) is a program in which academic study is combined with career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students typically apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

See the "Co-operative Education in Science" section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information. Note that not all students who apply will be admitted; much will depend on predicted job availability. Admission into Microbiology & Immunology Co-op requires permission from the Microbiology & Immunology Co-op Academic Advisor and Science Co-op Director. In addition, a GPA of 3.30 in first year classes is required, as is a grade of at least B in MICI 2100.03. Students must also maintain a cumulative GPA of 3.30 for continuance in the program. Please consult with the Microbiology & Immunology Co-op Academic Advisor regarding possible work term sequences.

For further information, please visit the Co-op website at <http://www.sciencecoop.dal.ca>

Co-op Academic Advisor in Microbiology/Immunology:

Dr. Stoltz (494-2590) [dstoltz@dal.ca](mailto:dstoltz@dal.ca)

## F. Minors and Other Programs

For students wishing to pursue a minor in Microbiology & Immunology (this is for non-Microbiology & Immunology majors only), the basic requirement is three full credits in Microbiology & Immunology at or above the 2000 level; this must include MICI 2100. Also required, as pre-requisite classes: BIOL 2020 and 2030, BIOC 2300, and either CHEM 2401/2402 or CHEM 2441.

Students wishing to pursue a minor in another subject should consult with an academic advisor, and see the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 131, as well as the particular subject area of the Calendar.

## III. Class Descriptions

For more detailed information on the following classes please see the departmental webpage <http://microbiology.medicine.dal.ca>

NOTE: Owing to the combined pressures of student numbers and a dearth of available space, the names of students absent from the first day of class may be deleted from class lists; students are therefore advised that being signed into a class is no guarantee of continued registration.

### MICI 1050.03: Basic Microbiology and Immunology for Pharmacy.

This course is only for pharmacy students and involves problem based learning tutorials, lectures and laboratory sessions (demonstrations and exercises). Topics include: concepts of antibiotics and immunity, basic principles of microbial structure, physiology, and genetics in relation to microbial pathogenesis.

INSTRUCTOR(S): L. Murray

FORMAT: Lecture 3 hours, tutorial 6 hours. 3 weeks

PREREQUISITE: BIOL 1000X/Y.06 or (BIOL 1010 or BIOL 1020 and BIOL 1011 or BIOL 1021) or instructor's consent

### MICI 1100.03: Health Science Microbiology.

An introduction to microbiology and infectious diseases designed for healthcare professionals. It includes a study of the structure and physiology of microorganisms, the ways microorganisms cause disease in man and the way they affect man's well being.

NOTE: This class is also offered by distance education.

INSTRUCTOR(S): D. Haldane (L. Veinotte for distance education)

FORMAT: Lecture 3 hours

RESTRICTION: This class is restricted to students in 2nd Year Nursing; Kinesiology and Diagnostic Cytology.

### MICI 1200.03: Introduction to General and Oral Microbiology.

See class description in the Dental Hygiene section of the Dentistry, Law and Medicine Calendar (DEHY 2850.03).

### MICI 2100.03: Introductory Microbiology and Immunology.

An introduction to the basic concepts of microbiology and immunology. Topics include: structure, genetics and biology of microorganisms, basic immunology and host defence mechanisms. The course is designed to interrelate the major research themes within the Department (bacteriology and microbial pathogenesis, immunology, microbial and molecular genetics, virology and cancer biology).

NOTE: Students cannot enter this class after labs have commenced.

INSTRUCTOR(S): N. Thomas

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Grade of B or better in BIOL 1010.03 and 1011.03, CHEM 1011.03 and CHEM 1012.03

### MICI 2115.03: Human Organs and Tissues.

Using a histology approach, students look at how tissues and organs are constructed and function at the cellular level normally and in disease. The course does not cover all histology topics. Instead, the subject matter has been selected for its relevance and potential for complementing advanced courses in microbiology/immunology.

INSTRUCTOR(S): R. Garduno, J. F. Legare, R. Liwski, S. Pasternak, P. Marcato, K. West

FORMAT: Lecture 3 hours

PREREQUISITE: Grade of B or better in MICI 2100.03

### MICI 3024.03: Microscopy.

Biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. Topics include: physical and chemical principles governing technical procedures such as fixation, staining, freeze-fracture, immunocytochemistry, autoradiography, X-ray microanalysis and photography. During laboratory periods, students have the opportunity through individual projects to participate in some techniques covered in lectures.

INSTRUCTOR(S): G.T. Faulkner, R. Garduno, D. O'Neil, D. Stoltz, R. Garduno, P. Li

FORMAT: Lecture 3 hours, lab project

PREREQUISITE: A grade of B or better in MICI 2100.03 and BIOL 2020.03

CROSS-LISTING: BIOL 3024.03

**MICI 3114.03: Virology.**

Viruses play important roles in infectious diseases and cancer as well as in model systems for gene regulation, molecular evolution and gene therapy. Topics include: virus structure, assays, classification, gene organization and expression, host-cell interactions, cell transformation, gene therapy and molecular mechanisms of pathogenesis.

INSTRUCTOR(S): R. Anderson, R. Duncan, D.B. Stoltz

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: Includes all of MICI 2100.03, BIOC 2300.03 and BIOC 2610.03, BIOL 2020.03 and BIOL 2030.03 (a B average in these classes with a minimum B- in any one). BIOC 3400.03 must be taken either prior to or concurrently with this class; the same grade requirement applies.

**MICI 3115.03: Immunology.**

An introduction to cellular and molecular immunology. Topics include: cells and tissues of the immune system, the structure and synthesis of antibodies, complement pathways, lymphocyte subsets and their functions, hypersensitivity reactions, and the genetics of the immune response.

INSTRUCTOR(S): D.W. Hoskin, A. Stadnyk

FORMAT: Lecture 3 hours

PREREQUISITE: Includes all of MICI 2100.03, BIOC 2300.03 and BIOC 2610.03, BIOL 2020.03 and BIOL 2030.03 (a B average in these classes with a minimum B- in any one class)

**MICI 3119.03: Physiology of the Prokaryotic Cell.**

An introduction to the bacterial physiological processes required for interactions with other organisms and the environment. Topics include: molecular architecture and assembly of bacterial cell components, metabolism and energy production, utilization of energy, adaptation responses to host and environmental challenges, and host-pathogen interactions.

INSTRUCTOR(S): S. F. Lee, J. Rohde

PREREQUISITE: MICI 2100, BIOC 2300 and BIOC 2610, BIOL 2020 and 2030, (a B average in these classes with a minimum B- in any one).

**MICI 3620.03: Experiential Learning in Microbiology and Immunology.**

This lab-based class is designed to give students an introduction to general lab procedures, molecular and cell biological techniques in bacterial pathogenesis, cancer cell biology, immunology, molecular genetics or virology. In collaboration with the research supervisor and the course coordinator, students will draft a learning agreement specifying learning outcomes and how these will be achieved. NOTE: To register in this class students will need to find a research supervisor and receive approval from the Undergraduate Committee.

FORMAT: A minimum of 84 hours per term, normally to be carried out over 1 day per week for the term.

PREREQUISITE: Includes all of MICI 2100.03, BIOC 2300.03, BIOC 2610.03, BIOL 2020.03, BIOL 2030.03 (a B average in these classes with a minimum of a B- in any one).

EXCLUSION: The following may not be used towards MICI 3620: lab work that is part of another scheduled class, co-op workterms, and paid employment. Only one experiential learning course per degree is permitted. The class will normally be restricted to students registered in a Majors or Honours degree in Microbiology and Immunology; any other students interested should consult the course coordinator (C. Barnes); students may not take MICI 3620 concurrently with MICI 4900, MICI 4700, MICI 4901, MICI 4902, or a co-op work term.

**MICI 4027.03: Molecular Mechanisms of Cancer.**

This advanced course focuses on the molecular mechanisms of cancer and consists of lectures and student presentations based on review articles and current research papers. Topics include: receptors and downstream signaling, oncogenes and tumor suppressors, cancer metastasis and angiogenesis, cell cycle control, and apoptosis

INSTRUCTOR(S): P. Lee and D. Waisman

FORMAT: Lecture/student presentations/discussion

PREREQUISITE: Minimum grades of B+ in a 3000 level Microbiology, Pathology or Biochemistry class. Permission of instructor required.

CROSS-LISTING: MICI 5027.03/PATH 5027.03/BIOC 4027.03

**MICI 4033.03: Advanced Microbial Genetics.**

This advanced class focuses on select aspects on bacterial gene regulation including bacterial viruses. Topics include gene transfer, transposon biology, bacterial cell signaling, activators and repressors, molecular and chemical approaches to genetic analysis and regulation of bacterial gene expression.

INSTRUCTOR(S): J. Rohde and C. Barnes

FORMAT: Lecture 3 hours

PREREQUISITE: A grade of B- or better in MICI 3119.03 or instructor's consent is required.

**MICI 4100.03: Processes and Mediators of Inflammation.**

This advanced course focuses on the cellular and molecular mechanisms of inflammation and consists of lectures and student presentations based on review articles and current research papers. Topics include: inflammatory mediators and receptors, complement, steroids, tissue remodeling and transplant modulation. Current research questions and emerging treatments are emphasized.

INSTRUCTOR(S): B. Johnston

FORMAT: Lecture/presentation/discussion

PREREQUISITE: MICI 3115.03 with a grade of B+ or better and instructor's consent is required

CROSS-LISTING: MICI 5100.03, PATH 5100.03

**MICI 4114.03: Advanced Topics in Molecular and Medical Virology.**

This advanced course focuses on selected aspects of molecular and medical virology and consists of lectures and student presentations based on review articles and current research papers. Topics include: Hepatitis C virus and innate immunity, influenza virus pathogenesis, virus interactions with host cells, viruses as vectors for gene therapy and vaccines.

INSTRUCTOR(S): R. Duncan

FORMAT: Lecture/presentation/discussion 3 hours

PREREQUISITE: Students enrol in the Fall semester, but must attend the first class where final admittance is determined. Restricted enrollment based on performance in MICI 3114.03 (minimum B+).

CROSS-LISTING: MICI 5114.03

**MICI 4115.03: Immunology of Host Resistance.**

This advanced course focuses on mechanisms involved in the host immune response to pathogens and tumour cells and consists of lectures and student presentations based on review articles and current research papers. Topics also include: allergic inflammation and transplantation immunology.

INSTRUCTOR(S): J. Wang and Microbiology and Immunology faculty members

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: Minimum grade of B+ in MICI 3115.03 or instructor's consent

**MICI 4116.03: Current Topics in Mucosal Immunology.**

This advanced course focuses on the mucosal immune system, which maintains a state of tolerance to environmental antigens while mounting a strong immune response to infectious agents. The course consists of lectures and student presentations based on review articles and research papers. Topics include: immune mechanisms in the gastrointestinal tract and respiratory and genitourinary systems.

INSTRUCTOR(S): A. Stadnyk

PREREQUISITE: MICI 3115.03 with a grade of B+ or better or instructor's consent

CROSS-LISTING: MICI 5116.03

**MICI 4118.03: Molecular Bacterial Pathogenesis.**

This advanced course focuses on the molecular basis of bacterial pathogenesis and consists of lectures and student presentations based on landmark articles and current research papers. Topics include: the regulation of genes encoding virulence factors, the function of these factors in surface colonization, invasion, intracellular growth and toxin production.

INSTRUCTOR(S): R. Garduno

PREREQUISITE: MICI 3119.03

CROSS-LISTING: MICI 5118.03

**MICI 4218.: Clinical Bacteriology.**

This advanced course covers all aspects of clinical microbiology including bacteriology, virology, parasitology, mycology and molecular diagnostics. The emphasis will be placed on bacteriology. Topics include epidemiology and transmission, laboratory management and identification, antimicrobial testing and resistance, treatment and prevention of infectious diseases.

INSTRUCTOR(S): R. Davidson

FORMAT: Lecture

PREREQUISITE: A grade of B- or better in MICI 3119.03 or Instructor's consent.

EXCLUSION: MICI 3118

**MICI 4302.03: Molecular Immunology.**

This advanced course focuses on understanding the generation and expression of immune responses. Topics include: regulation of cytokines, antibody diversity by immunoglobulin gene rearrangement, course switching, structure/function of cell surface receptors including the T cell antigen receptor, MHC and adhesion molecules, receptor signaling and the genetics of immune regulation.

INSTRUCTOR(S): T.J. Lin

FORMAT: Lecture/student presentations/discussion

PREREQUISITE: MICI 3115.03 with a grade of B+ or instructor's consent

CROSS-LISTING: BIOL 4302.03/5302.03, MICI 5302.03

**MICI 4403.03: Genes and Genomes.**

See class description for BIOC 4403.03 in the Biochemistry and Molecular Biology section of this calendar.

CROSS-LISTING: BIOC 4403.03, BIOL 4010.03, BIOC 5403.03

**MICI 4404.03: Gene Expression.**

See class description for BIOC 4404.03 in the Biochemistry and Molecular Biology section of this calendar.

**MICI 4700X/Y.06: Directed Research Project.**

Students spend at least one day per week performing laboratory research in the lab of approved departmental faculty. This course is not for students in a regular BSc program. Approval is required from the departmental undergraduate committee.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Undergraduate Studies Committee

FORMAT: Lab 1 day per week

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will serve as a supervisor. At least a B average for MICI, 3114.03, 3115.03 and 3119.03 (or equivalent)

**MICI 4701.03: Advanced Topics in Microbiology and Immunology.**

This advanced course is an independent studies course that is not part of the regular BSc program. Approval is required from the departmental undergraduate committee.

INSTRUCTOR(S): Undergraduate Studies Committee

FORMAT: Independent study

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will supervise the independent study program.

**MICI 4702.03: Advanced Topics in Microbiology and Immunology.**

This advanced course is an independent studies course that is not part of the regular BSc program. Approval is required from the departmental undergraduate committee.

INSTRUCTOR(S): Undergraduate Studies Committee

FORMAT: Independent study

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will supervise the independent study program.

**MICI 4900X/Y.06: Honours Research and Thesis.**

This advanced course requires at least one day per week of laboratory research in the lab of approved departmental faculty. This course is for students in a MICI or combined MICI BSc Honour's program. Students must meet with the MICI Undergraduate Coordinator prior to registering for the course.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): Undergraduate Studies Coordinator

FORMAT: Lab 1 day per week

PREREQUISITE: Permission of the Undergraduate Studies Committee and a member of the Department who will serve as a supervisor.

**MICI 4901.03/4902.03: Honours Research and Thesis.**

See description for MICI 4900X/Y.06

**MICI 8891.00: Co-op Work Term I.****MICI 8892.00: Co-op Work Term II.****MICI 8893.00: Co-op Work Term III.****MICI 8894.00: Co-op Work Term IV (optional).****MICI 8895.00: Co-op Work Term V (optional).**

# Neuroscience

Location: Department of Psychology and Neuroscience  
Life Sciences Centre  
1355 Oxford Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3417  
Fax: (902) 494-6585  
Websites: [http://psychology.dal.ca/Programs/Neuroscience\\_program.php](http://psychology.dal.ca/Programs/Neuroscience_program.php)

## Dean

Moore, C.L., BA, PhD (Cantab)

## Program Advisors

To contact a program advisor, please go to the Psychology and Neuroscience Main Office (Life Sciences Centre, Room 3263), telephone (902) 494-3417, or visit the Psychology and Neuroscience website.

For a complete listing of faculty members in the Department of Psychology and Neuroscience, please see the Psychology Program section on page 571.

## I. Introduction

The last four decades have witnessed the emergence of a new, interdisciplinary field called Neuroscience. Its primary goal is the understanding of the brain. Neuroscience is a rapidly developing research area which includes all aspects of the structure and function of nervous systems. Neuroscience involves a variety of experimental strategies to understand nervous systems. These include molecular, biochemical, behavioural, anatomical, physiological, and developmental approaches. Although firmly grounded in the natural sciences, the scope of Neuroscience also encompasses fundamentally important philosophical issues, such as the nature of human thought and its mechanism. The programs outlined below represent all of these approaches, with an emphasis on behaviour as the adaptive product of neural activity. Knowledge obtained from research in Neuroscience is applied to a variety of human health problems, including Alzheimer disease, Parkinson disease, and a variety of drug- or injury-induced behavioural disorders. Research in Neuroscience is also contributing new information related to the major psychiatric disorders, including affective disorders and the schizophrenias.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BSc or BA (20 credit) Honours in Neuroscience

This program, which is offered through the Department of Psychology and Neuroscience, is intended to serve as a preparation for graduate work in Neuroscience, biological psychology, medicine, human communication disorders and related fields. Its interdisciplinary nature is reflected in the participation of faculty from several departments in the program.

#### Structure

In the first year of study, students are required to take classes which provide a firm grounding in the physical and biological sciences. In subsequent years, the program includes credits in classes drawn from Neuroscience, Psychology and Biology. These include a number of required core classes that emphasize the acquisition and application of laboratory skills.

It is recommended that students interested in taking an Honours degree in Neuroscience follow the class sequence specified for Honours students. They should consult with Dr. T. Perrot in January of their third year and complete a departmental Honours Application Form. Admission to Honours in January will require a grade of B or better in NESC 2007.03 and an A- average in the last six

completed Neuroscience half credits. Applications may be delayed until the end of the third year, in which case, a grade of B or better in NESC 2007.03 and an A- average in the last nine completed Neuroscience half credits will be required. Potential Honours students should try to locate a thesis advisor and begin laying the groundwork for their thesis research (e.g., background reading, acquiring laboratory methodology) as early as possible in their third year. The supervisor should be a member (or eligible for membership in) the Neuroscience Institute. A detailed description of the Honours application process may be found on the departmental website:

[http://psychology.dal.ca/Programs/Neuroscience\\_Program.php](http://psychology.dal.ca/Programs/Neuroscience_Program.php).

### Grade Requirements

All students wishing to take Psychology/Neuroscience classes numbered 2000 or above for which Introductory Psychology or Introductory Biology or DISP is a prerequisite must have a grade of B- in the required class(es) (PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27).

NOTE: PSYO 2501.03 (Statistical Methods I) does not fulfil any part of the Faculty of Science Mathematics requirement.

### Departmental Requirements

#### 1000 level

- MATH 1000.03 (preferred) or MATH 1215.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- Either PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03, or PHYC 1280.03/1290.03 or 1300X/Y.06
- Or in lieu of the above, SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27

Students are strongly recommended to take both PHYC 1280.03/1290.03 or PHYC 1300X/Y.06 and PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03 prior to finishing their degree.

#### 2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03
- Two half credits selected from: NESC 2130.03, 2140.03, 2150.03, 2160.03, 2170.03, BIOC 2300.03, BIOL 2030.03, PHYC 2250.03

#### 3000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- PSYO 3502.03
- Two additional half credits selected from NESC 3043.03, 3052.03, 3131.03, 3132.03, 3133.03, 3134.03, 3162.03, 3165.03, 3180.03, 3190.03, 3227.03, 3237.03, 3260.03, 3264.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOC 3200.03, BIOL 3020.03

#### 4000 level

- NESC 4500X/Y.06
- Two half credits selected from NESC 4000.03, 4007.03, 4050.03, 4070.03, 4130.03, 4160.03, 4170.03, 4177.03, 4185.03, 4230.03, 4374.03, 4376.03, 4740.03
- Two half credits from NESC 3000- or 4000-level classes
- Honours Qualifying Exam

### B. BSc or BA (20 credit) Combined Honours in Neuroscience

It is possible for students to take an Honours degree combining Neuroscience with another Science subject (other than Psychology) such as Biology or Biochemistry. Students proposing to take such a class of study must consult with an Honours advisor in both departments to arrange program details.

**If Neuroscience is chosen as the *primary* subject in a Combined Honours degree, the following classes are required.**

**1000 level**

- MATH 1000.03 (preferred) or MATH 1215.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- Either PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03, or PHYC 1280.03/1290.03 or 1300X/Y.06
- Or, in lieu of the above, SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 with a B- in the Psychology or Biology component

Students are strongly recommended to take both PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, and PHYC 1280.03/1290.03 or PHYC 1300X/Y.06 prior to finishing their degree.

**2000 level**

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03\*
- One half credit selected from: NESC 2130.03, 2140.03, 2150.03, 2160.03, 2170.03, BIOC 2300.03, BIOL 2030.03, PHYC 2250.03

**3000 level**

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- PSYO 3502.03
- At least one additional half credit selected from NESC 3043.03, 3052.03, 3131.03, 3132.03, 3133.03, 3134.03, 3162.03, 3165.03, 3180.03, 3190.03, 3227.03, 3237.03, 3260.03, 3264.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, BIOC 3200.03, BIOL 3020.03

**4000 level**

- NESC 4500X/Y.06
- Two half credits selected from NESC 4000.03, 4050.03, 4070.03, 4130.03, 4160.03, 4170.03, 4177.03, 4185.03, 4230.03, 4374.03, 4376.03, 4740.03
- Honours Qualifying Exam

If Neuroscience is chosen as the *secondary* subject in a Combined Honours degree, the following second and third-year classes are required.

**2000 level**

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03\*

**3000/4000 level**

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- One additional full credit (or two half credits) in Neuroscience classes at the 3000/4000 level

\* If students undertake another program of study that requires BIOL 2020.03, they should substitute another half-credit elective in a Neuroscience topic at the 2000 level for BIOL 2020.03.

**C. BSc or BA (20 credit) Major in Neuroscience**

This program is intended to provide a four-year survey of Neuroscience, and is designed for students not anticipating subsequent experimental graduate-level training in Neuroscience or related disciplines. The Major program thus differs from the Honours program in not having thesis (and related) requirements, and in having fewer credits of required Neuroscience classes in each of the second, third and fourth years.

**Grade Requirements**

All students wishing to take Psychology/Neuroscience classes numbered 2000 or above for which Introductory Psychology or Introductory Biology or DISP is a prerequisite must have a grade of B- in the required class(es) (PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27).

Note: For the BSc, a minimum of seven and a maximum of 10 (including four at or above the 3000 level) credits in the Major are required.

**Departmental Requirements****1000 level**

- MATH 1000.03 (preferred) or MATH 1215.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03
- Or, in lieu of the above, SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27

Students are strongly recommended to take PHYC 1280.03/1290.03 or PHYC 1300X/Y.06 prior to finishing their degree.

**2000 level**

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03
- Two half credits selected from: NESC 2130.03, 2140.03, 2150.03, 2160.03, 2170.03, BIOC 2300.03, BIOL 2030.03, PHYC 2250.03

**3000 /4000 level**

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- Two more half credits selected from NESC 3043.03, 3052.03, 3131.03, 3132.03, 3133.03, 3134.03, 3162.03, 3165.03, 3180.03, 3190.03, 3227.03, 3237.03, 3260.03, 3264.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, 4374.03, 4376.03
- Two additional full credits (or four half credits) in Neuroscience classes at the 3000/4000 level

Note: The following can be counted as NESC classes: BIOC 2300.03, 3200.03, BIOL 2030.03, 3020.03, PHYC 2250.03.

**D. BSc or BA (20 credit) Double Major in Neuroscience**

It is possible for students to take a degree combining a Major in Neuroscience with another subject (other than Psychology) such as Biology or Biochemistry.

If Neuroscience is chosen as the *primary* subject in a Double Major degree, the following classes are required.

**1000 level**

- MATH 1000.03 (preferred) or MATH 1215.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03
- Or, in lieu of the above, SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27

Students are strongly recommended to take PHYC 1280.03/1290.03 or PHYC 1300X/Y.06 prior to finishing their degree.

**2000 level**

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03\*

**3000/4000 level**

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- Two more half credits selected from NESC 3043.03, 3052.03, 3131.03, 3132.03, 3133.03, 3134.03, 3162.03, 3165.03, 3180.03, 3190.03, 3227.03, 3237.03, 3260.03, 3264.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, 4374.03, 4376.03
- One additional full credit (or two half credits) in Neuroscience classes at the 3000/4000 level



Note: The following can be counted as NESC classes: BIOC 2300.03, 3200.03, BIOL 2030.03, 3020.03, PHYC 2250.03.

If Neuroscience is chosen as the *secondary* subject in a Double Major degree, the following classes are required.

#### 1000 level

- MATH 1000.03 (preferred) or MATH 1215.03
- One other half credit in Mathematics (ideally, but not necessarily, MATH 1010.03)
- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03
- PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03
- Or, in lieu of the above, SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27

Students are strongly recommended to take PHYC 1280.03/1290.03 or PHYC 1300X/Y.06 prior to finishing their degree.

#### 2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03 (or STAT 2080.03)
- BIOL 2020.03\*

#### 3000/4000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3051.03, 3137.03, 3161.03, 3370.03, 3371.03, 3440.03, 3775.03
- One additional full credit (or two half credits) in Neuroscience classes at the 3000/4000 level

\* If students undertake, as part of a Double Major degree, another program of study that requires BIOL 2020.03, they should substitute another half-credit elective in a Neuroscience topic at the 2000 level for BIOL 2020.03.

### E. Neuroscience Minor

Students in a 20 credit degree programs other than Neuroscience and Psychology may choose to complete a Minor Program in Neuroscience. A Minor in Neuroscience is offered to students enrolled in other programs within the Faculty of Science and to students from other Faculties, provided they complete any three full credits in Neuroscience classes above the 1000 level other than NESC 2007.03 which is restricted to students in the Major or Honours program. Note that if a Minor is added to a Double Major or a Combined Honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements.

### F. Minor Programs available to students enrolled in a Major or Honours Neuroscience Program

Minor programs allow students to develop subject specialities outside their main subject of study. Minors are normally added to a four year (20 credit) Major or Honours program. A student enrolled in a Major or Honours Neuroscience program may enroll in any of the Minors offered by other programs in the Faculty of Science, or in Minors offered by other Faculties.

NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor program.

#### Minors in other Faculty of Science programs (see 5.a. page 135)

#### Minors offered by the Faculty of Arts and Social Sciences (see 5.a. page 135)

#### Minors in other Faculties (see 5.b. page 135)

### BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

### Diplomas, Certificates, and Language Proficiency Certificates

In combination with a BA or BSc there are certificates or diplomas that can be obtained to emphasize areas of proficiency. For a complete list and details refer to the College of Arts and Science Degree Requirements starting on page 131 of the calendar.

#### Certificate in Animal Behaviour

The Certificate program is a collaborative effort of both the Biology and the Psychology and Neuroscience departments. It provides students an opportunity to take, within their BA or BSc Honours or Major program, a set of classes and a research project that will accord them an animal behaviour specialization. Completion of the Certificate will be shown on a student's transcript.

Note: It is the responsibility of students in the Certificates Program to complete the class sequence specified, and to provide the Certificate Coordinator with confirmation that the necessary classes have been taken, by the end of the examination period in their final year of study.

#### Certificate requirements:

1. A minimum grade of a B- is required in four mandatory classes:  
NESC/PSYO 2160.03: Animal Behaviour  
PSYO 2501.03: Statistical Methods I or STAT 2080.03: Statistical Methods for Data Analysis and Inference  
BIOL 3062.03: Behavioural Ecology or PSYO/NESC 3162.03: Advanced Animal Behaviour Theories and Applications  
BIOL 3630.03: Field Methods in Animal Behaviour or NESC/PSYO 3161.03: Measuring Behaviour
2. A grade of B- in two full credits of elective classes chosen from the following list. One of the two full credits must be at the 3000/4000 level.

#### 2000 level

NESC/PSYO 2140.03: Learning  
NESC/PSYO 2170.03: Hormones and Behaviour  
NESC/PSYO 2470.03: Systems Neuroscience

#### 3000 level

BIOL 3327.03: Entomology  
BIOL 3622.03: Ornithology  
BIOL 3067.03: Ecology and Evolution of Fishes  
BIOL 3626.03: Field Studies of Marine Mammals  
NESC/PSYO 3000.06: Independent Research in Modern Psychology (Animal Behaviour topic)  
NESC/PSYO 3001.03: Directed Research Project in Psychology (Animal Behaviour topic)  
NESC/PSYO 3043.03: Neurobiology and Learning  
NESC/PSYO 3044.03: Laboratory Methods of Learning and Conditioning  
NESC/PSYO 3162.03: Advanced Animal Behaviour  
NESC/PSYO 3165.03: Neuroethology  
NESC/PSYO 3180.03: Psychoneuroimmunology/Ecological Immunology  
NESC/PSYO 3670.03: Genes, Brain and Behaviour

#### 4000 level

NESC/PSYO 4160.03: Topics in Behavioural Biology  
BIOL 4060.03: Marine Mammalogy  
BIOL 4800.06: Special Topics (Animal Behaviour topic)  
BIOL 4804.03, 4806.03, 4807.03: Special Topics (Animal Behaviour topic)

3. A grade of B- in one half credit or more of independent research in Animal Behaviour.

The research topic must be pre-approved by the Certificate Coordinator prior to the start of their research class (i.e., NESC/PSYO 3000.06, NESC/PSYO 3001.03, NESC/PSYO 4500.06, BIOL 4800.06, BIOL 4806.03, BIOL 4807.03, or BIOL 4900.06). Honours students are encouraged to complete their Honours thesis on a topic in Animal Behaviour to fulfill this requirement.

Students are also encouraged to further develop their study design and analysis skills by taking additional classes such as BIOL 4061.03 (Design of Biological Experiments) or BIOL 4062.03 (Analysis of Biological Data).

4. Enrollment in the Certificate in Animal Behaviour program should be undertaken by students in their third or fourth year of studies when they are seeking approval of the research topic by the Certificate Coordinator.

The Certificate Coordinator will be named by the Animal Behaviour Working Group (S. Adamo, S. Gadbois, A. Horn, M. Leonard, C. Staicer).

### III. Class Descriptions

In 2006/2007, the full-credit Introduction to Psychology classes were divided into two half-credit classes. PSYO 1000X/Y.06 became PSYO 1021.03 and 1022.03, and PSYO 1001X/Y.06 became PSYO 1011.03 and 1012.03. If a class now requires PSYO 1011.03 or 1021.03 and PSYO 1012.03 or 1022.03 as prerequisites, this requirement may also be met by either PSYO 1000.06 or PSYO 1001.06.

#### NESC 2007.03: Neuroscience Principles and Methods.

This class introduces methods used to investigate contemporary issues in Neurobiology. Characteristics of these methods, including their strengths and limitations, are presented conceptually in lectures, and then practically in the form of supervised laboratory experiments where students implement in the lab what they encountered first in lectures.

INSTRUCTOR(S): K.R. Duffy and S. Gadbois

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

EXCLUSION: PSYO 2000.03

#### NESC 2130.03: Introduction to Cognitive Psychology.

Lectures focus on the processes involved in transforming sensory information into the meaningful everyday world that we know. Initially, emphasis is on the visual system, and how information within that system is structured and organized, followed by a consideration of the character of internal representations used in thinking and remembering.

INSTRUCTOR(S): O. Krigolson

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 (with a grade of B- or better)

CROSS-LISTING: PSYO 2130.03

#### NESC 2140.03: Learning.

Lectures focus on several goals: (1) providing general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Emphasis is on understanding why researchers in animal learning do what they are currently doing (given the goals and the historical context).

INSTRUCTOR(S): V. LoLordo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 (with a grade of B- or better)

CROSS-LISTING: PSYO 2140.03

#### NESC 2150.03: Perceptual Processes.

Perception deals with the way in which our senses provide us with information about our environment. This class focuses on the process by which sensory experiences are coded, how they are interpreted by the nervous system, and how experience modifies perception.

INSTRUCTOR(S): N. Crowder

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2150.03

EXCLUSION: NESC/PSYO 3005.03

#### NESC 2160.03: Animal Behaviour.

Using concepts from behavioural biology and psychology, animal behaviourists attempt to explain why animals behave the way they do. The class examines topics such as mating and social systems, mate choice, the evolution of behaviour, and animal communication. The behaviour of a wide range of animals is studied.

INSTRUCTOR(S): S. Adamo or S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2160.03

#### NESC 2170.03: Hormones and Behaviour.

How chemical signals of the neural, endocrine, and immune systems interact to influence the brain and behaviour. How neurotransmitters, cytokines, and hormones control neural and behavioural development, sexual, aggressive, and maternal behaviour. Hormone receptors in the brain, reproduction, puberty, brain sex differences, and stress are also examined.

INSTRUCTOR(S): R.E. Brown

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2170.03

#### NESC 2470.03: Systems Neuroscience.

This class provides an introduction to the functional systems of the brain. We examine neural systems (e.g., the sensory systems, motor system, neurotransmitter-specific systems) individually. We explore their anatomy and function, neurobiological properties that make each unique, and factors that are common to all neural systems (e.g., development and plasticity).

INSTRUCTOR(S): D. Philips

FORMAT: Lecture 3 hours

PREREQUISITE: NESC/PSYO 2570.03 or instructor's consent

CROSS-LISTING: PSYO 2470.03

EXCLUSION: PSYO 2770.03

#### NESC 2570.03: Cellular Neuroscience.

This class explores the brain at the neuronal level. Material covered includes: the ionic basis of resting potentials; the electrical activity of neurons; synaptic transmission and plasticity; synthesis and action of synaptic transmitters; and drug actions. Cellular phenomena relevant to healthy and neurologically-dysfunctional systems are also discussed.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.27, 1540X/Y.27, or BIOL 1010.03/1011.03 or BIOL 1020.02/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2570.03, PHYL 2570.03

#### NESC 3000X/Y.06: Independent Research in Neuroscience.

Primarily for Honours students wishing research experience. Requirements include a minimum grade of B in NESC 2007.03 or PSYO 2000.03, a high level of performance in other Neuroscience classes, an overall B+ (GPA 3.30) average, and securing a faculty advisor to supervise the research project.

Note: This class cannot be used to fulfill the department's research laboratory requirement.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or NESC/PSYO 2470.03, PSYO 2501.03 or STAT 2080.03, and previous or concurrent enrolment in two other NESC/PSYO 3000-level classes, and Coordinator's consent.

CROSS-LISTING: PSYO 3000X/Y.06

EXCLUSION: NESC/PSYO 3001.03

#### NESC 3001.03: Directed Project in Neuroscience.

Primarily for Honours students wishing research experience. Requirements include a minimum grade of B in NESC 2007.03 or PSYO 2000.03, a high level of performance in other Neuroscience classes, an overall B+ (GPA 3.30) average, and securing a faculty advisor to supervise the research project.

Note: This class cannot be used to fulfill the department's research laboratory requirement.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

NOTE: This class provides only a half-year research experience. Students wanting a full-year research experience in a lab should register for NESC 3000X/Y.06

FORMAT: Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or NESC/PSYO 2470.03, PSYO 2501.03 or STAT 2080.03, and previous or concurrent enrolment in two other NESC/PSYO 3000-level classes, and Coordinator's consent.  
CROSS-LISTING: PSYO 3001.03  
EXCLUSION: NESC/PSYO 3000X/Y.06

### **NESC 3010X/Y.06: Advanced General Psychology.**

An active learning class for suitably-qualified senior students. Students complete a series of oral and written assignments designed to consolidate critical thinking and communication skills in Psychology/Neuroscience. After instructional training, assignments include preparing and delivering lab material to a small group (~30) of PSYO 1011.03 and 1012.03 students.  
SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): H. Schellinck

FORMAT: Lecture/Seminar 2 hours, Skills Lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, advanced classes in Psychology or Neuroscience, and instructor's consent.

CROSS-LISTING: PSYO 3010X/Y.06

### **NESC 3043.03: Neurobiology of Learning.**

This class examines the neurobiological processes underlying various forms of learning such as classical and operant conditioning, song learning by birds, spatial learning, and fear conditioning. Different methods used to study the neurobiology of learning, and the evolutionary origins of these systems are also considered.

INSTRUCTOR(S): L. Phillmore

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2140.03 or NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3043.03

### **NESC 3044.03: Laboratory Methods of Learning and Conditioning.**

A hands-on class on techniques used to test learning and memory in animals, including operant conditioning and spatial memory, and an exposure to the neurobiological systems involved. Students work in pairs to conduct a series of experiments, analyze data as a class, but write individual laboratory reports on each experiment.

NOTE: Students should be aware that some data collection occurs outside of class time.

INSTRUCTOR(S): L. Phillmore

FORMAT: Research Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and one of NESC/PSYO 2140.03 or NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3044.03

EXCLUSION: PSYO 3042.03

### **NESC 3051.03: Sensory Neuroscience I. Vision.**

This class examines the neural basis for the perception of light, colour, movement, depth, and form. The class covers developmental events important for vision, and the extent to which vision is constrained by anatomical and physiological development.

INSTRUCTOR(S): N. Crowder

FORMAT: Lecture 3 hours, Research Lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 2470.03 or PSYO 2770.03, and NESC/PSYO 2150.03

CROSS-LISTING: PSYO 3051.03

### **NESC 3052.03: Sensory Neuroscience II. Hearing and Speech.**

This class explores hearing at levels that include stimulus parameters and their psychophysical correlates, middle ear function, cochlear biophysics, central auditory neurophysiology, and principles of speech perception. We emphasize mechanisms of normal hearing and speech, but address pathology wherever it helps us understand the relation between neurophysiology and perception.

INSTRUCTOR(S): D.P. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03

CROSS-LISTING: PSYO 3052.03

### **NESC 3131.03: Research Methods in Attention.**

The methods, findings, and theories that underpin our understanding of attention (alertness, preparation, selection, and control of information processing) are

covered. Behavioural and neuroscientific evidence as well as computational models are examined in the lectures. Laboratories emphasize behavioural methods used to isolate and reveal the components of attention.

INSTRUCTOR(S): R. Klein

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and NESC/PSYO 2130.03 or NESC/PSYO 2150.03

CROSS-LISTING: PSYO 3131.03

EXCLUSION: NESC/PSYO 3130.06

### **NESC 3132.03: Research Methods in Visual Cognition.**

Visual cognition is the study of how we extract meaning from our visual environment and use it to direct our behaviour. Emphasis is placed on object, face, and word recognition as revealed by normal behaviour, and by neuroimaging techniques and neuropsychological studies of brain-damaged individuals who have lost these recognition abilities.

INSTRUCTOR(S): P. McMullen

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and NESC/PSYO 2130.03 or NESC/PSYO 2150.03

CROSS-LISTING: PSYO 3132.03

EXCLUSION: NESC/PSYO 3130.06

### **NESC 3133.03: Research Methods in Memory.**

This class examines human memory from the perspective of cognitive psychology and, to a lesser extent, cognitive neuroscience. Lectures emphasize cognitive approaches to the study of memory with an explicit focus on empirical research methods, data, and interpretation of results.

INSTRUCTOR(S): T. Taylor-Helmick

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and NESC/PSYO 2130.03

CROSS-LISTING: PSYO 3133.03

EXCLUSION: NESC/PSYO 3130.06

### **NESC 3134.03: Research Methods in Psycholinguistics.**

Provides hands-on experience with various methodologies employed in the study of language processing, and uses these to explore topics in psycholinguistics in greater depth. Methods covered may include reaction time, priming, self-paced reading, computational modeling, corpus-based research, and event-related brain potentials. Students serve as experimenters and participants in class experiments.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and NESC/PSYO 3190.03

CROSS-LISTING: PSYO 3134.03

EXCLUSION: NESC/PSYO 3130.06

### **NESC 3137.03: Research Methods in Cognitive Neuroscience.**

An overview of neuroimaging and other techniques of cognitive neuroscience (including fMRI, ERP, and others) focusing on how they work, how they are applied, and their inherent limitations. Labs include experience collecting and analyzing ERP data, demonstrations of fMRI scanning, and analysis of fMRI data.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and NESC/PSYO 2130.03

CROSS-LISTING: PSYO 3137.03

### **NESC 3161.03: Measuring Behaviour.**

Measuring behaviour is essential in the study of ethology, behavioural neuroscience, developmental, social and clinical psychology. The function of this laboratory class is to teach methods of observing and scoring behavior using qualitative and quantitative methods. Sampling methods, behavior description and analysis will be done in laboratory and naturalistic settings.

INSTRUCTOR(S): R. E. Brown

FORMAT: Research Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03

CROSS-LISTING: PSYO 3161.03

### NESC 3162.03: Advanced Animal Behaviour: Theories and Applications.

This class focuses on advanced theories and applications of animal behaviour, with a focus on proximate, integrative and applied questions. It offers a more in-depth analysis of topics covered in NESC/PSYO 2160.03 and explores trends and issues in contemporary ethology, animal psychology and behavioural ecology.

INSTRUCTOR(S): S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007 or BIOL 3062.03 or BIOL 3630.03, and NESC/PSYO 2160.03

CROSS-LISTING: PSYO 3162.03

### NESC 3165.03: Neuroethology.

Neuroethology explores how assemblies of neurons work together to produce behaviour. Neural control of selected behaviours from a wide range of animals, both invertebrate and vertebrate, are examined. From this comparative perspective an attempt is made to tease out common themes in the physiological control of behaviour.

NOTE: All experiments in the accompanying lab involve insects. Students are required to handle insects during the lab.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 2 hours, Research Lab 2 hours

PREREQUISITE: NESC/PSYO 2160.03 or BIOL 3062.03; and NESC/PSYO 2570.03 or BIOL 3078.03 and BIOL 3079.03 or MARI 3074.03 and MARI 3076.03; and PSYO 2000.03 or NESC 2007.03 or one of following Biology classes: 2003.03, 2004.03, 2020.03, 2030.03, 2060.03

CROSS-LISTING: PSYO 3165.03

### NESC 3180.03: Psychoneuroimmunology/Ecological Immunology.

Our behaviour can influence how well we resist disease, and infection can alter behaviour. This class examines how immune systems and nervous systems interact in both vertebrates and invertebrates. Evolutionary forces that have led to the existence of these interactions are also examined.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either NESC/PSYO 2470.03 or PSYO 2770.03 or MICI 2100.03; OR BIOL 2020.03

CROSS-LISTING: PSYO 3180.03

### NESC 3190.03: Psycholinguistics.

Explores the cognitive and neural bases of human language processing. Topics include: human language and other communication systems; phonology; morphology; semantics; syntax; discourse; first and second language acquisition; relationship of language to general cognitive functions such as music and mathematics; signed languages such as American Sign Language, and non-linguistic gesture.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2130.03

CROSS-LISTING: PSYO 3190.03

EXCLUSION: NESC/PSYO 2190.03

### NESC 3227.03: Principles of Human Neuropsychology.

Clinical neuropsychologists study the organization of cognitive, emotional, and social functions in the brain to understand how brain damage alters human behaviour across the lifespan. We examine how clinicians diagnose and rehabilitate persons with brain diseases and disorders. Assignments emphasize application of textbook/lecture-based knowledge, critical thinking, and group presentation skills.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03 or PSYO 2770.03; NESC/PSYO 2130.03 is helpful

CROSS-LISTING: PSYO 3227.03

### NESC 3237.03: Drugs and Behaviour.

An introduction to behavioural psychopharmacology. The lectures involve basic anatomy, physiology, and chemistry of the nervous system. Behavioural effects and underlying mechanisms of various psychoactive drugs are discussed. Specific topics covered are alcohol, tobacco, amphetamines, cocaine, opiates, hallucinogens, tranquilizers, and antipsychotic drugs.

INSTRUCTOR(S): S. Barrett

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2170.03, 2470.03, 2570.03, or PSYO 2770.03

CROSS-LISTING: PSYO 3237.03

### NESC 3260.03: Biological Rhythms.

Daily (circadian) clocks generate rhythms in many functions, including sleep, reproduction, and intellectual performance. This class examines the nature of these biological clocks, their neural mechanisms, and their roles in regulating sleep and other aspects of physiology and in pathological conditions, including sleep disorders, jet lag, and psychiatric disorders.

INSTRUCTOR(S): B. Rusak

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, and either NESC/PSYO 2170.03 or NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3260.03

### NESC 3264.03: The Science of Sleep.

This class reviews: how sleep is studied; sleep characteristics across the lifespan and among species; cultural and societal impacts on human sleep; circadian, homeostatic, neural and endocrine mechanisms that regulate sleep; functions of sleep; impacts of sleep loss. Sleep disorders may be discussed to illuminate aspects of sleep regulation.

INSTRUCTOR(S): B. Rusak

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either NESC/PSYO 2470.03 or PSYO 2770.03; OR BIOL 2020.03

CROSS-LISTING: PSYO 3264.03

### NESC 3270.03: Developmental Neuroscience.

This class presents the fundamentals of development in complex and simple nervous systems. Cell differentiation, pattern regulation, proliferation, migration, and circuit development are discussed. Special attention is given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-target interactions, and synapse formation.

INSTRUCTOR(S): K. Duffy

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 2470.03 and NESC/PSYO 2570.03

CROSS-LISTING: PSYO 3270.03

### NESC 3370.03: Neuroscience Laboratory I.

Introduction to several neurophysiological techniques used in contemporary neuroscience, employing extracellular and intracellular electrical recording and stimulation methods on nervous system preparations, both sensory and motor. After introductory instruction, students in groups of 2 or 3 get to perform quite sophisticated practical experiments themselves, enabled by computer-based data acquisition.

INSTRUCTOR(S): Staff

FORMAT: Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 2470.03 and 2570.03, or NESC/PSYO 3270.03

CROSS-LISTING: PSYO 3370.03

### NESC 3371.03: Neuroscience Laboratory II.

Introduction to several techniques used in contemporary neuroscience. Students work under supervision in groups of 2 or 3 in regular labs that introduce neuroanatomical analyses using the following: Golgi impregnation, immunocytochemistry, dye-tracing of connections, electronmicroscopy of the retina, and neurotransmitter determinations using HPLC.

INSTRUCTOR(S): I. Meinerzhagen

FORMAT: Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, NESC/PSYO 2470.03 and 2570.03, or NESC/PSYO 3270.03

CROSS-LISTING: PSYO 3371.03

### NESC 3440.03: Neuroanatomy.

This is a survey of the structure and function of the human central nervous system (CNS, the brain and spinal cord). The laboratory component provides the opportunity to dissect the human brain and to study the microscopic anatomy of the CNS. This course provides the lecture and laboratory component for the graduate class ANAT 5100 Human Neuroanatomy.

ORGANIZER: W. Baldrige

INSTRUCTOR(S): Members of the Department of Anatomy & Neurobiology

FORMAT: Lecture/lab 3 hours per week  
 PREREQUISITE: BIOL 2020.03 or permission of the instructor

### NESC 3670.03: Genes, Brain and Behaviour.

The application of genetic techniques to the study of cognitive abilities, psychopathology, personality disorders, stress-related illnesses, and ethical issues in genetic research. The role of genetic factors in eating and drug abuse problems, as well as methods used to study gene-environment interactions are explored.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: NESC/PSYO 2470.03 or PSYO 2770.03, AND BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 or SCIE 1515X/Y.36, 1520X/Y.30, or 1540.27 (with a grade of B or better); BIOL 2020.03 and BIOL 2030.03 are useful

CROSS-LISTING: PSYO 3670.03

EXCLUSION: NESC/PSYO 2670.03

### NESC 3770.03: Behavioural Neuroscience.

Behavioural neuroscience explores the neural and hormonal mechanisms underlying a variety of behavioural phenomena. The class focuses on neural correlates of social and emotional behaviour, motor behaviour and patterns, and behavioural toxicology processes (neurotoxins and endocrine disruptors).

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3770.03

### NESC 3775.03: Behavioural Neuroscience Laboratory.

Students motivated to pursue a career in Neuroscience, or in a related biomedical discipline, gain direct experience studying the nervous system in relation to behaviour. Students acquire skills in animal handling, ethics, and measuring behaviour. Emphasis is placed on histological/molecular analysis of the brain including examining protein and/or mRNA levels.

SIGNATURE REQUIRED

INSTRUCTOR(S): T. Perrot

FORMAT: Research Lab 3+ hours

PREREQUISITE: PSYO 2000.03 or NESC 2007, NESC/PSYO 2470.03 or PSYO 2770.03, PSYO 2501.03, and one of NESC/PSYO 2160.03 or NESC/PSYO 2170.03 or NESC/PSYO 3237.03 or NESC/PSYO 3770, and instructor's consent

CROSS-LISTING: PSYO 3775.03

### NESC 3790.03: Neurolinguistics.

The class covers: (1) brain damage and language disorders; (2) aphasia; (3) localization of lesions in the human brain; (4) neuroimaging; (5) intracranial electric stimulation experiments; (6) event-related brain potential experiments; (7) PET, fNMR scan experiments; (8) neural models of language processing.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3790.03

### NESC 3970.03: Molecular Neuroscience.

This class examines the development, function, and pathology of the brain at the molecular level. Model systems are examined from the perspective of ion channels, messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The concepts underlying basic cellular and molecular neuroscience tools are emphasized.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: NESC/PSYO 2570.03

CROSS-LISTING: PSYO 3970.03

### 4000-level Seminars

The following seminars are intended for fourth-year Honours students. Third-year Honours students are eligible provided they obtain permission from the instructor, and the needs of all the fourth-year Honours students have been met. The topics covered in these classes vary from year to year. Go to the departmental website (<http://psychology.dal.ca/>) for more detail about the topics to be covered in the current academic year.

### NESC 4000.03: Senior Seminar.

An individually tailored reading or study class designed to allow Honours students to focus on a particular issue, or a set of related issues, that are not part of the

regular program. Enrolment is contingent upon securing a faculty member to supervise the study program.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4000.03

### NESC 4007.03: Contemporary Issues in Neuroscience.

This is a seminar class that focuses on a significant theme or topic in the research literature in Neuroscience. Topics vary from year to year. Consult the department for the details about class content.

SIGNATURE REQUIRED

INSTRUCTOR(S): N. Crowder

FORMAT: Seminar 2 hours

PREREQUISITE: NESC Honours student, permission of the instructor.

### NESC 4050.03: Topics in Perception.

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

PREREQUISITE: NESC/PSYO 3051.03 or instructor's consent

CROSS-LISTING: PSYO 4050.03

### NESC 4070.03: Chemical Neurobiology.

The goal is to acquaint the student with neurotransmitters (excitatory amino acids, acetylcholine, monoamines, neuropeptides). Anatomical, biochemical, physiological, pharmacological, behavioral, and clinical aspects of individual neurotransmitter systems are discussed. Lectures are given by the instructors. Students are expected to write an examination and a review, and give a presentation.

INSTRUCTOR(S): K. Semba

FORMAT: Seminar 2 hours

PREREQUISITE: NESC/PSYO 2470.03 and 2570.03, or NESC/PSYO 3270.03, or instructor's consent

CROSS-LISTING: PSYO 4070.03, ANAT 5070.03

### NESC 4130.03: Topics in Human Information Processing.

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4130.03

### NESC 4160.03: Topics in Behavioural Biology.

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4160.03

### NESC 4170.03: Topics in Behavioural Neuroendocrinology.

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4170.03

RESTRICTION: Restricted to NESC/PSYO Honours Students

### NESC 4177.03: Theoretical Neuroscience.

An introduction to basic concepts and research questions in computational neuroscience. This includes cellular mechanisms such as spike generation and synaptic plasticity, network-level concepts such as perceptrons and associative attractor networks, and system-level concepts such as memory, learning and anticipation. This class includes an introduction to MATLAB programming.

NOTE: SIGNATURE REQUIRED

INSTRUCTOR(S): T. Trappenberg

FORMAT: Seminar

PREREQUISITE: Intended for third- or fourth-year Neuroscience students.

### NESC 4185.03: Current Advances in Synaptic Function and Plasticity.

Key recent research studies in cellular and system neurophysiology are presented and critically discussed. Emphasis is placed on plasticity, synaptic function, excitability, dendritic integration, neural networks and relevant advances in experimental methods. Newly published papers within these areas are reviewed weekly, followed by a more extensive critique of two publications.

INSTRUCTOR(S): S. Krueger and A. Fine

FORMAT: Seminar 2 hours

PREREQUISITE: NESC 2570/PHYL 2570 or permission of course instructors  
CROSS-LISTING: PHYL 4000.03

### **NESC 4230.03: Human Performance Topics.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4230.03

### **NESC 4374.03: Introduction to Pharmacology I.**

This introductory class is designed to acquaint students with the actions of drugs on physiological and biochemical functions in mammals including humans. Factors which affect the blood levels of drugs (absorption, distribution, metabolism, and elimination) will be considered, together with the mechanisms by which drugs act and their potential uses. The interaction of drugs with various body systems will be covered, including the central and peripheral nervous systems and the cardiovascular system. Drugs that assist or regulate host defence mechanisms will also be studied.

COORDINATOR: M.E.M. Kelly

FORMAT: Lecture 3 hours

PREREQUISITE: A previous course in physiology and biochemistry is recommended. Extra reading may be required for students without these courses.

CROSS-LISTING: PHAC 5406.03, BIOC 4804.03, and BIOL 4404.03

### **NESC 4376.03: Introduction to Pharmacology II.**

This class is intended to cover specific aspects of drug action not covered in NESC 4374.03. The class includes: drug receptor signaling, ion channels, second messengers, G-proteins and immunopharmacology, plus specific consideration of drugs used for pain, inflammation, cancer, diabetes, and asthma.

COORDINATOR: D. Dupre

FORMAT: Lecture 3 hours

PREREQUISITE: NESC 4374.03 (with a grade of B or better)

CROSS-LISTING: PHAC 5409.03, BIOC 4806.03, and BIOL 4407.03

### **NESC 4500X/Y.06: Honours Thesis.**

Under a staff member's supervision, each student conducts original research in experimental neuroscience. Students meet to describe their proposed research and progress. A formal written report of the completed research is required. The final grade is based on originality and skill with emphasis on the written and oral reports.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): T. Perrot, P. McMullen

PREREQUISITE: Fourth-year Honours students, and instructor's consent

CROSS-LISTING: PSYO 4500X/Y.06

RESTRICTION: Restricted to Honours students in their graduating year

### **NESC 4740.03: Topics in the Neurobiology of Learning and Memory.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

PREREQUISITE: NESC/PSYO 2470.03, NESC/PSYO 2140.03

CROSS-LISTING: PSYO 4740.03

## **Ocean Sciences**

\* Pending MPHEC approval.

See Oceanography for contact information and a list of faculty.

### **I. Introduction**

Ocean Sciences includes study of the physics, biology, geology, chemistry, and meteorology of the marine environment. Topic areas include ocean currents, waves, tides, marine sediments, oceanic crustal structure, nutrient cycling, acoustics, ocean-atmosphere coupling, biological production, and seawater properties, among others. Students enrolled in the Ocean Sciences program will be educated in the core oceanographic sub-disciplines of physical, geological, chemical, and biological oceanography, while also being exposed to issues in marine policy, law, and management. Graduates of the Ocean Sciences program will have gained an appreciation of the interdisciplinary and collaborative approaches often required to arrive at meaningful solutions to environmental problems relating to the oceans. They will have developed strong quantitative and practical skills, as well as a breadth of knowledge across ocean science disciplines. Ocean scientists are employed in research laboratories, universities, government agencies, and private industry. Career paths include environmental prediction, environmental monitoring and assessment, marine technology, marine surveying, marine resource use and extraction, and marine conservation.

### **II. Degree Programs**

The Department of Oceanography offers a number of degree programs in Ocean Sciences, including Major, Double Major, Concentrated Honours, Combined Honours, and Minor options. In addition to the departmental requirements detailed below, students must satisfy the degree requirements of the College of Arts and Science (outlined in the College of Arts and Science section of this calendar).

#### **A. BSc (20 credit) Major in Ocean Sciences**

##### **Departmental Requirements**

###### **1000 level**

- PHYC 1280.03/1290.03 or PHYC 1300.06
- MATH 1000.03/1010.03
- STAT 1060.03
- Any two of the following three course sequences: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03

OR

- One of: SCIE 1515.36, SCIE 1520.30, 1530.27

OR

- SCIE 1540.27
- MATH 1010.03
- PHYC 1320.03

###### **2000 level**

- OCEA 2000.06 or OCEA 2001.03/2002.03
- OCEA 2020.03/2021.03

###### **3000 and 4000 level**

- OCEA 3003.03
- A minimum of one credit from each of three Ocean Science Areas (three credits total). See IV. Ocean Science Areas.
- OCEA 4000.03
- OCEA 4401.03/4402.03

#### **B. BSc (20 credit) Double Major in Ocean Sciences**

##### **Departmental Requirements**

Same as for 20-credit BSc Major in Ocean Sciences.

## C. BSc (20 credit) Concentrated Honours in Ocean Sciences

### Departmental Requirements

#### 1000 level

- PHYC 1280.03/1290.03 or PHYC 1300.06
- MATH 1000.03/1010.03
- STAT 1060.03
- Any two of the following three course sequences: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03

OR

- One of: SCIE 1515.36, SCIE 1520.30, 1530.27

OR

- SCIE 1540.27
- MATH 1010.03
- PHYC 1320.03

A “B+” average (3.7) must be attained in the following 2000-, 3000- and 4000-classes. Additionally, a “B” (3.0) must be attained in the required 2000 classes.

#### 2000 level

- OCEA 2000.06 or OCEA 2001.03/2002.03
- OCEA 2020.03/2021.03

#### 3000 and 4000 level

- OCEA 3003.03
- A minimum of one credit from each of three Ocean Science Areas (three credits total). See IV. Ocean Science Areas.
- One additional credit from the Ocean Science Areas. See IV. Ocean Science Areas.
- OCEA 3001.03 or OCEA 4120.03 must be included in one of the preceding two requirements.
- OCEA 4000.03
- OCEA 4401.03/4402.03
- OCEA 4200.06
- Honours Qualifying exam (graded as Pass/Fail) based on participation in OCEA 4200.06

## D. BSc (20 credit) Combined Honours in Ocean Sciences (A) and another subject (B)

### Departmental Requirements

#### 1000 level

- PHYC 1280.03/1290.03 or PHYC 1300.06
- MATH 1000.03/1010.03
- STAT 1060.03
- Any two of the following three course sequences: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03

OR

- One of: SCIE 1515.36, SCIE 1520.30, 1530.27

OR

- SCIE 1540.27
- MATH 1010.03
- PHYC 1320.03

A “B+” average (3.7) must be attained in the following 2000-, 3000- and 4000-classes. Additionally, a “B” (3.0) must be attained in the required 2000 classes.

#### 2000 level

- OCEA 2000.06 or OCEA 2001.03/2002.03
- OCEA 2020.03/2021.03

#### 3000 and 4000 level

- OCEA 3003.03
- OCEA 3001.03 or OCEA 4120.03
- One credit chosen from: OCEA 3002.03, OCEA 4110.03, OCEA 4140.03
- One and one-half (1.5) additional credits from the Ocean Science Areas. See IV. Ocean Science Areas.
- OCEA 4000.03
- OCEA 4401.03/4402.03
- OCEA 4200.06
- Honours Qualifying exam (graded as Pass/Fail) based on participation in OCEA 4200.06

## E. BSc (20 credit) Combined Honours in a subject (A) and Ocean Sciences (B)

### Departmental Requirements

#### 2000 level

- OCEA 2000.06 or OCEA 2001.03/2002.03
- OCEA 2020.03/2021.03

#### 3000 and 4000 level

- OCEA 3003.03
- A minimum of one credit from each of three Ocean Science Areas (three credits total). See IV. Ocean Science Areas.
- OCEA 4000.03

## F. Minor programs in Ocean Sciences

Students enrolled in a 20-credit degree program other than Ocean Sciences or students enrolled in a 15-credit degree program may choose to complete a Minor in Ocean Sciences.

To obtain a Minor in Ocean Sciences, a student must successfully complete three full credits in Ocean Sciences (OCEA) classes at or above the 2000 level.

## G. Minor programs available to students enrolled in a Major or Honours Ocean Sciences program

Minor programs allow students to develop subject specialities outside their main subject of study. A student enrolled in a Major or Honours Ocean Sciences program may enroll in any of the Minors offered by the university.

NOTE: Classes counted toward a 20-credit Major or Honours program may not be used to fulfill the requirements of a Minor program.

- G.1. Minors in other Faculty of Science programs
- G.2. Minors in the Faculty of Arts and Social Sciences
- G.3. Minors in other faculties

## H. BSc (20 credit) in Environmental Science: Oceans and Global Change

See Environmental Science Programs.

### I. Certificate programs

In combination with a BA or BSc, there are certificates that can be obtained to emphasize areas of proficiency. For a complete list of offerings refer to Certificate Programs in the College of Arts and Science section of the calendar.

## III. Ocean Science Areas

NOTE: Classes marked with an asterisk\* are required in that area.

### A. Physical Oceanography

OCEA 3001.03 and/or OCEA 4120.03\*, OCEA 4210.03, OCEA 4220.03, OCEA 4222.03, OCEA 4311.03, OCEA 4411.03, OCEA 4412.03, OCEA 4505.03, OCEA 4520.03, OCEA 4541.03, OCEA 4550.03

### B. Biological Oceanography

OCEA 4140.03\*, OCEA 4160.03, OCEA 4230.03, OCEA 4330.03, OCEA 4335.03, OCEA 4370.03, OCEA 4380.03

### C. Chemical Oceanography

OCEA 3002.03\*, OCEA 3420.03 (NOTE: this class may fulfill a half-credit requirement in either this Ocean Science Area or the Geological Oceanography Ocean Science Area, but not both), OCEA 4130.03, OCEA 4595.03

### D. Geological Oceanography

OCEA 3004.03, OCEA 3420.03 (NOTE: this class may fulfill a half-credit requirement in either this Ocean Science Area or the Chemical Oceanography Ocean Science Area, but not both), OCEA 4110.03\*, OCEA 4115.03, OCEA 4470.03, OCEA 4480.03

See Oceanography section for class descriptions.

# Oceanography

Location: Life Sciences Centre  
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Fax: (902) 494-3877  
Email: Oceanography@Dal.ca  
Website: <http://www.dal.ca/oceanography>

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## Chairperson of Department

Lewis, M. R. (494-1435)

## Undergraduate Advisor

Metaxas, A. (494-3021)

## Graduate Studies Coordinator

Kelley, D. (494-1694)

## Professors Emeriti

Bowen, A. J., MA (Cantab), PhD (Scripps), FRSC  
Fournier, R. O., MSc (Wm. & Mary), PhD (URI)  
Mills, E., BSc (CARL), MS, PhD (Yale), FLS

## Professors

Beaumont, C., BSc (Sussex), PhD (Dalhousie), Canada Research Chair  
Boudreau, B. P., BSc (UNB), MS (Texas A & M), PhD (Yale), FRSC Killam  
Professor & Dean of Graduate Studies  
Cullen, J., AB (Calif), PhD (Scripps), (NSERC/Atlantic Research Chair) (Killam  
Chair in Ocean Studies)  
Grant, J., BSc (Duke), PhD (South Carolina)  
Hay, A., BSc, MSc (Western), PhD (UBC)  
Hill, P. S., AB (Dartmouth), MSc, PhD (Wash)  
Kelley, D., BSc (Mt. A), PhD (Dalhousie)  
Lewis, M. R., BS, MS (UMd), PhD (Dalhousie)  
Louden, K. E., BA (Oberlin), MEd (Temple), PhD (MIT)  
Metaxas, A., BSc (McGill), MSc (UBC), PhD (Dalhousie) (NSERC UFA)  
Moore, R. M., BA (Oxon), PhD (Southampton)  
Ruddick, B. R., BSc (UVic), PhD (MIT)  
Sheng, J., BSc (East China Tech. Univ.), MSc, PhD (MUN) (LRET Chair)  
Taggart, C. T., BSc (Carleton), MSc (York), PhD (McGill)  
Thomas, H., MSc (Düsseldorf), PhD (Rostock)  
Thompson, K. R., BSc, MSc (UManc), PhD (Liv) (jointly with Mathematics and  
Statistics), Canada Research Chair  
Wallace, D. W., BSc (U of East Anglia), PhD (Dalhousie), Canada Excellence  
Research Chair (CERC)

## Associate Professors

Fennel, K., MSc, PhD (Rostock), Canada Research Chair  
Folkins, I., BSc (Dalhousie), MSc, PhD (Toronto) (cross appointment with  
Department of Physics and Atmospheric Science)  
Kienast, M., BSc (Clausthal), MSc (Kiel), PhD (UBC) (CIFAR Scholar)  
Ross, T., BSc, PhD (Manitoba) (NSERC UFA)

## Assistant Professor

Engleman, W. C., BEng (McGill), PhD (Dartmouth) (cross appointment with  
Engineering Mathematics)

## Adjunct Professors

Azetsu-Scott, K., BSc, MSc (Japan), PhD (Dalhousie)  
Boyd, C. M., MA (Ind), PhD (Scripps)  
Cranford P., BSc, PhD (Dalhousie)  
DiBacco, C., BSc, MSc (Dalhousie), PhD (Scripps)

Frank, K. T., BSc, PhD (Toledo)  
Greenberg, D. A., MMath (Waterloo), PhD (Liverpool)  
Hannah, C. G., BAsC, PhD (UBC)  
Hebert, D., MS (U Vic), PhD (Dalhousie)  
Hines, P., BS/BEng (Dalhousie), PhD (U Bath)  
Johnson, B., BEng (North Carolina), PhD (Dalhousie)  
Kienast, S., MSc (Kiel), PhD (UBC)  
Lee, H., BSc (Dalhousie), MSc, PhD (U of T)  
Li, W. K. W., BSc (UBC), PhD (Dalhousie)  
Lu, Y., B.Eng (Tsinghua), MSc (Qingdao), MSc (Memorial), PhD (UVic)  
Mosher, D. C., BSc (Acadia), MSc (MUN), PhD (Dalhousie)  
Oakey, N., BSc (McGill), MSc (Sask), PhD (McMaster)  
Piper, D. J. W., BA, MA, PhD (Cantab)  
Ritchie, H., BSc (Mt. A), BA (Oxford), MSc, PhD (McGill)

## Adjunct Research Associates

Brillant, S., PhD (U Sydney)  
Craig, S. E., BSc, PhD (Strathclyde)  
McIntyre, H., MA (U Texas), PhD (U Delaware)  
Smedbol, R. K., BSc (Dalhousie), MSc, PhD (Memorial)  
Turk, D., Dipl. Eng (Slovenia), PhD (Dalhousie)  
Vanderlaan, A., MSc (U Vic), PhD (Dalhousie)

## I. Introduction

Oceanography is an inter-disciplinary science that includes studies of tides and currents, the chemistry of sea water, plants and animals that live in the sea, and ocean bottom sediments and underlying crustal structures. Career oceanographers are employed in Canadian universities, in various federal laboratories that are engaged in both basic research and applied problems which meet a national need, such as fisheries investigations, exploration for offshore mineral resources, and studies of ice in navigable waters, and in a number of private companies interested in marine environmental protection or exploration.

The Department of Oceanography offers undergraduate training in Oceanography as part of Combined Honours Degrees with the Departments of Biology and Marine Biology, Chemistry, Earth Sciences, Mathematics, Statistics, and Physics and Atmospheric Science. Honours students in these Combined Honours Programs have an opportunity to complement their training in their chosen scientific field with a background in Oceanography, thus enhancing their career and employment opportunities. Students considering graduate study in Oceanography should also consider a Combined Honours degree. Further training in Oceanography occurs at the graduate level only.

In addition, many of the classes listed below can be taken as part of a Minor in Environmental Studies or included within the Minor in Environmental Science. Consult the Environmental Programs section of this calendar for details. Some of the classes listed here are required for students seeking a Diploma in Meteorology. Details for this class of study are found in the Physics and Atmospheric Science section of this calendar.

A good background in basic science is a necessary prerequisite for students wishing to prepare for studies in Oceanography. There are introductory classes which survey the entire field and advanced classes in each of the major specialties -- physical, chemical, geological, biological oceanography and atmospheric sciences. Students are encouraged to select electives from the 3000 and 4000 level classes below as appropriate to their selected Undergraduate Honours and/or Major degree.

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

## II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. Combined Honours Program: Marine Biology/Oceanography

Oceanography is intended to be the second or four credit honours subject and Marine Biology is intended to be the primary or seven credit honours subject. The requirements for a combined honours program in Marine Biology/Oceanography are that the students take a minimum of 11 credits beyond 1000-level in two the



subjects with not more than nine nor fewer than four in either. Core Biology requirements for the current Marine Biology Program (e.g. 1000-3000 level classes in the Calendar) are unchanged. Other classes currently required by the Marine Biology Program in Chemistry, Mathematics, and Statistics are unchanged; however, the Oceanography Department strongly recommends completion of higher level mathematics and statistics classes.

To fulfill the requirements for the combined program, students will take two credits from required classes listed below. In addition, students will need to choose a minimum of two elective credits either from the required classes or elective listed below to complete the program. Finally, students working with faculty in Oceanography or Marine Biology on their honours research would be required to enroll in BIOL 4900.06 as well as BIOL 8880.00.

#### Required Classes

- OCEA 2000X/Y.06: The Blue Planet
- OCEA 2800.03: Climate Change
- OCEA 3001.03: Introduction to Physical Oceanography
- OCEA 3002.03: Introduction to Chemical Oceanography
- OCEA 3003.03: Introduction to Biological Oceanography
- OCEA 3004.03: The Last Billion Years
- OCEA 4140.03: Biological Oceanography
- BIOL 4900.06: Honours Thesis/Project
- BIOL 8880.00: Honours Qualifying Examination

#### Electives

- OCEA 3420.03: Geochemistry of Aquatic Environments
- OCEA 4000.03: Oceans and Global Change
- OCEA 4160.03: Fisheries Oceanography
- OCEA 4230.03: Biology of Phytoplankton
- OCEA 4330.03: Benthic Ecology
- OCEA 4331.03: History of Marine Sciences
- OCEA 4335.03: Environmental Impacts in Marine Ecosystems
- OCEA 4370.03: Deep Sea Biology
- OCEA 4380.03: Marine Modelling

## B. Combined Honours Program: Chemistry/Oceanography

Oceanography is designated as the four credit component of the Combined Honours Degree. At least 11.5 credits beyond the 1000 level are required in Chemistry and Oceanography/Related Sciences. CHEM 2101.03, 2201.03, 2301.03, 2302.03, 2401.03, and 2402.03 must be part of this combined honours program and must be passed with a grade of C or better.

The additional eight credits must be chosen in consultation with the two departments involved, specifically the Honours Student Advisor in Chemistry and the Undergraduate Coordinator in Oceanography before registering in the combined program. Students should also consult the handbook "Undergraduate Studies in Chemistry" for more information.

Classes for Combined Honours with Oceanography degree.

Required marked with an asterisk (\*).

#### First Year

- \*CHEM 1011.03 + 1012.03: Concepts in Chemistry I & II or
- CHEM 1021.03 + 1022.03: Engineering Chemistry I & II
- \*MATH 1000.03 + 1010.03: Differential and Integral Calculus I & II
- \*PHYC 1100.06 or 1300.06: Intro or Physics in and Around You
- \*Writing Class - Language or Humanities
- \*Social Science

#### 2000 level classes (chemistry)

- \*CHEM 2101.03 + 2201.03: Intro. Inorganic + Intro. Analytical
- \*CHEM 2301.03 + 2304.03: Thermodynamics + Kinetics and Dynamics
- \*CHEM 2401.03/2402.03: Organic Chemistry

#### 3000 and 4000 level classes (chemistry)

- \*CHEM 3201.03: Spectroscopy & Separations
- \*CHEM 4205.03: Chemometrics
- Three classes from CHEM 31XX, 33XX, 34XX, 4304†
- \*CHEM 4901‡: Honours Research Project

#### Oceanography and related classes

- \*OCEA 2000.06: The Blue Planet

- OCEA 2800.03: Climate Change
- EARTH 2400.03<sup>1</sup>: Marine Geoscience
- \*OCEA 3001.03: Introduction to Physical Oceanography
- \*OCEA 3002.03: Introduction to Chemical Oceanography
- OCEA 3003.03<sup>2</sup>: Introduction to Biological Oceanography
- OCEA 3004.03<sup>3</sup>: The Last Billion Years
- OCEA 3420.03<sup>4</sup>: Geochemistry of Aquatic Environments
- \*OCEA 4130.03: Chemical Oceanography
- OCEA 4331.03<sup>5</sup>: History of Marine Sciences
- OCEA 4520.03: Introduction to Atmospheric Sciences
- OCEA 4595.03<sup>6</sup>: Atmospheric Chemistry
- \*OCEA 4200.06: Honours Research Project

† - CHEM 4205 is not taught every year; students may need to take it in the third year of their program.

‡ Students will conduct their Honours thesis work as OCEA 4200, but will defend their project in the Chemistry Department as part of CHEM 4901

1 - students are required to take EARTH 1080+1090 first

2 - students are required to take OCEA 3001 and OCEA 3002 first

3 - Students are required to take EARTH 1080+1090 first

4 - students are advised to take EARTH 1080+1090 first

5 - as available

6 - students are advised to take OCEA 4520 first

7 - students are required to take OCEA 4130 first

Students must take a total of 1.5 credits of non-required CHEM classes and 1.0 credits of non-required OCEA and related classes.

In addition, one credit from MATH 2001+2002 (calculus), or 1060+2080 (stats).

Recommended other classes (please review prerequisites):

- BIOL 1000, 3060, 4068
- EARTH 1080+1090, 1040+1050, 2410
- MATH 1400, 2001-2202, 2030-2300, 3110-3120-3260

Note: in the future, we could be adding a Methods and Instruments class and a Isotope Chemistry class

## C. Combined Honours Program: Earth Sciences/Oceanography

Oceanography is designated as the four credit component of the Combined Honours Degree. As a minimum, students must choose 11 credits beyond 1000-level in two subjects with not more than seven nor fewer than four in either; at a maximum, student will choose 13 credits beyond 1000-level in two subjects with not more than nine nor fewer than four in either.

#### Four Required Oceanography Credits taken from:

- OCEA 2000.06: The Blue Planet
- OCEA 2800.03: Climate Change
- OCEA 3001.03: Introduction to Physical Oceanography
- OCEA 3002.03: Introduction to Chemical Oceanography
- OCEA 3004.03: The Last Billion Years
- OCEA 3420.03: Geochemistry of the Aquatic Environments
- OCEA 4110.03: Geological Oceanography
- OCEA 4331.03: History of Marine Sciences
- OCEA 4470.03: Introduction to Seismic Imaging
- OCEA 4200.06: Honors Thesis \*

\*Students registered for this class must take instruction in thesis writing along with students registered in EARTH 4200.06

These Oceanography credits must be combined with core Earth Sciences classes, which constitute five credits:

- EARTH 2000.015: Field School
- EARTH 2001.03: Earth Materials Science I
- EARTH 2002.03: Earth Materials Science II
- EARTH 2050.03: Principles of Geophysics I
- EARTH 2110.03: Field Methods
- EARTH 2203.03: Sediments and Sedimentary Rocks
- EARTH 2205.03: Introduction to Palaeontology
- EARTH 3000.015: Computer Camp
- EARTH 3140.03: Structural Geology
- EARTH 3303.03: Stratigraphy
- EARTH 4000.00: Advanced Field School (NB: 0 credit hours)
- EARTH 4350.03: Tectonics

Additional credits EARTH credits will be chosen from the following list so that the total of OCEA and EARTH classes is between 11 and 13 credits.

- EARTH 2400.03: Marine Geosciences (recommended)
- EARTH 3010.03: Igneous Petrology
- EARTH 3020.03: Metamorphic Petrology
- EARTH 3302.03: Quaternary Sedimentary Environments
- EARTH 3500.03: Exploring GIS
- EARTH 4152.03: Fossil Fuels
- EARTH 4270.03: Applied Geophysics
- EARTH 4430.03: Quaternary Dating and Palaeoclimatology
- EARTH 4502.03: Micropalaeontology and Global Change
- EARTH 4520.03: GIS Applications to Environmental
- EARTH 4530.03: Environmental Remote Sensing

## D. Combined Honours Program: Mathematics/Oceanography

Mathematics is intended to be the primary or seven credit honours subject and Oceanography the second or four credit subject. The requirements for a combined honours program in Mathematics/Oceanography are that the students take a minimum of 11 and a maximum of 13 credits beyond the 1000 level in the two subjects with not more than seven nor fewer than four in each. Oceanography classes must be chosen in consultation with the Honours Project advisors.

### Required Classes

- MATH 2001.03/2002.03: Intermediate Calculus
- MATH 2030.03/2135.03: Linear Algebra
- MATH 2505.03: Analysis
- One of:
  - MATH 3030.06: Abstract Algebra or
  - MATH 3500.06: Analysis)
- One full credit in MATH at 4000 level.
- OCEA 2000.06: The Blue Planet
- OCEA 3001.03: Introduction to Physical Oceanography
- Plus MATH 4950 or OCEA 4200 (Honours Research Project)

### Recommended Mathematics Classes

- MATH 2120.03/3120.03: Differential Equations
- MATH 3210.03: Introduction to Numerical Analysis
- MATH 4220.03/4230.03: Partial Differential Equations

### Remaining Oceanography Electives Should Be Chosen From:

- OCEA 2800.03: Climate Change
- OCEA 3002.03: Introduction to Chemical Oceanography
- OCEA 3003.03: Introduction to Biological Oceanography
- OCEA 3004.03: The Last Billion Years
- OCEA 4110.03: Geological Oceanography
- OCEA 4140.03: Biological Oceanography
- OCEA 4160.03: Fisheries Oceanography
- OCEA 4210.03: Time Series Analysis in Oceanography and Meteorology
- OCEA 4220.03: Numerical Modelling of Atmospheres and Oceans
- OCEA 4221.03: Ocean Dynamics
- OCEA 4222.03: Estuary, Coast and Shelf Dynamics
- OCEA 4250.03: Acoustical Oceanography
- OCEA 4290.03: Advanced Chemical Oceanography
- OCEA 4311.03: Fluid Dynamics I
- OCEA 4335.03: Environmental Impacts in Marine Ecosystems
- OCEA 4380.03: Marine Modelling

## E. Combined Honours Programs: Physics/Oceanography

Oceanography is designated as the four credit component of the Combined Honours Degree. At least 11 credits beyond the 1000 level are required in Physics and Oceanography. The additional nine credits must be chosen in consultation with the two departments involved, specifically the Honours Student Advisor in Physics and the Undergraduate Coordinator in Oceanography, before registering in the combined program.

Required Physics classes are:

### 2000 level:

- PHYC 2140.03: Physics Tools: Theory

- PHYC 2150.03: Physics Tools: Experiment.
- PHYC 2515.03: Modern Physics
- PHYC 2510.03: Electricity and Magnetism.

### 3000 level:

- PHYC 3000.03/3010.03: Experimental Physics
- PHYC 3200.03: Thermodynamics
- PHYC 3210.03: Statistical Mechanics
- PHYC 3590.03: Advanced Classical Mechanics
- PHYC 3540.03: Optic and Photonics

### 4000 level:

- PHYC 480.03/485.03 two Honours Projects<sup>†</sup>
- PHYC 4160.03: Math Methods in Physics
- PHYC 4100.03: Electrodynamics.

Other required classes as dictated by pre-requisites for the different physics classes offered:

- CHEM 1011.03/1012.03: Concepts in Chemistry I/II
- MATH 1000.03/1010.03: Differential and Integral Calculus I/II
- MATH 2001.03/2002.03: Intermediate Calculus I/II
- MATH 2030.03: Matrix Theory and Linear Algebra I and (MATH 2135.03: Linear Algebra or MATH 2300.03: Mathematical Modelling I or MATH 2400.03: Introduction to Numerical Computing)
- MATH 3110.03/3120.03: Differential Equations I/II

A full-credit class in scientific computer programming (e.g. PHYC 2050: Computer Simulations in Science) is recommended to be taken before the end of the second year.

<sup>†</sup> the 2nd honours projects (PHYC4850) can be a continuation of the first one (PHYC 4800). The projects need to have a strong oceanographic component, with a supervisor or co-supervisor chosen from the faculty members in the Department of Oceanography.

The Oceanography component is comprised of the following classes:

### Required Oceanography Classes:

- OCEA 2000X/Y.06 or 2001A/2002B: The Blue Planet
- OCEA 4120.03: Physical Oceanography
- OCEA 4311.03: Fluid Dynamics I

The following classes are available to fill the remaining OCEA credits\*:

- OCEA 4130.03: Chemical Oceanography
- OCEA 4210.03: Time Series Analysis in Oceanography and Meteorology
- OCEA 4220.03: Numerical Modelling of Atmospheres and Oceans
- OCEA 4221.03: Ocean Dynamics
- OCEA 4222.03: Estuary, Coast and Shelf Dynamics
- OCEA 4250.03: Acoustical Oceanography
- OCEA 4520.03: Introduction to Atmospheric Science
- OCEA 5680.03: Ecosystem Modelling of Marine and Freshwater Environments (cross-listed as ENGM4680)

\* Students are responsible for fulfilling all pre-requisite classes or obtaining the permission of the instructor to enroll. Students in the program must consult regularly with the Undergraduate Coordinator in each Department.

## F. Combined Honours Program: Statistics/Oceanography

Oceanography is designated as the four credit component of the Combined Honours Degree. As a minimum, students must choose 11 credits beyond the 1000 level in two subjects, with not more than seven nor fewer than four credits in either. At a maximum, the student will choose 13 credits beyond the 1000 level in two subjects, with no more than nine, nor fewer than four in either. Oceanography classes must be chosen in consultation with the Honours Project supervisors.

### Required Oceanography Credits taken from:

- OCEA 2000.06: The Blue Planet  
(or equivalently OCEA 2001.03/OCEA2001.03)
- OCEA 3001.03: Introduction to Physical Oceanography

**Elective Oceanography classes<sup>1</sup> taken from the following list so that the total number of OCEA credits is at least four.**

- OCEA 2800.03: Climate Change
- OCEA 3002.03: Introduction to Chemical Oceanography
- OCEA 3003.03:<sup>2</sup> Introduction to Biological Oceanography
- OCEA 3004.03: The Last Billion Years
- OCEA 4110.03: Geological Oceanography
- OCEA 4140.03:<sup>2</sup> Biological Oceanography
- OCEA 4160.03: Fisheries Oceanography
- OCEA 4210.03/ STAT4390.03: Time Series Analysis in Oceanography and in Meteorology
- OCEA 4220.03: Numerical Modelling of Atmospheres and Oceans
- OCEA 4221.03: Ocean Dynamics
- OCEA 4222.03: Estuary, Coast and Shelf Dynamics
- OCEA 4250.03: Acoustical Oceanography
- OCEA 4311.03: Fluid Dynamics I
- OCEA 4330.03: Benthic Ecology
- OCEA 4335.03: Environmental Impacts in Marine Ecosystems
- OCEA 4370.03: Deep Sea Biology
- OCEA 4380.03: Marine Modelling

**Required Statistics/Mathematics Classes**

- MATH 2001.03: Intermediate Calculus I
- MATH 2002.03: Intermediate Calculus II
- MATH 2030.03: Matrix Theory and Linear Algebra I
- MATH 2040.03: Matrix Theory and Linear Algebra II
- STAT 2050.03: Exploratory Data Analysis
- STAT 2060.03: Introduction to Probability and Statistics
- STAT 2080.03: Statistical Methods for Data Analysis and Inference
- STAT 3340.03: Regression and Analysis of Variance
- STAT 3360.03: Probability
- STAT 3460.03: Intermediate Statistical Theory

At least two half classes chosen from:

- STAT 4066.03: Advanced Statistical Theory I
- STAT 4350.03: Applied Multivariate Analysis
- STAT 4620.03: Data Analysis
- STAT 4390.03/OCEA4210.03: Time Series Analysis I

**Elective Statistics/Mathematics classes taken from the following list so that the total of OCEA and STAT credits is at least 11.**

- MATH 3110.03: Differential Equations
- STAT 3345.03: Environmental Risk Assessment
- STAT 4066.03: Advanced Statistical Theory I
- STAT 4350.03: Applied Multivariate Analysis
- STAT 4620.03: Data Analysis
- STAT 4390.03/OCEA4210.03: Time Series Analysis I

**Either**

- OCEA 4200.06:<sup>3</sup> Honours Thesis
- or
- STAT 4950.03:<sup>3</sup> Honours Research Project

<sup>1</sup> - Students should be aware of prerequisites or permissions needed for any of these classes.

<sup>2</sup> - Only one of OCEA 3003 and OCEA 4140 can be counted towards the Combined Honours degree. OCEA 3003 is currently given in the summer session.

<sup>3</sup> - Students in the program must have co-supervisors in each Department, unless the advisor is Cross- or Joint-Appointed or holds Adjunct status in the other Department.

Note: Cross-listed classes can only be counted once for the fulfillment of degree requirements.

**G. BSc (20 credit) Double Major: Marine Biology/ Oceanography, Chemistry/Oceanography, Earth Science/Oceanography, Mathematics/Oceanography, Physics/Oceanography, Statistics/Oceanography**

Students should follow the requirements for a Combined Honours program (see sub-section B - G, above), but replace the Honours thesis with other MARI/ OCEA, CHEM/OCEA, EARTH/OCEA, MATH/OCEA, PHYC/OCEA, STAT/ OCEA classes.

**III. Class Descriptions**

**OCEA 1000X/Y.06: Conversations with Ocean Scientists.**

Students engage with working ocean scientists about their research, its relevance, and how to communicate science to different audiences. In addition to regular writing exercises that include journaling, blogging, and lab reporting, students compose a research paper and follow it through the process of submission and peer-review for an in-class journal.

FORMAT: ✍ Writing requirement. Lecture 1.5 hours, tutorial 1.5 hours

CO-REQUISITE: MATH 1000.03 or MATH 1215.03

**OCEA 2000X/Y.06: 2001.03, 2002.03: The Blue Planet.**

This class provides a general survey of oceanography. It is designed to develop an understanding of the ocean and of the science of oceanography. Students learn about the geological, chemical, physical and biological processes at work in the sea. Consideration is also given to human impacts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. The exception is for Marine Biology Co-op students, who can enroll in OCEA 2001X.03 and OCEA 2002Y.03 in non-consecutive terms if their program demands conflict with a full-year enrollment.

INSTRUCTOR(S): P. Hill

FORMAT: Lecture 3 hours

EXCLUSION: OCEA 2001.03/2002.03, OCEA 2850.06, OCEA 2851.03/2852.03

**OCEA 2001.03: The Blue Planet I.**

This class provides a general survey of oceanography. It is designed to develop an understanding of the ocean and of the science of oceanography. Students learn about the geological, chemical, physical and biological processes at work in the sea. Consideration is also given to human impacts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. The exception is for Marine Biology Co-op students, who can enroll in OCEA 2001.03 and OCEA 2002.03 in non-consecutive terms if their program demands conflict with a full-year enrollment.

INSTRUCTOR(S): P. Hill

EXCLUSION: OCEA 2000.06, OCEA 2850.06, OCEA 2851.03/2852.03

**OCEA 2002.03: The Blue Planet II.**

This class provides a general survey of oceanography. It is designed to develop an understanding of the ocean and of the science of oceanography. Students learn about the geological, chemical, physical and biological processes at work in the sea. Consideration is also given to human impacts.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms. The exception is for Marine Biology Co-op students, who can enroll in OCEA 2001.03 and OCEA 2002.03 in non-consecutive terms if their program demands conflict with a full-year enrollment.

INSTRUCTOR(S): P. Hill

**OCEA 2020.03: Tools and Concepts in Ocean Sciences I.**

Students gain applications-based insights into concepts introduced in OCEA 2000.06 through hands-on experience with data acquisition and analysis, instrumentation, and wet-lab experiments. Quantitative skills are developed and applied to ocean examples. Topics include determining the age of the earth, seawater chemistry, acidification, water mass variation, waves and tides.

PREREQUISITE: MATH 1000.03; STAT 1060.03; PHYC 1280/1290.03 (or PHYC 1300.06); at least 1 credit from BIOL 1010/1011 or (BIOL 1020.03/ 1021.03), or CHEM 1011.03/1012.03, EARTH 1080.03/1090.03 ; or permission of instructor.

CO-REQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03); or permission of instructor.

### OCEA 2021.03: Tools and Concepts II.

Following from OCEA 2020.03, students further develop quantitative skills applied to topics that include ocean optics, ocean productivity and biomass, sedimentation, remote sensing, and biological modelling. Students build their own ocean sensors that are used to measure various states and rates during labs throughout the term.

FORMAT: Lab 3 hours

PREREQUISITE: OCEA 2020.03

CO-REQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03); or permission of instructor

### OCEA 2800.03: Climate Change.

See class description for PHYC 2800.03 in the Physics and Atmospheric Science section of this calendar.

CROSS-LISTING: PHYC 2800.03, GEOG 2800.03

EXCLUSION: ECON2850.06, PHYC2850.06

### OCEA 3001.03: Introduction to Physical Oceanography.

This course introduces Ocean Physics, focusing on issues of interest to undergraduates in ocean-related disciplines. The approach is to bind facts together with ideas, often starting with thought experiments and proceeding to simple mathematical models.

INSTRUCTOR(S): D. Kelley

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03); OCEA 2020.03;

OCEA 2021.03; or permission of Instructor

EXCLUSION: OCEA 3170

### OCEA 3002.03: Introduction to Chemical Oceanography.

This course provides students with a basic understanding of the composition of seawater and the processes that leads to this composition. This understanding is both qualitative and quantitative through the use of thermodynamic, kinetic and box models to describe the balances that produce the observed chemical distributions.

INSTRUCTOR(S): H. Thomas

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03 and CHEM 1012.03 or equivalents, and OCEA 2000.06 (or OCEA 2001.03/2002.03); OCEA 2020.03; OCEA 2021.03; or

permission of instructor

EXCLUSION: OCEA 3170

### OCEA 3003.03: Introduction to Field Oceanography.

This class explores interrelationships between living organisms in the sea and the ocean environment. Biological processes are introduced in the context of the physical and chemical oceanography. The emphasis is on sea-going field work on day trips in local marine waters and hands-on laboratory investigation.

INSTRUCTOR(S): M. Lewis

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 2000

CROSS-LISTING: MARI 3003.03, BIOL 3003.03

### OCEA 3004.03: The Last Billion Years.

This class examines major events in Earth history. The geological evidence of major events will be described, and the hypothesized causes of the events will be examined. The goal of this course is to develop on the part of students an understanding of the functioning of the earth/ocean/atmosphere system.

INSTRUCTOR(S): P. Hill

PREREQUISITE: OCEA 2000X/Y or EARTH 1080

### OCEA 3420.03: Geochemistry of Aquatic Environments.

This class is an introduction to the governing principles and processes of aquatic geochemistry. Specific topics will include physical chemistry of natural waters, kinetics of geochemical reactions, the hydrologic cycle, the carbonate system and pH, redox reactions, weathering and mineral-solution equilibria, controls on the composition of rainwater, rivers, and oceans.

INSTRUCTOR(S): M. Kienast

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent and EARTH 1080.03/1090.03

CROSS-LISTING: EARTH 3420.03

### OCEA 4000.03: Oceans and Global Change.

This course examines the role and response of the Oceans to global change, including alterations in currents and circulation, increases in sea level and storm surges, changes in ocean chemistry, modification to the types and patterns of sediment deposition, alterations in the abundances and distributions of organisms, and overall productivity. The course will discuss means of predicting these changes and their effects.

INSTRUCTOR(S): M. Kienast, K. Fennel, H. Thomas

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 3001.03, OCEA 3002.03, OCEA 4110.03, OCEA 4140.03 or permission of Instructor

### OCEA 4110.03: Geological Oceanography.

This class is intended to give a broad survey of topics in marine geology and geophysics. The class content covers recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered are: plate tectonics; seismic, heat flow, gravity, and magnetic methods; patterns and processes of sediment transport and deposition.

NOTE: Some laboratory exercises may augment the lectures. Third year and honours undergraduates will be admitted by consent of the instructor. No previous background in Geology or Geophysics is required.

INSTRUCTOR(S): M. Kienast

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03); OCEA 2020.03; OCEA 2021.03; or permission of instructor.

CROSS-LISTING: OCEA 5110.03, EARTH 4110.03

### OCEA 4115.03: Micropaleontology and Global Change.

See course description for EARTH 4502 in the Earth Sciences section of this calendar.

CROSS-LISTING: EARTH 4502.03

### OCEA 4120.03: Physical Oceanography.

This course introduces undergraduate students to the physical properties and dynamics of the oceans. Topics range from global circulation down to the small scales of turbulence. Fact and theory are blended throughout. Quantitative problem solving is emphasized in assignments.

INSTRUCTOR(S): D. Kelley

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1000.03, MATH 1010.03, classic calculus or equivalent, and permission of the instructor

CROSS-LISTING: OCEA 5120.03

RESTRICTION: Third- and fourth-year students only

### OCEA 4130.03: Chemical Oceanography.

This class covers the major and minor constituents of sea water, the controls on its chemical composition, nutrient cycling, gas exchange and the influence of the oceans on atmospheric chemistry. Other topics included are chemical tracers, and radiochemical dating methods, stable isotope studies, chemical speciation and chemical models of sea water.

INSTRUCTOR(S): D. Wallace

FORMAT: Lecture 3 hours, some labs

PREREQUISITE: OCEA 2000, OCEA 3002 or instructor's consent

CROSS-LISTING: OCEA 5130.03

### OCEA 4140.03: Biological Oceanography.

The goal is to describe how physical, chemical and biological processes interact to determine the species composition, biogeochemical activities, and trophic structure of marine communities. Outstanding problems currently facing biological oceanographers and earth systems scientists are discussed, as are current attempts and methodologies to address them.

NOTE: Biological oceanography is a quantitative science and extensive problem solving is required. Students should be competent in mathematics through calculus. Permission of instructor is required.

INSTRUCTOR(S): J. Grant

PREREQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03); OCEA 2020.03; OCEA 2021.03; or permission of instructor

CROSS-LISTING: OCEA 5140.03, BIOL 4661.03, 5661.03, MARI 4661.03

### OCEA 4160.03: Fisheries Oceanography.

Oceanographic influences on ecology of marine fish: on population dynamics, distribution, abundance, reproduction, life history, feeding, growth, metabolism, mortality, and recruitment. Emphasis on contemporary hypotheses and primary

literature and some on fishery management. Primary-publication-style research paper required. Competence with fundamental population dynamics, ecology, physical oceanography, mathematics, and statistical analyses expected.

INSTRUCTOR(S): C.T. Taggart

FORMAT: Lecture 3 hours, some practicums/tutorials

PREREQUISITE: OCEA 2000.06 or 2001.03 or 2002.03, BIOL 2060.03 and/or 3067.03 or equivalent. MATH/STAT 1060.03 and/or 2080.03 or equivalent or instructor's consent.

CROSS-LISTING: BIOL 4369.03, MARI 4369.03, OCEA 5160.03

### **OCEA 4200X/Y.06: Honours Research.**

This class is required for students enrolled in the Concentrated Honours in Ocean Sciences, and certain streams of the Combined Honours in Oceanography program. It consists of a research project under the supervision of a faculty member, including an original component in oceanography. A written thesis is submitted to the Department.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

PREREQUISITE: Permission of Honours Coordinator.

### **OCEA 4210.03: Time Series Analysis in Oceanography and Meteorology.**

This course describes the application of advanced time series analysis in oceanography and meteorology. Time and frequency domain approaches are covered. Students will develop their own computer programs to analyze real observations. Specific topics include stationarity, auto and cross covariance functions, power and cross spectra, and state space models.

INSTRUCTOR(S): M. Dowd

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: STAT 4390.03/5390.03, OCEA 5210.03

### **OCEA 4220.03: Numerical Modelling of Atmospheres and Oceans.**

This class discusses numerical modelling techniques for simulating atmospheric and oceanic circulations. Material includes: review of governing equations; finite difference, finite element, and spectral methods; Eulerian, semi-implicit and semi-Lagrangian time integration techniques; accuracy and stability analyses; data assimilation and ensemble prediction methods; and boundary treatment for ocean models.

INSTRUCTOR(S): J. Sheng

FORMAT: Lecture/3 hours

PREREQUISITE: 1000-level calculus class and instructor's consent

CROSS-LISTING: OCEA 5220.03

### **OCEA 4221.03: Ocean Dynamics.**

An advanced class for students in Physical Oceanography and Atmospheric Science that studies the basic equations governing rotating geophysical flows, plus applications. Topics include geostrophy, conservation of potential vorticity, quasi-geostrophic dynamics, geostrophic adjustment, response to surface forcing (steady and unsteady).

INSTRUCTOR(S): A. Hay

CROSS-LISTING: OCEA 5221.03

### **OCEA 4222.03: Estuary, Coast and Shelf Dynamics.**

This class discusses the physical processes that operate on continental shelves to create long waves, tides, tidal mixing, thermohaline circulation, wind forcing, upwelling, etc. Both observations and models for these processes are discussed.

INSTRUCTOR(S): J. Sheng

FORMAT: Lecture/3 hours

PREREQUISITE: OCEA 4120.03

CROSS-LISTING: OCEA 5222.03

### **OCEA 4230.03: Biology of Phytoplankton.**

The role of phytoplankton as primary producers of organic material in the sea, and as agents of biogeochemical transformations, explored in the context of interactions with physical and chemical oceanographic processes.

INSTRUCTOR(S): J. Cullen

FORMAT: Lecture 3 hours, some labs

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4662.03, OCEA 5230.03, MARI 4662.03

### **OCEA 4290.03: Advanced Chemical Oceanography.**

This class presents research topics in chemical oceanography, taught as 3-4 self-contained modules. Examples include, the oceanic CO<sub>2</sub> system and its relation to

climate change, chemical reactions in sediments, photochemistry in the upper ocean, and inferring the chemistry of ancient oceans through the isotope record in sediments.

INSTRUCTOR(S): R. Moore

PREREQUISITE: Students will have completed all required 3000 level courses in Oceanography, OCEA 4130, and have the consent of the instructor of this class.

CROSS-LISTING: OCEA 5290.03

RESTRICTION: Open only to students enrolled in the combined Honours in Chemistry and Oceanography

### **OCEA 4311.03: Fluid Dynamics I.**

An introduction to the theory of fluid dynamics, with some emphasis on geophysically important aspects. Contents: tensor mathematics, flow kinematics, equations of motion, viscous flow, potential flow, convection, turbulence, and basic aerodynamics. Occasional reference will be made to current research topics, especially those in Physical Oceanography.

INSTRUCTOR(S): T. Ross

FORMAT: Lecture 3 hours

PREREQUISITE: Intended for first-year graduate students in physical

oceanography, but graduate students or senior undergraduates in Mathematics or Physics are invited to take it (subject to instructor approval)

CROSS-LISTING: PHYC 4311.03, PHYC 5311.03, OCEA 5311.03

### **OCEA 4330.03: Benthic Ecology.**

A graduate/fourth year undergraduate class on major problems of benthic ecology, such as food supply to benthic animals, and geomicrobiological processes in sediments. Classes consist of two lectures per week and one journal paper discussion session. The last three weeks of the class are devoted to a class research project.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4666.03, OCEA 5330.03, MARI 4666.03

### **OCEA 4331.03: History of Marine Sciences.**

This class describes the development of the marine sciences from biological, chemical, physical and geological knowledge going back to the 17th century or earlier. It includes the important voyages of exploration, the development of marine biology, ocean circulation and plate tectonics, also the importance of technological changes upon marine sciences.

INSTRUCTOR(S): E.L. Mills

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4664.03, OCEA 5331.03, SCIE 4001.03, HIST 3073.03, HSTC 3331.03, MARI 4664.03

### **OCEA 4335.03: Environmental Impacts in Marine Ecosystems.**

Consideration of various activities in marine environments, with focus on ecosystem level influences: dispersion, elemental fluxes, benthic impacts, food webs, biodiversity. Simulation modelling of ecosystems is undertaken using Simile OOP software. Classes include lectures, modelling examples, and discussion of research papers. Course requirements consist of problem sets and modelling project.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture

CROSS-LISTING: OCEA 5335.03, BIOL 4335.03, MARI 4335.03

CO-REQUISITE: BIOL 2060.03, MATH 1000.03, STAT 1060, or permission of the instructor.

### **OCEA 4370.03: Deep Sea Biology.**

We focus on the biology of organisms inhabiting the deep sea: physiological adaptations to the physicochemical and geological environment; spatial and temporal distributions of biological assemblages; and regulatory factors of these assemblages, such as currents, food availability, reproduction and recruitment. Also, we delve into unique habitats, such as hydrothermal vents.

INSTRUCTOR(S): A. Metaxas

PREREQUISITE: BIOL 2060.03 and OCEA 2000.06

CROSS-LISTING: BIOL 4370.03, MARI 4370.03, OCEA 5370.03

### **OCEA 4380.03: Marine Modelling.**

This class provides a survey of modelling techniques applied to physical, biological and biogeochemical problems in oceanography. Lecture material covers the philosophy of modelling, dimensional analysis, parameterization of various

processes, numerical approaches to solving differential equations, etc. Students are given the opportunity to study topics of particular interest to them.

INSTRUCTOR(S): K. Fennel

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1000.03; MATH 1010.03; OCEA 2020.03; OCEA 2021.03; and permission of instructor

CROSS-LISTING: OCEA 5380.03

### **OCEA 4401.03: Marine Management I.**

This class exposes students with a marine science background to the increasing need for marine scientists and ocean managers and policy makers to work collaboratively to address the interdisciplinary nature of the problems confronting the world's oceans. This class is restricted to 4th year students with a marine science background.

FORMAT: Lecture

PREREQUISITE: OCEA 2000.06 (or OCEA 2001.03/2002.03)

RESTRICTION: Restricted to 4th year students

### **OCEA 4402.03: Marine Management II.**

Students focus on the linkages between ocean governance and ocean science to understand the role of marine science in informing and influencing decisions affecting coastal and marine space and resources at multiple geographic and jurisdictional scales. This class is restricted to 4th year students with a marine science background.

PREREQUISITE: OCEA 2000.06 (or OCEA 1002.03/2002.03)

### **OCEA 4411.03: Atmospheric Dynamics I.**

See course description for PHYC 4411.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: PHYC 2140.03 and MATH 3110.03, or instructor's consent

CROSS-LISTING: OCEA 5411.03, PHYC 4411.03/5411.03

### **OCEA 4412.03: Atmospheric Dynamics II.**

See course description for PHYC 4412.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: OCEA 4411.03/5411.03 or PHYC 4411.03/5411.03, or instructor's consent

CROSS-LISTING: OCEA 5412.03, PHYC 4412.03/ PHYC 5412.03

### **OCEA 4470.03: Introduction to Seismic Imaging.**

See course description for EARTH 4470.03 in the Earth Sciences section of this calendar.

PREREQUISITE: EARTH 3270.03, or instructor's consent

CROSS-LISTING: OCEA 5470.03, EARTH 4470.03/5470.03

### **OCEA 4480.03: Advanced Seismic Imaging.**

See course description for EARTH 4480.03 in the Earth Sciences section of this calendar.

PREREQUISITE: EARTH 4470.03, or instructor's consent

CROSS-LISTING: EARTH 4480.03, EARTH 5480.03, OCEA 5480.03

### **OCEA 4505.03: Atmospheric Physics.**

See course description for PHYC 4505.03 in the Physics & Atmospheric Science section of this calendar.

CROSS-LISTING: OCEA 5505, PHYC 4505/5505

### **OCEA 4520.03: Introduction to Atmospheric Science.**

See course description for PHYC 4520.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: PHYC 2140.03, or instructor's consent

CROSS-LISTING: OCEA 5520.03, PHYC 4520.03/5520.03

### **OCEA 4541.03: Synoptic Meteorology I.**

See course description for PHYC 4540.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: At least one third-year Physics class

CROSS-LISTING: OCEA 5541.03, PHYC 4541.03/5541.03

CO-REQUISITE: OCEA 4220.03

### **OCEA 4550.03: Synoptic Meteorology II.**

See course description for PHYC 4550.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: OCEA 4541.03, or PHYC 4540

CROSS-LISTING: OCEA 5550.03, PHYC 4550.03/5550.03

### **OCEA 4595.03: Atmospheric Chemistry.**

See course description for PHYC 4595.03 in the Physics and Atmospheric Science section of this calendar.

PREREQUISITE: PHYC 2140.03 and a first-year chemistry class

CROSS-LISTING: OCEA 5595.03, PHYC 4595.03, PHYC 5595.03, CHEM 4595.03

# Physics and Atmospheric Science

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## Graduate Coordinator

Hewitt, K. (494-2315) [kevin.hewitt@dal.ca](mailto:kevin.hewitt@dal.ca)

## Coordinator, Atmospheric Science

Drummond, J. R. (494-2324) [james.drummond@dal.ca](mailto:james.drummond@dal.ca)

## Coordinator, Diploma in Meteorology

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## Co-op Academic Advisor

Labrie, D. (494-2322) [daniel.labrie@dal.ca](mailto:daniel.labrie@dal.ca)

## Professors Emeriti

Jericho, M. H., BSc, MSc (Dalhousie), PhD (Cantab), FRSC  
Kreuzer, H. J., MSc, DSc (Bonn), FRSC - A.C. Fales Professor of Theoretical Physics  
Stroink, G., BSc, MSc (Delft), PhD (McGill), PEng

## Professors Research

Geldart, D. J. W., BSc (Acadia), PhD (McMaster), FRSC - Research  
Kreuzer, H. J., MSc, DSc (Bonn), FRSC - A.C. Fales Professor of Theoretical Physics

## Professors

Chapman, S. C., BSc, MSc, PhD (UBC)  
Dahn, J. R., BSc (Dalhousie), MSc, PhD (UBC), FRSC, NSERC/3M Canada Inc.  
Industrial Research Chair, Canada Research Chair in Materials for Batteries and Fuel Cells, cross appointment with Chemistry  
Drummond, J. R., BA, MA, PhD (Oxford), FRSC - Canada Research Chair, Remote Sounding of Atmospheres  
Dunlap, R. A., BS (Worcester), AM (Dart), PhD (Clark), Director, Institute for Research in Materials; cross appointment with College of Sustainability  
Geldart, D. J. W., BSc (Acadia), PhD (McMaster), FRSC - Research  
Hill, I. G., BSc, PhD (Queen's)  
Martin, R. V., BS (Comell), MS, PhD (Harvard), Killam Professor, cross appointment with Environmental Programs, Chemistry  
Rotermund, H. H., PhD (Berlin), George Munro Professor of Physics  
White, M. A., BSc (Western), PhD (McMaster), University Research Professor, primary appointment with Chemistry  
Zwanziger, J. W., BA (Chicago), PhD (Cornell), Canada Research Chair in NMR Studies of Materials, primary appointment with Chemistry

## Associate Professors

Bonev, S. A., MSc (Dalhousie), PhD (Cornell)  
Duck, T., BSc, PhD (York)  
Folkins, I., BSc (Dalhousie), MSc, PhD (Toronto)  
Hall, K. C., MSc, PhD (Toronto), Canada Research Chair, Ultrafast Science  
Hewitt, K., BSc (Toronto), PhD (Simon Fraser), P. Phys.  
Kelly, R., BSc, MSc (Memorial), PhD (Western)  
Krepler, L., MSc (Supelec), PhD (Univ. Paris XI), cross appointment with Biomedical Engineering  
Kyriakidis, J., BSc, MSc (Dalhousie), PhD (Basel)  
Labrie, D., BSc (Montreal), MSc, PhD (McMaster)  
Maksym, G. N., PhD (McGill), primary appointment in the School of Biomedical Engineering  
Monchesky, T., BSc (Toronto), PhD (Simon Fraser)  
Robar, J., MSc (McGill), PhD (UBC), primary appointment with Radiation Oncology  
Rutenberg, A. D., BSc (Toronto), PhD (Princeton)  
Thomas, C., BSc (SMU), MSc (Dalhousie), PhD (Western Ontario)  
Xu, H., BSc (Zhejiang), MSc (Regina), PhD (McMaster)

## Assistant Professors

Lesins, G. B., PhD (Toronto)  
Wells, S. M., BSc (Western), PhD (Toronto) (NSERC University Faculty Award), primary appointment with Medicine

## Instructors

Payne, S. H., BSc, PhD (Canterbury)  
de Vet, S. J., MSc (Dalhousie), PhD (Western)

## Adjunct Professors

Azzouz, M., PhD (J.F., France), Physics & Astronomy, Laurentian University  
Bennett, J. C., PhD (Waterloo), Physics, Acadia  
Beyea, S., PhD (UNB), National Research Council of Canada  
Bowen, C., PhD (Western), Institute for Biodiagnostics, NRC  
Butler, M., PhD (Caltech), Carleton University  
Grabtchak, S., PhD, Department of Physics (UPEI)  
Greatbatch, R., BSc (Liverpool), PhD (Cambridge), NSERC/MARTEC/MSC Industrial Research Chair  
Hornidge, D., PhD (U of Saskatchewan) Physics, Mount Allison  
Kanungo, R., PhD (Calcutta U), Astronomy & Physics, SMU  
Pierce, J., BS (Northeastern), PhD (Carnegie Mellon)  
Ritchie, H. C., MSc, PhD (McGill), Meteorological Service of Canada - Atlantic  
Robertson, M., PhD (Waterloo), Physics, Acadia  
Sarty, A., PhD (U of Saskatchewan) Astronomy and Physics, SMU  
Schmidt, P., PhD (Michigan)

## Postdoctoral Fellows/Research Associates

Byrne, T., MSc (Dalhousie)  
Croft, B., PhD (Dalhousie)  
Gagne, S., PhD (U Helsinki)  
Kharol, S., PhD (Andhra U)  
LeBlanc, L., M.Sc. (U of Waterloo)  
Nayak, C., PhD (Cochin U of Science & Technology)  
Nowlan, C., PhD (U of Toronto)  
Romero, J., PhD (Syracuse)  
Sanderson, R., PhD (Dalhousie)  
Sinah, N., PhD (Indian Institute of Science)  
Staple, D., PhD (Dalhousie)  
Stevens, D., PhD (Dalhousie)  
Tikhomirov, A., D.Sci. (Institute of Atmospheric Optics, St. Petersburg)  
Tsehtik, Y., M.Sc. (Mozhaisky Military Space Engineering University)  
van Donkelaar, A., PhD (Dalhousie)

## I. Introduction

Physics is the study of the fundamental properties of energy and matter. It attempts to describe and explain the great diversity of nature with the fewest and simplest hypotheses, and to show the underlying similarities of seemingly diverse phenomena. It requires imagination and its success is judged by whether or not nature confirms its predictions when tested by experiment. An understanding of physics must be built on a good foundation. The various programs are arranged to do this in an orderly, efficient way.

The Honours program is a focussed, intensive program aimed at those intending to pursue either graduate study or professional research work either in physics or in allied sciences. The various Majors programs provide the opportunity to pursue a broad education in both physics and other areas. Such programs provide a suitable background for employment in industry, and for further studies in such fields as meteorology, engineering, education, law, medicine, dentistry, health sciences, and business.

### First Year Classes

There are three first year classes. PHYC 1450X/Y.06 is a general interest class for BA students and is not acceptable as a prerequisite for further classes in physics. PHYC 1190.03/1290.03, and 1300X/Y.06 both give a general introduction to physics, but each has its own particular approach and selection of topics.

PHYC 1190.03/1290.03 is primarily for students intending to make a study of a physical science or engineering; it has regular labs, occasional tutorials, uses calculus, and is accepted as a prerequisite for advanced physics classes. Nova Scotia Grade XII Physics or its equivalent is a prerequisite. It is recommended that 1190/1290 be taken consecutively, but 1190 is not a prerequisite for 1290.

PHYC 1300X/Y.06 is an introductory class which is oriented towards the health sciences and is primarily intended for students in biology, pre-medicine, pre-dentistry and allied health sciences. The class incorporates labs and tutorials, and is accepted as a prerequisite for advanced physics classes when Mathematics 1000.03 and 1010.03 are taken concurrently. It is a good preparation for the Medical College Admission Test (MCAT). Nova Scotia Grade XII Physics or its equivalent is highly recommended.

### Second Year Classes

There are four 2nd year core physics classes (PHYC 2140, 2150, 2510, 2515). These classes are also suitable for students in other disciplines who would like to enhance their knowledge of physics. In particular, PHYC 2150 provides an opportunity to gain more laboratory experience, which is extremely valuable in many jobs.

### Third and Fourth Year Classes

Not all classes are offered each year. Students should take careful note of the year in which each of these classes is planned to be offered. This information can be found at the department website (<http://www.physics.dal.ca>)

Prizes are awarded to the top students in each year of the program. Please refer to Section IV. 9 on page 647 for the full listing of Physics and Atmospheric Science awards.

## II. Degree Programs

There are two main programs: The 20 Credit Honours in Physics and the 20 Credit BSc with a Major in Physics. In addition, there are combined Honours and Major Programs, a Co-operative Education Program in Physics and a 15 Credit BSc with a Minor in physics. Our Department also offers a one year Diploma in Meteorology, leading to a career as a professional meteorologist. This diploma program can also be taken as part of a 20 Credit BSc. Details of each program are given below.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BSc with Honours in Physics

All students who intend to take a BSc with Honours in Physics are encouraged to discuss their program with staff members of the department, and should consult with the Undergraduate Advisor by the beginning of the second year.

#### Departmental Requirements

A Concentrated Honours Program in Physics will normally include the following classes:

##### 1000 level

- PHYC 1190.03/1290.03 or 1300X/Y.06 or SCIE 1501X/Y.27 or 1510X/Y.33

##### 2000 level

- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03

##### 3000 level

- PHYC 3000.03/3010.03
- PHYC 3640.03/3590.03
- PHYC 3200.03/3210.03

##### 4000 level

- PHYC 4800.03/4850.03
- PHYC 4151.03
- PHYC 4160.03/4100.03

#### Classes from other departments

- CHEM 1011.03/1012.03
- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- MATH 2030.03 and (MATH 2120.03 or MATH 2135.03 or MATH 2300.03 or MATH 2400.03)
- MATH 3120.03
- One or more of PHYC 3050.03, PHYC 3250.03, or PHYC 4250.03
- Two other physics half credits at the 3000 or 4000 level, other than PHYC 3160.03, PHYC 3170.03, PHYC 3330.03, PHYC 4540.03, PHYC 4550.03

Students with a special interest in Applied Physics should take PHYC 3000.03/3010.03 and 3540.03. Up to five full credits may be chosen as general electives from the Faculty of Engineering. Participation in the Co-op Program is encouraged.

### B. Combined Honours

Students interested in both physics and another science may wish to take a BSc with Honours in Physics and the other subject combined. In recent years, students have followed programs combining physics with:

- Mathematics
- Biology
- Earth Sciences
- Chemistry
- Computer Science
- History of Science and Technology
- Contemporary Studies

As so many possibilities exist, we do not list specific programs here. Any combined honours program involving Physics must include the classes specified under "BSc (15 credit) Minor in Physics" below.

A combined Honours Degree may be an appropriate choice for your particular interests. However, if you opt for a combined degree, make sure that you are adequately educated in the areas of your future career. It is possible that if you don't select the correct classes, you might have to do a qualifying year before being able to enter a regular graduate program.

Students contemplating such a program should, in any case, consult the departments before the beginning of their second year of study. Examples of such programs can be found on our website: <http://www.physics.dal.ca>.

### C. BSc (20 credit) Major in Physics

A BSc (20 credit) Major in Physics will normally include the following classes:

##### 1000 level

- PHYC 1190.03/1290.03 or 1300X/Y.06 or SCIE 1501X/Y.27 or 1510X/Y.33

##### 2000 level

- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03
- Two other physics half credits at or above the 2000 level

##### 3000 level

- Eight physics half credits at the 3000 level or above; which must include one or more of PHYC 3050.03, PHYC 3250.03, or PHYC 4250.03

#### Classes from other departments

- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- CHEM 1011.03/1012.03



## D. BSc (15 credit) Minor in another subject

Please see requirements below, section III. D. Minors in Physics.

The BSc (15 credit) can be combined with a Diploma in Engineering (see also III below)

Completion of the BSc (15 credit) with appropriate physics classes can lead to admission into the Diploma in Meteorology Program (see IV).

## E. Co-op Education in Physics

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students incorporate three or four work terms in their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Physics Co-op Academic Advisor for your work term sequence.

See the “Co-operative Education in Science” section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

For further information on the Physics Co-op program, please see <http://www.physics.dal.ca> and follow the links to the Science Co-op website.

Co-op Program Advisor in Physics:  
D. Labrie (494-2322) [daniel.labrie@dal.ca](mailto:daniel.labrie@dal.ca)

## F. Honours Co-op in Physics

### Departmental Requirements

Same as for the regular Honours in Physics as above with the addition of the following:

- Three or four supervised work-terms: PHYC 8891.00, 8892.00, 8893.00, 8894.00
- Co-op Seminar: SCIE 2800.00

This is required and is a prerequisite to the first work term.

- Continuous standing of at least B

It is strongly recommended that students take a full credit in scientific computer programming in their second year.

Please consult the Department's website (<http://www.physics.dal.ca>) for complete program listing.

## III. Interdisciplinary Opportunities

In addition to combined honours, opportunities exist to combine other degrees in physics with the many programs Dalhousie offers. Below are listed interdisciplinary opportunities which may be of particular interest. Please contact the Undergraduate Advisor for details.

### A. Physics and Engineering Concurrent Programs

If you wish to enter one of these concurrent programs, you should register for the standard first year Engineering program and consult the Undergraduate Advisor in Physics in order to plan your class selection. Additional details, can be found in the Degree Requirements section.

The following Programs can be taken concurrently:

1. BSc/DipEng: Students can complete the requirements for the BSc (15 credit) and the DipEng in as little as three years.
2. BSc/BEng: Students can complete the BSc (15 credit) and the BEng degrees in as little as five years.
3. A BSc (Honours Physics)/BEng combination is also possible (see <http://www.physics.dal.ca> for more information).

## B. Geophysics

For those interested in Geophysics, it is recommended that they take the classes required for a Combined Honours in Physics and Earth Sciences, or for Honours Physics, and choose as their electives a selection of the following classes: EARTH 2270.03, 3270.03, 4470.03, 4480.03.

## C. Minors and Other Programs

Minor programs allow students to develop subject specialities, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Physics and Atmospheric Science, minor programs are available in the following subject areas.

### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Environmental Studies (BA or BSc)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA or BSc)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 131, as well as the particular subject area of the calendar.

### Bachelor of Computer Science with Minor in Physics

The requirements for the Minor are as specified for the 15 Credit BSc with Minor in Physics.

### Diplomas, Certificates, and Language Proficiency Certificates

In combination with a BA or BSc there are certificates or diplomas that can be obtained to emphasize areas of proficiency. For a complete list and details refer to the College of Arts and Science Degree Requirements on page 131 of the calendar.

## D. Minors in Physics

Students from other disciplines that have any three credits in Physics above the 1000 level, will obtain a Minor in Physics.

## IV. Diploma in Meteorology

### A. BSc or BA (20 credit) Major in Physics combined with a Diploma in Meteorology

This is an integrated Physics/Meteorology program. The student follows the regular 20 Credit BSc in Physics. The minimum requirements are:

- PHYC 1190.03/1290.03
- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03
- PHYC 3050.03 or PHYC 3250.03 or PHYC 3590.03 or PHYC 4311.03
- PHYC 3200.03
- One other half credit at the 2000 level or above in physics
- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- MATH 2030.03
- MATH 2040.03 or MATH 2120.03 or MATH 2135.03 or MATH 2300.03 or MATH 2400.03
- CHEM 1011.03/1012.03
- Plus 13 half-credit electives (some of which could be additional physics classes)

The required Meteorology classes are:

- PHYC 4505.03/PHYC 4570.03
- PHYC 4540.03/4550.03

- PHYC 4411.03/4412.03
- PHYC 4520.03/4595.03
- OCEA 4120.03
- OCEA 4220.03 or other classes approved by Program Coordinator to total one additional half credit.

Students are encouraged to ensure that their program meets the requirements for the 15 Credit BSc, by the end of Year 3.

## B. Diploma in Meteorology

For admission into this program, a general 15 Credit BSc degree in Physics, Mathematics, or Chemistry, with appropriate Physics classes, is required. A strong background in Physics and Mathematics is necessary, and classes taken should cover Vector Calculus and differential equations. To obtain the Diploma, the ten half-credit Meteorology classes listed above are required.

More information on the Diploma in Meteorology program is available at: [http://atm.dal.ca/Diploma\\_in\\_Meteorology/](http://atm.dal.ca/Diploma_in_Meteorology/)

## C. Atmospheric Science

After completion of the Diploma program, students are eligible to be considered for admission to a graduate program in Atmospheric Science at Dalhousie.

## V. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

### PHYC 0010.00: University Prep Physics.

This class can be used as a prerequisite for PHYC 1100X/Y.06 and PHYC 1300X/Y.06. The class will develop problem-solving techniques in preparation for topics to be covered in PHYC 1100X/Y.06 and PHYC 1300X/Y.06. This class is offered by the College of Continuing Education. Students may register and pay for this course at the College of Continuing Education located at 1220 LeMarchant Street, 2nd Floor or by calling (902) 494-2375. This class is offered in the Fall and Summer sessions only (see College of Continuing Education for more details <http://collegeofcontinuinged.dal.ca>).

PREREQUISITE: Grade 12 Pre-Calculus Math

### PHYC 1190.03: Introduction to Physics.

This class concentrates on mechanics (forces and motion). Primarily for students interested in Physical Sciences and Engineering. Students entering this class must be familiar with algebra, graphs, and trigonometry, and should be taking calculus (MATH 1000.03/1010.03 or MATH 1280.03/1290.03) concurrently. Ideas are introduced through in-class demonstrations enabling students to relate physical theory to events in the real world. Students explore many concepts via hands-on labs.

INSTRUCTOR(S): J. Dahn, T. Duck

FORMAT: Lecture 3 hours, lab 3 hours (number of labs = 12)

PREREQUISITE: High School Physics equivalent to the Nova Scotia 12 level.

Students not having a physics credit equivalent to Nova Scotia Grade 12 Physics are strongly advised to take PHYC 0010.00 available in the summer and in the fall term. The College of continuing Education at: <http://collegeofcontinuinged.dal.ca>

EXCLUSION: Credit will be given for only one of 1190.03, 1280.03, or 1310.03

### PHYC 1290.03: Introduction to Physics.

This class concentrates on oscillations and waves, optics, electricity and magnetism. Primarily for students interested in Physical Sciences and Engineering. This class is required for all Engineering programs. Students entering this class must be familiar with algebra, graphs, and trigonometry, and should be taking calculus (MATH 1000.03/1010.03 or MATH 1280.03/1290.03) concurrently.

Ideas are introduced through in-class demonstrations enabling students to relate physical theory to events in the real world. Students explore many concepts via hands-on labs.

INSTRUCTOR(S): J. Dahn, T. Duck

FORMAT: Lecture 3 hours, lab 3 hours (number of labs = 12)

PREREQUISITE: High School Physics equivalent to the Nova Scotia 12 level.

Students not having a physics credit equivalent to Nova Scotia Grade 12 Physics are strongly advised to take PHYC 0010.00 available in the summer and in the fall term. The College of continuing Education at: <http://collegeofcontinuinged.dal.ca>

EXCLUSION: Credit will be given for only one of 1190.03/1290.03, 1280.03/1290.03, 1300X/Y.06, or 1310.03/1320.03

### PHYC 1300X/Y.06: Physics In and Around You.

An introduction to physics for students in Biology, Psychology, Arts and Environmental Sciences, and for students preparing for MCAT, and Medicine, Dentistry and Applied Health Sciences. It is accepted as a prerequisite to advanced classes in physics when combined with MATH 1000.03 and 1010.03. Basic concepts in physics are applied, where possible, to realistic biological models, e.g. forces and torques are related to muscles and joints, electricity to cellular activity, fluids to blood circulation, etc.

NOTES:

1. This class is not acceptable in the Engineering program.

2. Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

3. Labs do not start until the second week of classes.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): T. Monchesky, S. Wells

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: High School Physics equivalent to Nova Scotia Grade 12 level is highly recommended. Students not having a physics credit equivalent to Nova Scotia Grade 12 Physics are strongly advised to take PHYC 0010.00 available in the summer and in the fall term, the College of Continuing Education at: <http://collegeofcontinuinged.dal.ca>.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1190.03/1290.03, 1280.03/1290.03, 1300X/Y.06, or 1310.03/1320.03

### PHYC 1310.03/1320.03: Physics In and Around You.

These two half classes are, as a pair, equivalent to PHYC 1300X/Y.06. They are available ONLY to accommodate special circumstances; permission from the Department is required for students not in Kinesiology. PHYC 1310.03 is strongly recommended for all first year Kinesiology students. PHYC 1320.03 is strongly recommended for Kinesiology students considering the Ergonomics stream. See the Health and Human Performance section of this calendar.

INSTRUCTOR(S): T. Monchesky, S. Wells

PREREQUISITE: High School Physics equivalent to Nova Scotia Grade 12 level is highly recommended. Students not having a physics credit equivalent to Nova Scotia Grade 12 Physics are strongly advised to take PHYC 0010.00 available in the summer and in the fall term see The College of Continuing Education at: <http://collegeofcontinuinged.dal.ca>.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1190.03/1290.03, 1280.03/1290.03, 1300X/Y.06, or 1310.03/1320.03

### PHYC 1320.03/1310.03: Physics In and Around You.

These two half classes are, as a pair, equivalent to PHYC 1300X/Y.06. They are available ONLY to accommodate special circumstances; permission from the Department is required for students not in Kinesiology. PHYC 1310.03 is strongly recommended for all first year Kinesiology students. PHYC 1320.03 is strongly recommended for Kinesiology students considering the Ergonomics stream. See the Health and Human Performance section of this calendar.

INSTRUCTOR(S): T. Monchesky, S. Wells

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 1190.03/1290.03, 1280.03/1290.03, 1300X/Y.06, or 1310.03/1320.03

### PHYC 1450X/Y.06: Astronomy: The Evolving Universe.

Both the universe and our understanding of it are evolving. Topics include naked eye" astronomy, underlying laws of nature, the revolution in our understanding of the solar system (planets, moons, origin), and the recently discovered "other" planetary systems. We examine our advances in the study of stars, galaxies, and the universe at large. Finally, we introduce the weird and the wonderful - black holes, dark matter and dark energy.

NOTE: This class meets the science distribution requirements for BA students.

The class does not count as a prerequisite for any other science class. Algebra and geometry are used only when helpful. Credit can only be given for this class if X and Y are completed in consecutive terms.

INSTRUCTOR(S): P. Kelly

FORMAT: Lecture 3 hours

EXCLUSION: Not open to students taking or having taken PHYC 2450X/Y.06, or 2451.03 or 2452.03. BSc students should take PHYC 2451.03 and 2452.03 instead.

### PHYC 1600.03: Understanding Weather.

The changing weather is a topic of almost universal interest. This course provides an introductory explanation for the basic processes that comprise the day to day weather changes in a non-mathematical way. Topics include weather maps and the wide range of atmospheric phenomena.

INSTRUCTOR(S): G. Lesins  
 FORMAT: Lecture 3 hours

### PHYC 2140.03: Physics Tools: Theory.

The character of physical laws is most lucidly expressed in mathematical terms. The objective of this course is the acquisition of mathematical tools and gainful proficiency in their use. Topics will include complex numbers, partial derivatives, vector calculus, linear transformations and differential equations. Theorems and proofs will be kept to a minimum. Instead, lectures, homework and tutorials will be largely driven by example problems from a wide variety of physics fields. Text book: Boas, Mathematical Methods in the Physical Sciences.

INSTRUCTOR(S): E. Yaz

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: PHYC 1280.03/1290.03 or 1300X/Y.06 and a 1000 level calculus class or permission from the instructor.

### PHYC 2150.03: Physics Tools: Experiment.

Introducing experimental tools and techniques within a theoretical framework, this course explores concepts in oscillations, waves, electricity and magnetism. The aim is to learn and apply techniques commonly used in Physics research. The following experimental tools and techniques are explored: Instrumentation; Fourier series; Data analysis; building AC and DC circuits; Detection and production of ultrasonic, acoustic, visible, microwaves; Mechanical systems. For example, the concept of resonance is applied to electronic (e.g. Radio), optical, acoustic (e.g. Music), mechanical and nuclear (e.g. MRI) systems in the lab. Textbook: An Introduction to Error Analysis, John R. Taylor.

INSTRUCTOR(S): L. Kreplak

FORMAT: Lecture 1 hrs, Lab 5 hrs

PREREQUISITE: PHYC 1280.03/1290.03 or 1300X/Y.06 or SCIE 1500X/Y.30 and a 1000-level calculus class, or permission of instructor

### PHYC 2250.03: Physics of Biological and Medical Technology.

This class focuses on the nature of different forms of radiation and their interactions with living organisms. Particular attention is given to imaging techniques for the examination of internal organs, and the resulting effects of radiation. Topics may include ultrasound, nuclear medicine, X-ray tomography, magnetic resonance imaging, and exposure to ultraviolet and nuclear radiation.

INSTRUCTOR(S): K. Hewitt

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 1280.03/1290.03 or 1300X/Y.06: MATH 1000.03/1010.03 or SCIE 1500X/Y.30, 1501X/Y.30, 1501X/Y.27, 1502X/Y.21 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 or permission of the instructor.

### PHYC 2310.03: Energy and the Environment.

The physical principles and limitations of renewable energy source utilization and energy conversion. A quantitative introduction to energy conversion and storage systems, including solar power and heating, wind, tidal, geothermal, hydroelectric, nuclear power, hydrogen technology, electrical and mechanical energy storage. The input of these energy options on the global climate and environment will be discussed.

INSTRUCTOR(S): R. Dunlap

FORMAT: Lecture/3 hours

PREREQUISITE: PHYC 1280.03/1290.03 or PHYC 1300X/Y.06, MATH 1010.03, CHEM 1011.03 or permission of the instructor.

EXCLUSION: Students who have previously taken PHYC 3330 can not take PHYC 2310.

### PHYC 2451.03: Astronomy I : The Sky and Planets.

An introduction to astronomy for science students.

If you have ever marvelled at the beauty of the night sky and yearned to learn a little about how Science can help us understand it, then this class (and its companion PHYC 2452.03) is for you.

After learning the fundamentals, (observation of the sky, gravitation, radiation and telescopes), we will study the Solar System, primarily the planets and their major satellites.

INSTRUCTOR(S): D.A. Tindall

FORMAT: Lecture 3 hours

PREREQUISITE: A first year science class

EXCLUSION: PHYC 2450.06 X/Y

### PHYC 2452.03: Astronomy II: Stars and Beyond.

This class is the second part of an introduction to astronomy for science students.

This class builds on the knowledge gained in the first half of PHYC 2451.03 to study the nearest star (the sun) and develops this to explain the behaviour of objects outside the Solar System like stars, pulsars, quasars and black holes. Finally, galaxies and the Universe as a whole (cosmology) are studied with questions like, "will the universe expand forever - or will it collapse in the Big Crunch"? How do we know all of this and how well do we know it?

INSTRUCTOR(S): D.A. Tindall

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2451.03 or permission of the instructor

EXCLUSION: PHYC 2450X/Y.06

### PHYC 2510.03: Electricity and Magnetism.

The class will develop the vector calculus needed for the description of electric and magnetic fields. Other topics include scalar and vector potentials, forces on charges, magnetic induction and Maxwell's equations. The class will give students the necessary foundation for an understanding of more advanced topics in electricity and magnetism.

INSTRUCTOR(S): T. Monchesky

FORMAT: Lecture 3 hours, tutorial

PREREQUISITE: PHYC 2140.03, a multi-variable calculus class (MATH

2001.03/2002.03, which can be taken concurrently), or permission of the instructor

### PHYC 2515.03: Modern Physics.

This course introduces two physics revolutions: Einstein's theory of special relativity and the theory of quantum mechanics. Important early experiments are considered throughout the course. We consider length contraction, time dilation, and relativistic kinematics. Then, to account for wave-like properties of matter, we introduce complex wave functions in one-dimension and show how they lead to energy quantization, Schrodinger's equation, and penetration into classically forbidden regions. Other topics of modern physics, such as random walks (transport theory) may be introduced. A tutorial is offered.

INSTRUCTOR(S): S. Chapman

FORMAT: Lecture 3 hours, tutorial 1.5 hours

PREREQUISITE: PHYC 1280.03/1290.03 or PHYC 1300.06 or SCIE 1500.03, and a 1000 level calculus class

### PHYC 2610.03: Introduction to Biomechanics.

This course provides an introduction to mechanical and analytical concepts applied to the study of biological systems, particularly human movements and tissues.

It expands on the knowledge acquired in PHYC 1310, the mechanics as it applies to the human body. It deals with the muscle forces required for the different tasks, the role of the centre of mass in balance and motion and the stresses and strains endured by the different biological tissues.

The primary goal of the course is to learn to apply basic mechanical concepts to human movements.

FORMAT: Lecture

PREREQUISITE: PHYC 1300.06 or PHYC 1310.03 or PHYC 1280.03 or permission of the instructor

EXCLUSION: KINE 2465.03

### PHYC 2800.03: Climate Change.

The workings of the Earth's climate system are examined and then applied to help understand contemporary climate change. The role of numerical climate models is discussed with the aim of interpreting climate change predictions for the coming decades. Finally the impacts of climate change are studied with a focus on the various mitigation and adaptation strategies needed.

INSTRUCTOR(S): G. Lesins

FORMAT: 3 hours

CROSS-LISTING: GEOG 2800.03, OCEA 2800.03

EXCLUSION: ECON2850.06, PHYC2850.06

### PHYC 2850.06: The Science and Economics of Climate Change.

This course examines how climate change will impact the environment and human activities, and how to formulate and implement economically realistic solutions. It integrates the physical and biological science with economics in order to analyze the response options as we move towards a carbon-neutral society.

INSTRUCTOR(S): G. Lesins, R. Forsdyke

FORMAT: Lecture

CROSS-LISTING: ECON 2850

EXCLUSION: PHYC 2800, ECON 2216

### PHYC 3000.03: Experimental Physics I.

This class introduces students to electronics and measuring techniques. Topics include digital electronics: logic gates, clocks, shift registers, counters, memory; analog electronics; R.C.L. circuits, operational amplifiers; electronic systems: A/D and D/A chips, computer chips, and displays. The class also introduces students to modern data acquisition methods (including LabVIEW), skills which will be applied in the design and execution of experiments that illustrate fundamental concepts in physics. This class is open to Honours students only.

NOTE: This class has no final examination. Student evaluation is through performance on assignments and projects, and evaluation of written lab reports.

INSTRUCTOR(S): D. Labrie

FORMAT: Lecture 3 hours, lab 6 hours

PREREQUISITE: PHYC 2150.03 and PHYC 2515.03

### PHYC 3010.03: Experimental Physics II.

Designed to give the students a chance to do non-set experiments and thereby encounter and solve the problems of experimentation. Original approaches by the students are encouraged. As the number of experiments is small (three) students should achieve a real understanding of a few physical phenomena. Lecture topics include a survey of experimental techniques as encountered in the different areas of physics. This class is open to students only.

INSTRUCTOR(S): D. Labrie

FORMAT: Lecture 1.5 hours, lab 6 hours

PREREQUISITE: PHYC 3000.03 with a minimum grade of B, or permission of instructor

### PHYC 3050.03: Introduction to Numerical Programming.

This class explores computer programming for numerical computation. It introduces a modern programming language and it uses it to model simple physical systems (for example, projectile motion with realistic drag). Techniques are introduced to solve the governing equations. An important aspect is the interpretation of modelled results and comparison with experiment.

INSTRUCTOR(S): J. Kyriakidis

FORMAT: Lecture/3 hours

PREREQUISITE: PHYC 1280.03/1290.03 or equivalent, or MATH 1010.03 or equivalent

### PHYC 3180.03: Contemporary Physics.

This class covers a variety of topics related to areas of current interest in physics. Presently, topics include high temperature superconductivity, quantum hall effect, neutrino oscillations, gravitational radiation and fusion reactors.

INSTRUCTOR(S): R. Dunlap

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03 and at least one of PHYC 2515.03 or PHYC 2150.03 or permission of the instructor

### PHYC 3200.03: Thermodynamics.

An introduction to the basic concepts and laws of thermodynamics. There will be a short survey of required Mathematics (partial derivatives). Topics include: thermometry, equations of state, energy and entropy, thermodynamic potentials, heat engines, thermodynamic efficiency and phase transitions.

INSTRUCTOR(S): T. Duck

FORMAT: Lecture 3 hours, tutorial 1.5 hours

PREREQUISITE: PHYC 2140.03, MATH 2001.03/2002.03, or permission of the instructor.

### PHYC 3210.03: Statistical Mechanics.

Using statistical entropy, we will explore how macroscopic thermodynamic behavior emerges from microscopic models. We will consider the microcanonical, canonical, and the grand canonical statistical ensembles. We will examine two-state systems as well as non-interacting Fermionic and Bosonic systems. Finally, we will learn about deceptively simple interacting systems such as the Ising model.

INSTRUCTOR(S): S. Bonev

PREREQUISITE: PHYC 3200.03 or equivalent; MATH 2001.03/2002.03

### PHYC 3250.03: Computational Methods in Physics.

The objective of this class is to teach students the use of computers in physical analysis. The UNIX operating system will be introduced and used throughout the course. A modern programming language will be applied to a selection of problems drawn from physical theory and experiment. This is a hands-on, practical, and interactive class with an emphasis on the development of computational skills that scientists use.

INSTRUCTOR(S): J. Kyriakidis

PREREQUISITE: PHYC 1280.03/1290.03 or equivalent, MATH 1010.03 or equivalent, PHYC 3050.03 or equivalent

### PHYC 3303.03: Materials Science.

The emphasis is on the principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter are examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. Important processes such as photography and Xerography are explained.

INSTRUCTOR(S): M.A. White

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2301.03 or PHYC 3200.03 (which may be taken concurrently) or ERTD 2001.03/2002.03 or ENGI 2800.03 or permission of the instructor

CROSS-LISTING: CHEM 3305.03

### PHYC 3340.03: Electronics.

Topics include digital electronics: logic gates, clocks, shift registers, counters, memory; analog electronics: R.C.L. circuits, operational amplifiers; electronic systems: A/D and D/A chips, computer chips, and displays.

NOTE: Credit cannot be given for both PHYC 3000.03 and PHYC 3340.03

INSTRUCTOR(S): D. Labrie

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: PHYC 2150.03; or ENGI 2001.03

### PHYC 3640.03: Quantum Physics I.

This course introduces the formal structure of quantum mechanics as well as quantum mechanical calculations. The emphasis is on problem solving.

The course starts with quantum measurement, then considers particles in a box and the quantum harmonic oscillator. The course starts with one-dimensional quantum mechanics and ends with higher dimensional problems. The course introduces quantum mechanical operators, time-evolution, quantum angular momentum, and the solution of the hydrogen atom.

INSTRUCTOR(S): K. Hall

PREREQUISITE: MATH 2002.03, MATH 2030.03, PHYC 2515.03 and PHYC 2140.03

### PHYC 3810.03: Microcomputers and the Real World.

Subject material: measurement theory, modern sensors, microcomputer architecture, and software simulation of digital electronic circuits. Interfacing techniques including serial, parallel USB and GPIB ports. The graphical programming language is used throughout.

FORMAT: Lecture 3 hours, computer lab 3 hours

PREREQUISITE: PHYC 2150.03, PHYC 3340.03

CROSS-LISTING: CSCI 3122.03

### PHYC 3900.03: Introduction to Soft Condensed Matter Physics.

The aim of this course is to provide an introduction to some concepts used in soft condensed matter physics through the study of three systems, polymers, colloids and liquid crystals.

The course will be divided in four modules:

- I) Brownian dynamics and diffusion
- II) Polymers shape, molecular mass distribution, osmotic pressure, gel, entropic elasticity
- III) Colloids: van der Waals and electrostatic interactions, Hamaker constant, DLVO theory, polymer layers (brushes), gel electrophoresis
- IV) Liquid crystals: order parameter, optical properties of nematics (birefringence), phase transitions, LCD

INSTRUCTOR(S): L. Kreplak

FORMAT: Lecture

PREREQUISITE: MATH 2001.03, 2002.03: Intermediate Calculus I and II

### PHYC 4151.03: Quantum Physics II.

This class is a continuation of PHYC 3640.03. Topics include: the spin-1/2 problem, quantum dynamics, entanglement and the EPR Paradox, perturbation theory, identical particles, and the quantised radiation field.

INSTRUCTOR(S): J. Kyriakidis

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 3640.03

CROSS-LISTING: PHYC 5151.03

**PHYC 4160.03: Mathematical Methods of Physics.**

Topics discussed include: complex variable theory, Fourier and Laplace transform techniques, special functions, partial differential equations.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3120.03, PHYC 2140.03 or permission of instructor.

CROSS-LISTING: PHYC 5160.03, MATH 4165.03

**PHYC 4230.03: Introduction to Condensed Matter.**

An introduction to the basic concepts of solid state physics which are related to the periodic nature of the crystalline lattice. Topics include crystal structure, X-ray diffraction, phonons and lattice vibrations, the free electron theory of metals, energy bands, magnetism and superconductivity.

INSTRUCTOR(S): S. Bonev

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 3640.03 and 3210.03 which may be taken concurrently, or permission of instructor

CROSS-LISTING: PHYC 5230.03

**PHYC 4311.03: Fluid Dynamics I.**

An introduction to the theory of fluid dynamics with some emphasis on geophysically important aspects. Contents: tensor mathematics, flow kinematics, equations of motion, viscous flow, potential flow, convection, turbulence, and basic aerodynamics.

INSTRUCTOR(S): D. Kelley

FORMAT: Lecture 3 hours

PREREQUISITE: Subject to instructor approval.

CROSS-LISTING: PHYC 5311.02, OCEA 4311.03/5311.01

**PHYC 4411.03: Atmospheric Dynamics I.**

The basic laws of fluid dynamics are applied to studies of atmospheric motion, including the atmospheric boundary layer and synoptic scale weather disturbances (the familiar highs and lows on weather maps). Emphasis will be placed on the blend of mathematical theory and physical reasoning which leads to the best understanding of the dominant physical mechanisms.

INSTRUCTOR(S): I. Folkins

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 and MATH 3120.03 or permission of the instructor

CROSS-LISTING: PHYC 5411.03, OCEA 4411.03/5411.03.

**PHYC 4412.03: Atmospheric Dynamics II.**

The approach is the same as for PHYC 4411.03, with emphasis on synoptic-scale wave phenomena, frontal motions and the global circulation. Additional topics including tropical meteorology, middle atmospheric dynamics, severe storms, mesoscale meteorology and numerical weather prediction may be included.

INSTRUCTOR(S): I. Folkins

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4411.03 or permission of the instructor.

CROSS-LISTING: PHYC 5412.03, OCEA 4412.03/5412.03

**PHYC 4505.03: Atmospheric Physics.**

Moist thermodynamics is applied to a variety of atmospheric phenomena. These include aerosols, cloud droplets, precipitation formation, convection, supercells, hurricanes, lightning, and the boundary layer. We also discuss the radar equation and the interpretation of radar images.

FORMAT: Lecture

PREREQUISITE: PHYC 2140 and PHYC 4520, or permission of the instructor

CROSS-LISTING: PHYC 5505, OCEA 4505/5505

**PHYC 4520.03: Introduction to Atmospheric Science.**

The general overview of the atmosphere provides the student with an understanding of the composition and thermal structure of the atmosphere, air mass and frontal theory and weather generating physical processes and their consequences. Other topics include atmospheric radiation, dynamic meteorology, climatology and the physics of clouds and storms.

INSTRUCTOR(S): M. Earle

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 or permission of instructor

CROSS-LISTING: PHYC 5520.03, OCEA 4520.03/5520.03

**PHYC 4540.03: Synoptic Meteorology I.**

This class introduces the practical skills of meteorological observation and analysis. Emphasis is on developing skills in drawing and interpreting weather maps, and on studying the three-dimensional structure of weather systems.

Satellite and radar remote sensing of the atmosphere is also introduced. Case

studies of atmospheric systems and processes are carried out during the tutorial-laboratory period.

INSTRUCTOR(S): L. Titus

FORMAT: Lecture 2 hours, tutorial-lab 3 hours

PREREQUISITE: At least one third-year physics class

CROSS-LISTING: PHYC 5540.03, OCEA 4541.03/5541.03

CO-REQUISITE: OCEA 4220.03

**PHYC 4550.03: Synoptic Meteorology II.**

This class extends the analysis and diagnosis of atmospheric dynamics and weather processes introduced in PHYC 4540.03. Emphasis is on the practical application of meteorological theory, particularly in the area of diagnosing the cases of weather events. Modern computer and statistical methods are discussed, and students receive an introduction to weather forecasting.

INSTRUCTOR(S): L. Titus

FORMAT: Lecture 2 hours, tutorial-lab 3 hours

PREREQUISITE: PHYC 4540.03

CROSS-LISTING: PHYC 5550.03, OCEA 4550.03/5550.03

**PHYC 4570.03: Light Scattering, Radiative Transfer, and Remote Sensing.**

The equations of radiative transfer through the atmosphere will be developed and used. Special topics include transfer of infrared radiation. Mie scattering, absorption by atmospheric gases and aerosols, transfer through clear and cloudy atmospheres. Also remote sensing techniques and radiative transfer models are covered.

INSTRUCTOR(S): G. Lesins

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03, PHYC 2510.03

CROSS-LISTING: PHYC 5570.03, OCEA 5570.03

**PHYC 4595.03: Atmospheric Chemistry.**

A fundamental introduction to the physical and chemical processes determining the composition of the atmosphere and its implications for climate, ecosystems, and human welfare. Origin of the atmosphere.

Nitrogen, oxygen, carbon, sulfur cycles. Climate and the greenhouse effect.

Atmospheric transport and turbulence. Stratospheric ozone.

Oxidizing power of the atmosphere. Regional air pollution: aerosols, smog, acid rain.

INSTRUCTOR(S): R. Martin

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1000, PHYC 1280.03/1290.03 or PHYC 1300 and CHEM 1011/1012

CROSS-LISTING: PHYC 5595.03, CHEM 4595.03, OCEA 4595.03/5595.03

**PHYC 4650.03: General Relativity.**

A review of differential geometry will be given followed by an introduction to the general theory of relativity. Various topics will be discussed, including: linearized theory and gravitational radiation, spherically symmetric metrics and the Schwarzschild solution, gravitational collapse, black holes, and cosmology.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3045.03 or permission of the instructor

CROSS-LISTING: PHYC 5650.03, MATH 4650.03/5650.03

**PHYC 4660.03: Cosmology.**

A self-contained introduction to cosmology will be given and no prior knowledge of differential geometry or general relativity will be assumed (although some knowledge of elementary differential equations will be useful). A cosmological model is a model of the universe, as a whole, on the largest scales; the emphasis of the class will be on the modeling aspects of cosmology.

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's permission

CROSS-LISTING: PHYC 5660.03, MATH 4410.03/5410.03

**PHYC 4800.03: Honours Research Project I.**

Students in the honours stream in Physics and Atmospheric Science will do a research project under the direction of a faculty member. A research plan, interim progress reports and a formal final report are required. The final grade will be based on an evaluation of the reports and an oral presentation. Students in the major stream can apply to the department to take this course.

COORDINATOR: H. Rotermond

INSTRUCTOR(S): I. Hill

FORMAT: Independent research, typically 6 hours a week. This course can be taken in either the first or second semester.

PREREQUISITE: PHYC 3010 and permission of the coordinator and supervisor.

### PHYC 4850.03: Honours Research Project II.

Students in the honors stream will do a second research project or continue the project started in PHYC 4800 under the direction of a faculty member. A research plan, interim progress reports and a formal, final report are required. The final grade will be based on an evaluation of the reports and an oral presentation.

COORDINATOR: H. Rotermund

INSTRUCTOR(S): I. Hill

FORMAT: Independent research, typically 6 hours/week.

PREREQUISITE: PHYC 4800 and permission of the coordinator and supervisor.

### PHYC 8891.00: Co-op Work-Term I.

PREREQUISITE: SCIE 2800.00

### PHYC 8892.00: Co-op Work-Term II.

### PHYC 8893.00: Co-op Work-Term III.

### PHYC 8894.00: Co-op Work-Term IV.

## VI. Graduate Studies

The Department of Physics and Atmospheric Science provides classes of study leading to MSc and PhD degrees. Areas of research include condensed matter, geophysics, medical physics, soft matter, low temperature physics, theoretical physics, atmospheric physics and oceanography. Consult the Graduate Studies Calendar, the Graduate Coordinator for the Physics and Atmospheric Science Department, or the Physics and Atmospheric Science Website at <http://www.physics.dal.ca>.

## Psychology and Neuroscience

Location: Life Sciences Centre  
1355 Oxford Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3417  
Fax: (902) 494-6585  
Website: <http://psychology.dal.ca/>

### Dean

Moore, C. L., BA, PhD (Cantab)

### Chairperson of Department

Klein, R. M., BA (SUNY), MA, PhD (Oregon), University Research Professor

### Academic Advisors

To contact an academic advisor, please go to the Psychology and Neuroscience Main Office (LSC 3263), telephone (902) 494-3417, or visit the Psychology and Neuroscience website.

### Professors Emeriti

LoLordo, V. M., AB (Brown), PhD (Penn)

Mitchell, D. E., BSc, MAppSc (Melb), PhD (Berkeley)

### Professors

Adamo, S., BSc (Toronto), PhD (McGill), Faculty of Science Killam Professor in Psychology

Brown, R. E., BSc (Victoria), MA, PhD (Dalhousie), University Research Professor

Bryson, S. E., BA (Guelph), PhD (McGill), Major appointment in Pediatrics, Joan and Jack Craig Chair in Autism Research

Chambers, C. T., BSc (Dalhousie), MA, PhD (UBC), Joint appointment in Pediatrics; Canada Research Chair in Pain and Child Health

Finley, G. A., BSc, MD (Dalhousie), Major appointment in Anaesthesia

Kay-Raining Bird, E., BA (Queen's), MSc (Columbia Univ.), PhD (U. Wisconsin - Madison), Major appointment in the School of Human Communication Disorders

Kieft, M., BA (Memorial), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders

Klein, R.M., BA (SUNY), MA, PhD (Oregon), University Research Professor

McGrath, P., BA, MA (Sask), PhD (Queen's), Canada Research Chair in Pediatric Pain

McMullen, P., BSc, MSc (Toronto), PhD (Waterloo)

Meinertzhagen, I. A., BSc (Aberdeen), PhD, DSc (St. Andrews), University Research Professor

Moore, C. L., BA, PhD (Cantab), Faculty of Science Killam Professor in Psychology

Phillips, D. P., BSc, PhD (Monash)

Rusak, B., BA (Toronto), PhD (Berkeley), FRSC, Joint appointment in Psychiatry

Semba, K., BEd, MA (Tokyo), PhD (Rutgers), Major appointment in Anatomy and Neurobiology

Stewart, S., BSc (Dalhousie), PhD (McGill), Joint appointment in Psychiatry

Taylor-Helmick, T. L., BA (Calgary), MSc, PhD (Dalhousie)

Tibbo, P., BSc (Mt. A), BMedSc, MD (Memorial), Major appointment in Psychiatry

Ungar, M., BA, BSW, MSW (McGill), PhD (Wilfrid Laurier), Major appointment in the School of Social Work

### Associate Professors

Abbass, A., BSc (Ottawa), MD (Dalhousie), FRCPC (Toronto), Major appointment in Psychiatry

Barrett, S. P., BA (St. FX), PhD (McGill), Clinical PhD Program Associate  
Director of Training  
Corkum, P. V., BSc (Dalhousie), MA, PhD (OISE at Toronto), Clinical PhD  
Program Co-Director of Training  
Deacon, S. H., BSc (UPEI), PhD (Oxon)  
Duffy, K., BA (St. Thomas), PhD (McMaster)  
Earhard, B., BA, MA, PhD (Toronto), Undergraduate Program Coordinator  
Eskes, G. A., BA, PhD (Berkeley), Major appointment in Psychiatry  
Good, K., BSc (UNB), MSc, PhD (UBC), Major appointment in Psychiatry  
Ingles, J., BA (Queen's), PhD (Dalhousie), Major appointment in the School of  
Human Communication Disorders  
Jacques, S., BA (McGill), MA, PhD (Toronto)  
Johnson, S., BA (Kalamazoo), MSc, PhD (Victoria), Clinical PhD Program Co-  
Director of Training  
McGlone, J., BA, MA, PhD (Western)  
Newman, A. J., BA (Winnipeg), MSc, PhD (Oregon)  
Perrot, T. S., BSc, PhD (Western)  
Robinson, L., BSc (Victoria), MA, PhD (Simon Fraser), Major appointment in the  
School of Health and Human Performance  
Sherry, S. B., BA (York), MA (UBC), PhD (Saskatchewan), Graduate Program  
Coordinator  
Smith, I., BA (Dalhousie), MSc (Brown), PhD (Dalhousie), Major appointment in  
Pediatrics

### Assistant Professors

Aitken, S., BA, MSc, PhD (Toronto), Major appointment in the School of Human  
Communication Disorders  
Boe, S., BPhEd (Brock), PhD, MPT (Western), Major appointment in the School  
of Physiotherapy  
Chorney, J., BSc (Dalhousie), MA, PhD (West Virginia), Major appointment in  
Anesthesiology  
Crowder, N. A., BSc, PhD (Alberta)  
Krigolson, O. E., BEd (Victoria), MSc (Indiana), PhD (Victoria)  
Phillmore, L., BA (UWO), MA, PhD (Queen's)  
Rosen, N. O., BA (Queen's), PhD (McGill)  
Weaver, I. C. G., BSc (Alberdeen), MSc (Bristol), PhD (McGill)  
Westwood, D. A., BSc, MA, PhD (Waterloo), Major appointment in the School of  
Health and Human Performance

### Senior Instructors

Gadbois, S., BSc, MAPs (Univ de Moncton), PhD (Dalhousie)  
Juckes, T., BA, MA (Natal), PhD (Dalhousie)  
Schellinck, H., BSc, MSc, PhD (Dalhousie)  
Stamp, J., BSc (Dalhousie), PhD (Cambridge)

### Adjunct Professors

Backman, J., BA (Dalhousie), MA, PhD (Carleton), Erica Baker Psychological  
Services  
Barresi, J., BSc (Brown), MA (S. Calif.), MS, PhD (Wisc), Psychology and  
Neuroscience/Dalhousie  
Chipman, K., BA (UPEI), MA, PhD (Western), Neuropsychology Service/Nova  
Scotia Hospital  
Church, E., BA (St. John's), MA, PhD (Toronto), School Psychology/Mount Saint  
Vincent  
Cohen, A. J., BA (McGill), MA, PhD (Queen's), Psychology/UPEI  
D'Arcy, R. C. N., BSc (Victoria), MSc, PhD (Dalhousie), Engineering and  
Computing Science/Simon Fraser  
Ebert, P., BSc, MSc (Toronto), PhD (Victoria), Seniors Memory Clinic/Ontario  
Shores Centre for Mental Health Sciences  
Ellsworth, C., BA (McMaster), MA, PhD (Queen's), Psychology/IWK Health  
Centre  
Fisk, J., BSc, MA, PhD (Western), Psychology/QEII Health Sciences Centre  
Frankland, B. W., BSc (McMaster), MSc, PhD (Dalhousie)  
Gilin Oore, D., BSc (Northern Michigan), MA, PhD (Missouri-St. Louis),  
Psychology/Saint Mary's  
Hauf, P., PhD (Johann Wolfgang Goethe Univ., Frankfurt), Psychology/St. Francis  
Xavier  
Ivanoff, J., BSc, MA (Guelph), PhD (Dalhousie), Psychology/Saint Mary's  
LoLordo, V. M., AB (Brown), PhD (Penn), Psychology and Neuroscience/  
Dalhousie  
MacDonald, G. W., BA (St. FX), MA, PhD (Windsor), Private Practice  
Marchand, Y., MCS (Univ. of Paris), PhD (Compiègne)

McLeod, P., BA (Mt. A), MSc (Memorial), PhD (Dalhousie), Psychology/Acadia  
Mitchell, D. E., BSc, MAppSc (Melb), PhD (Berkeley), Psychology and  
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Omisade, A., BA (York), PhD (Dalhousie), Neuropsychology/QEII Health  
Sciences Centre  
O'Neill, P., MSc, PhD (Yale), Professor Emeritus/Acadia  
Porter, S. B., BSc (Acadia), MA, PhD (UBC), Psychology/UBC-Okanagan  
Rodger, R. S., MA (Edin), PhD (Queen's, Belfast)  
Saint-Aubin, J., BA (Sherbrooke), MPs, PhD (Laval), École de psychologie/  
Université de Moncton  
Shaw, S. R., BSc (London), PhD (St. Andrews), Psychology and Neuroscience/  
Dalhousie  
Smith, S. M., BA (Bishop's), MA, PhD (Queen's), Psychology/Saint Mary's  
Song, C., BSc (East China Normal Univ.), MD in Chinese Medicine (Hu Nan  
Medical Univ.), MSc (East China Normal Univ. and Chinese Acad. of  
Science), PhD (National Univ. of Ireland), Psychiatry/Guangxi Medical Univ.  
Vallis, T. M., BSc (Dalhousie), MA, PhD (Western), Psychology/QEII Health  
Sciences Centre  
Veitch Wolfe, V., BA (Auburn), MA (Southern Illinois), PhD (West Virginia),  
Psychology/IWK Health Centre  
Wassersug, R., BA (Tufts), PhD (Chicago), Urologic Sciences/UBC  
Watt, M., BA (St. FX), PhD (Dalhousie), Psychology/St. Francis Xavier  
Yoon, M. G., BS (Seoul), PhD (Berkeley)

### Research Associates

Borycz, J., PhD (Polish Academy of Sciences, Kraków, Poland)  
Fabian-Fine, R., Dr.phil.nat. (Frankfurt)  
Fröhlich, A., Diplom, Dr.rer.Nat. (Freie Universität Berlin), MSVU  
Pyza, E., PhD (Jagiellonian Univ.), Inst. of Zoology, Jagiellonian Univ.

### Postdoctoral Fellows

Borycz, J. A., PhD (Jagiellonian Univ., Kraków, Poland)  
Caceres, L., PhD (McGill)  
Caes, L., PhD (Ghent)  
Champod, A. S., PhD (McGill)  
Coulombe, A., PhD (Western)  
Easy, R., PhD (Dalhousie)  
Jaime, M., PhD (Florida International Univ.)  
MacKinnon, S., PhD (Dalhousie)  
Shinomiya, K., PhD (Tokyo)  
Stahlschmidt, Z., PhD (Arizona State), Killam Postdoctoral Fellow  
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# Psychology

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## Dean

Moore, C. L., BA, PhD (Cantab)

## I. Introduction

Psychology is an experimental science: Its purpose is to discover the conditions which control the activities of animals and people, to measure these conditions and the responses they produce, and to use this knowledge to invent ways of predicting behaviour and changing it. It is a subject for inventive but also scientifically rigorous people, better suited to those who want to find out for themselves than to those who want to be told what to believe.

Psychology at Dalhousie treats behaviour as a natural phenomenon, and in that sense shares much with the other life sciences. Today, for example, the boundary that historically has separated psychology from zoology, physiology, or even cellular biology has begun to blur. On the other hand, important ties are being made to such disciplines as anthropology, sociology, and philosophy. The student will find that the diverse subject matter includes three major levels of analysis: the organism, the organism's biological machinery, and the broader social-environmental context in which particular behaviour patterns are expressed. Meaningful integration of these diverse levels and forms of analysis is an intellectual challenge of major proportions. Similarly, the time perspectives of immediate causation, development, evolution, and function all contribute to the modern approach to behavioural science and each must be evaluated in relation to the others.

### A. Enrolment Limitations

Psychology is a popular program, and we have a high enrolment of students. Potential Major and Honours students, and those intending to enrol in the 15 Credit BA or BSc Minor program, in Psychology should note that there are limitations on the number of students that can be accepted into these programs in any given year. Passing introductory psychology classes with the required grade of B- and declaring an intent to Major in Psychology does not guarantee a place in any of these programs. Students are advised to register as early as possible for required classes to secure a space within a program.

There are strict size restrictions on individual classes. Lecture classes are limited by room size. Additional size restrictions are imposed on laboratory classes because of equipment limitations and the much closer supervision required. Because of size limitations on 3000 level laboratory classes, Major and Honours students, and those enrolled in the 15 Credit BA or BSc Minor program, should take 2000 level prerequisites for at least two 3000 level laboratory classes. Laboratory classes fill rapidly, and not all laboratory classes are offered every year.

### B. Enrolment of Other Students

Only Major and Honours students in Psychology may enrol in PSYO 2000.03, 2770.03 and 2501.03, and such students are given preference in other second-year classes. All students must have at least a B- in a full-credit of introductory psychology classes, or the psychology component of a DISP class, in order to register in any second-year class in Psychology.

### C. Laboratories

Several classes include a laboratory component, of which there are two types. One type is a research laboratory in which students will conduct research, collect data

and write reports on the results of the research. All Major and Honours students must take the second-year research laboratory class (PSYO 2000.03) and at least one third-year research laboratory class (full credit for Honours students.)

The other type is a proficiency or skills laboratory, which usually involves additional work in computer exercises related to the lecture material and class readings.

## II. Degree Programs

The department offers the following degree programs:

- BA and BSc (20 credit) Honours in Psychology
- BA and BSc (20 credit) Major in Psychology
- BA and BSc (15 credit) Minor in Psychology

While these programs are described below, a more detailed and up-to-date description is available from the Psychology and Neuroscience Main Office (Life Sciences Centre, Room 3263) in a pamphlet titled "A Student's Guide to Psychology Classes" (also available online at the Department's website: <http://psychology.dal.ca/>).

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

### A. BA or BSc (20 credit) Honours in Psychology

Students enrolled in either the BA or BSc Honours program must take nine to 11 full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level.

Students should follow the class sequence recommended below. Although there is considerable flexibility for the student, it is important to plan carefully (this is especially true for those considering graduate work in Psychology). Additional information or advice about the program can be obtained from an Honours Advisor. Students can be put in touch with an academic advisor by contacting the Psychology and Neuroscience Main Office (Life Sciences Centre, Room 3263 or 494-3417). Detailed descriptions of the Honours application process may be found on the departmental website: <http://psychology.dal.ca/Programs/Psychology.php>.

Registration Notes:

1. Students wishing to undertake an Honours program must meet with an Honours advisor, and complete a Departmental Honours Application form. The earliest students can apply for admission to the Honours program is in January of their third year of study. Admission to Honours in January will require a grade of B or better in PSYO 2000.03 and an A- average in the last six completed Psychology half credits. Application may be delayed until the end of the third year, in which case, a grade of B or better in PSYO 2000.03 and an A- average in the last nine completed Psychology half credits will be required. Both Departmental (and then University) approval is required for formal admission to the Honours program. A detailed description of the Honours application process can be found on the departmental website: <http://psychology.dal.ca/Programs/Psychology.php>
2. It is recommended that students in the Honours program obtain the agreement of a willing thesis research supervisor, and begin laying the groundwork for their thesis research (e.g., background reading, learning laboratory methodology, submission of ethics forms), no later than during the summer preceding the thesis year.
3. Students taking an Honours degree in Psychology cannot use cross-listed Neuroscience classes as electives.
4. Laboratory classes focusing on human psychology typically require students to serve as participants and/or as experimenters in class projects. Students who do not wish to participate in such projects should ensure that they have the prerequisites necessary to register in alternative laboratory classes.

## Departmental Requirements

### 1000 level

- PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 with a grade of B- or better

### 2000 level

A normal second-year program will include three required half-credit classes and three elective half-credit classes in Psychology. Care should be taken in selecting second-year elective classes to ensure they will provide the necessary prerequisites for classes intended to be taken in the third and fourth years of study.



**Required Second-Year Classes are:**

- PSYO 2000.03: Methods in Experimental Psychology, with a grade of B or better
- PSYO 2501.03: Statistical Methods I (or STAT 2080.03)
- PSYO 2770.03: Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

**OR**

PSYO 2470.03: Systems Neuroscience (recommended for students planning to take advanced Neuroscience classes)

**Elective Second-Year Classes are:**

- Three half credits required from -
- PSYO 2080.03: Social Psychology
- PSYO 2090.03: Developmental Psychology
- PSYO 2130.03: Introduction to Cognitive Psychology
- PSYO 2140.03: Learning
- PSYO 2150.03: Perceptual Processes
- PSYO 2160.03: Animal Behaviour
- PSYO 2170.03: Hormones and Behaviour
- PSYO 2220.03: Abnormal Behaviour
- PSYO 2570.03: Cellular Neuroscience

(Total = three full or six half credits)

**3000 level**

- PSYO 3502.03: Statistical Methods II
- Additional 2.5 full credits, or five half credits, selected from classes in Categories A and B. Two of the half credits must be in designated laboratory (LAB) classes. Students are also encouraged to take either a full-credit Independent Research in Modern Psychology class (PSYO 3000.06) or a half-credit Directed Project in Psychology class (PSYO 3001.03) from Category C to obtain experience that will assist them in preparing for their 4000-level Honours thesis. In planning their program, students should keep in mind that two half-credit classes must be completed in each of Category A and Category B prior to graduation.

**Category A. Brain, Language, Learning, and Cognition**

PSYO 3043.03: Neurobiology of Learning  
 PSYO 3044.03: Lab Methods of Learning and Conditioning (LAB)  
 PSYO 3051.03: Sensory Neuroscience I. Vision (LAB)  
 PSYO 3052.03: Sensory Neuroscience II. Hearing and Speech  
 PSYO 3084.03: Social Cognition  
 PSYO 3131.03: Research Methods in Attention (LAB)  
 PSYO 3132.03: Research Methods in Visual Cognition (LAB)  
 PSYO 3133.03: Research Methods in Memory (LAB)  
 PSYO 3134.03: Research Methods in Psycholinguistics (LAB)  
 PSYO 3137.03: Research Methods in Cognitive Neuroscience (LAB)  
 PSYO 3161.03: Measuring Behaviour (LAB)  
 PSYO 3162.03: Advanced Animal Behaviour  
 PSYO 3165.03: Neuroethology (LAB)  
 PSYO 3180.03: Psychoneuroimmunology/Ecological Immunology  
 PSYO 3190.03: Psycholinguistics  
 PSYO 3227.03: Principles of Human Neuropsychology  
 PSYO 3237.03: Drugs and Behaviour  
 PSYO 3260.03: Biological Rhythms  
 PSYO 3264.03: The Science of Sleep  
 PSYO 3270.03: Developmental Neuroscience  
 PSYO 3370.03: Neuroscience Laboratory I (LAB)  
 PSYO 3371.03: Neuroscience Laboratory II (LAB)  
 PSYO 3670.03: Genes, Brain and Behaviour  
 PSYO 3770.03: Behavioural Neuroscience  
 PSYO 3775.03: Behavioural Neuroscience Laboratory (LAB)  
 PSYO 3790.03: Neurolinguistics  
 PSYO 3970.03: Molecular Neuroscience

**Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology**

PSYO 3010.06: Advanced General Psychology  
 PSYO 3030.03: Psychometrics (LAB)  
 PSYO 3082.03: Experimental Social Psychology (LAB)  
 PSYO 3091.03: Methods in Developmental Psychology (LAB)  
 PSYO 3092.03: Early Development  
 PSYO 3093.03: Development of Language and Literacy Abilities  
 PSYO 3122.03: Methods in Experimental Clinical Psychology (LAB)

PSYO 3129.03: Childhood Psychopathology  
 PSYO 3220.03: Clinical Psychology  
 PSYO 3224.03: Forensic Psychology  
 PSYO 3225.03: Health Psychology  
 PSYO 3280.03: Personality  
 PSYO 3390.03: Cognitive Development  
 PSYO 3581.03: History of Psychology I  
 PSYO 3582.03: History of Psychology II

**Category C. Directed Research Classes for Potential Honours Students**

PSYO 3000.06: Independent Research in Modern Psychology  
 PSYO 3001.03: Directed Project in Psychology

(Total = three full or six half credits—exclusive of an independent research class)

**4000 level**

- PSYO 4500.06: Honours Thesis
- Two half credits of 4000-level seminars, plus
- One more full credit, or half-credit equivalents, of 3000- or 4000-level classes.

(Total = three full or six half credits)

Overall Total = nine full-credit or 18 half-credit classes

**B. BA or BSc (20 credit) Combined Honours**

It is possible for students to take an Honours degree combining Psychology with another subject (other than Neuroscience). Students proposing to take such a class of study must consult with an Honours advisor in both departments to arrange program details.

If Psychology is chosen as the **primary** subject in a Combined Honours program, the following classes should be taken.

**2000 level**

- PSYO 2000.03: Methods in Experimental Psychology, with a grade of B or better
- PSYO 2501.03: Statistical Methods I (or STAT 2080.03)
- PSYO 2770.03: Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

**OR**

PSYO 2470.03: Systems Neuroscience (recommended for students planning to take advanced Neuroscience classes)

- Three additional half-credit, second-year classes

**3000 level**

- PSYO 3502.03: Statistical Methods II
  - Two half-credit 3000-level laboratory classes
  - One additional full credit, or two half credits, in 3000-level Psychology classes
- In choosing the above classes, a minimum of one half credit must be selected from each of the Category A and the Category B list.

**4000 level**

- PSYO 4500.06: Honours Thesis
- Two half credits in 4000-level seminar classes.

Overall Total = 7.5 full credits or 15 half-credit classes.

If Psychology is chosen as the **secondary** subject in a Combined Honours program, the following classes should be taken.

**2000 level**

- PSYO 2000.03: Methods in Experimental Psychology, with a grade of B or better
- PSYO 2501.03: Statistical Methods I (or STAT 2080.03)
- PSYO 2770.03: Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

**OR**

- PSYO 2470.03: Systems Neuroscience (recommended for students planning to take advanced Neuroscience classes)
- Three additional half-credit, second-year classes

**3000 level**

- Two full credits, or four half credits, at or above the 3000 level are required to graduate. Students must take a minimum of one half-credit class from each of Category A and Category B classes, and must complete a designated half-credit laboratory (LAB) class.

### C. BA or BSc (20 credit) Major in Psychology

BA students must take at least seven and no more than nine full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. BSc students must take at least seven and no more than ten full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. All Major students must complete four full credits (or half-credit equivalents) in classes numbered 3000 or above.

Students should plan carefully and, if required, obtain advice from an academic advisor. Advisors can be consulted by contacting the Psychology and Neuroscience Main Office (Life Sciences Centre, Room 3263 or 494-3417). Students should be aware that laboratory classes focusing on human psychology typically require students to serve as participants and/or as experimenters in class projects. Students not wishing to participate in such projects should ensure that they have the prerequisites necessary to register in alternative laboratory classes

NOTE: Students who Major in Psychology cannot use cross-listed Neuroscience classes as electives.

#### Departmental Requirements

##### 1000 level

- PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 with a grade of B- or better

##### 2000 level

A normal second-year program will include three required half-credit classes and three elective half-credit classes in Psychology. Care should be taken in selecting second-year elective classes to ensure they will provide the necessary prerequisites for classes intended to be taken in the third and fourth years of study.

##### Required Second-Year Classes are:

- PSYO 2000.03: Methods in Experimental Psychology
- PSYO 2501.03: Statistical Methods I (or STAT 2080.03)
- PSYO 2770.03: Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

##### OR

PSYO 2470.03: Systems Neuroscience (recommended for students planning to take advanced Neuroscience classes)

##### Elective Second-Year Classes are:

- Three half credits required from -
- PSYO 2080.03: Social Psychology
- PSYO 2090.03: Developmental Psychology
- PSYO 2130.03: Introduction to Cognitive Psychology
- PSYO 2140.03: Learning
- PSYO 2150.03: Perceptual Processes
- PSYO 2160.03: Animal Behaviour
- PSYO 2170.03: Hormones and Behaviour
- PSYO 2220.03: Abnormal Behaviour
- PSYO 2570.03: Cellular Neuroscience

(Total = three full or six half credits)

##### 3000 level

- Four full credits or eight half credits at or above the 3000 level are required. Students must take a minimum of two half-credit classes in each of Category A and Category B, and complete a designated half-credit laboratory (LAB) class. Classes in Category C are intended for students planning to enter the Honours program.

#### Category A. Brain, Language, Learning, and Cognition

PSYO 3043.03: Neurobiology of Learning  
 PSYO 3044.03: Lab Methods of Learning and Conditioning (LAB)  
 PSYO 3051.03: Sensory Neuroscience I. Vision (LAB)  
 PSYO 3052.03: Sensory Neuroscience II. Hearing and Speech  
 PSYO 3084.03: Social Cognition  
 PSYO 3131.03: Research Methods in Attention (LAB)  
 PSYO 3132.03: Research Methods in Visual Cognition (LAB)  
 PSYO 3133.03: Research Methods in Memory (LAB)  
 PSYO 3134.03: Research Methods in Psycholinguistics (LAB)  
 PSYO 3137.03: Research Methods in Cognitive Neuroscience (LAB)  
 PSYO 3161.03: Measuring Behaviour (LAB)  
 PSYO 3162.03: Advanced Animal Behaviour  
 PSYO 3165.03: Neuroethology (LAB)  
 PSYO 3180.03: Psychoneuroimmunology/Ecological Immunology

PSYO 3190.03: Psycholinguistics  
 PSYO 3227.03: Principles of Human Neuropsychology  
 PSYO 3237.03: Drugs and Behaviour  
 PSYO 3260.03: Biological Rhythms  
 PSYO 3264.03: The Science of Sleep  
 PSYO 3270.03: Developmental Neuroscience  
 PSYO 3370.03: Neuroscience Laboratory I (LAB)  
 PSYO 3371.03: Neuroscience Laboratory II (LAB)  
 PSYO 3670.03: Genes, Brain and Behaviour  
 PSYO 3770.03: Behavioural Neuroscience  
 PSYO 3775.03: Behavioural Neuroscience Laboratory (LAB)  
 PSYO 3790.03: Neurolinguistics  
 PSYO 3970.03: Molecular Neuroscience

#### Category B. Clinical, Developmental, History, Personality, and Overviews of Psychology

PSYO 3010.06: Advanced General Psychology  
 PSYO 3030.03: Psychometrics (LAB)  
 PSYO 3082.03: Experimental Social Psychology (LAB)  
 PSYO 3091.03: Methods in Developmental Psychology (LAB)  
 PSYO 3092.03: Early Development  
 PSYO 3093.03: Development of Language and Literacy Abilities  
 PSYO 3122.03: Methods in Experimental Clinical Psychology (LAB)  
 PSYO 3129.03: Childhood Psychopathology  
 PSYO 3220.03: Clinical Psychology  
 PSYO 3224.03: Forensic Psychology  
 PSYO 3225.03: Health Psychology  
 PSYO 3280.03: Personality  
 PSYO 3390.03: Cognitive Development  
 PSYO 3581.03: History of Psychology I  
 PSYO 3582.03: History of Psychology II

#### Category C. Directed Research Classes for Potential Honours Students

PSYO 3000.06: Independent Research in Modern Psychology  
 PSYO 3001.03: Directed Project in Psychology  
 (Total = four full or eight half credits)

Overall Total = seven full-credit or 14 half-credit classes

### D. BA or BSc (20 credit) Double Major in Psychology

Students may combine a Major in Psychology with a Major in another subject such as Biology or Biochemistry. A minimum of 10 and a maximum of 13 full credits above the 1000 level are required in the two subjects chosen. No more than nine and no fewer than five full credits must be taken in either subject.

The minimum required classes in Psychology are:

##### 2000 level

- PSYO 2000.03: Methods in Experimental Psychology
- PSYO 2501.03: Statistical Methods I (or STAT 2080.03)
- PSYO 2770.03: Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

##### OR

- PSYO 2470.03: Systems Neuroscience (recommended for students planning to take advanced Neuroscience classes)
- Three additional half-credit, second-year classes

##### 3000 level

- Two full credits, or four half credits, at or above the 3000 level are required to graduate. Students must take a minimum of one half-credit class from each of Category A and Category B classes, and must complete a designated half-credit laboratory (LAB) class.

### E. BA or BSc (15 credit) Minor in Psychology

The Department of Psychology and Neuroscience does not encourage students to take the 15 credit degree, although that option is available to students who wish only a limited exposure to Psychology. Students are strongly urged to take a 20 credit Major or Honours degree. The 15 credit program requires students to complete a Minor consisting of at least three full credits in Psychology classes above the 1000 level other than those (PSYO 2000.03 and PSYO 2501.03) which are restricted to students in the Major or Honours program.

## F. Minor Program in Psychology

Students in 20 credit degree programs other than Psychology and Neuroscience may choose to complete a Minor Program in Psychology. A Minor in Psychology is offered to students enrolled in other programs within the Faculty of Science and to students from other Faculties, provided they complete the requisite classes.

To obtain a Minor in Psychology, a student must successfully complete any three full credits in Psychology above the 1000 level other than those (PSYO 2000.03 and PSYO 2501.03) which are restricted to students in the Major or Honours program. Admission to classes at the 2000 level requires completion of PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30, or 1540X/Y.27 with a grade of B- or better. Note that if a Minor is added to a Double Major or a Combined Honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements.

## BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements on page 131 of the calendar.

## G. Minor Programs available to students enrolled in a Major or Honours Psychology program

Minor programs allow students to develop subject specialities outside their main subject of study. Minors are normally added to a four year (20 credit) Major or Honours program. A student enrolled in a Major or Honours Psychology program may enroll in any of the Minors offered by other programs in the Faculty of Science, or in Minors offered by other Faculties.

NOTE: Classes counted toward a 20 credit Major or Honours program may not be used to fulfill the requirements of a Minor program.

*Minors in other Faculty of Science programs (see 5.a. page 135)*

*Minors offered by the Faculty of Arts and Social Sciences (see 5.a. page 135)*

*Minors in other Faculties (see 5.b. page 135)*

## H. Certificate Programs

A number of Certificate programs are available to students enrolled in an Honours, Major, or Minor program in Psychology. Please click here for full listing of available certificates (see page 137).

NOTE: Classes counted toward a Major, Honours or Minor program may also be used to fulfill the requirements of a Certificate.

Certificates offered through the Department of Psychology and Neuroscience include:

### Certificate in Animal Behaviour

(Contact Dr. Shelley Adamo, shelley.adamo@dal.ca)

The Certificate program is a collaborative effort of both the Biology and the Psychology and Neuroscience departments. It provides students an opportunity to take, within their BA or BSc Honours or Major program, a set of classes and a research project that will accord them an animal behaviour specialization. Completion of the Certificate will be shown on a student's transcript.

Note: It is the responsibility of students in the Certificate Program to complete the class sequence specified, and to provide the Certificate Coordinator with confirmation that the necessary classes have been taken, by the end of the examination period in their final year of study.

#### Certificate requirements:

1. A minimum grade of a B- is required in four mandatory classes:

PSYO/NESC 2160.03: Animal Behaviour

PSYO 2501.03: Statistical Methods I or STAT 2080.03: Statistical Methods for Data Analysis and Inference

BIOL 3062.03: Behavioural Ecology or PSYO/NESC 3162.03: Advance Animal Behaviour: Theories and Applications

BIOL 3630.03: Field Methods in Animal Behaviour or NESC/PSYO 3161.03: Measuring Behaviour

2. A grade of B- in two full credits of elective classes chosen from the following list. One of the two full credits must be at the 3000/4000 level.

#### 2000 level

PSYO/NESC 2140.03: Learning

PSYO/NESC 2170.03: Hormones and Behaviour

PSYO/NESC 2470.03: Systems Neuroscience

#### 3000 level

BIOL 3327.03: Entomology

BIOL 3622.03: Ornithology

BIOL 3067.03: Ecology and Evolution of Fishes

BIOL 3626.03: Field Studies of Marine Mammals

PSYO/NESC 3000.06: Independent Research in Modern Psychology (Animal Behaviour topic)

PSYO/NESC 3001.03: Directed Research Project in Psychology (Animal Behaviour topic)

PSYO/NESC 3043.03: Neurobiology and Learning

PSYO/NESC 3044.03: Laboratory Methods of Learning and Conditioning

PSYO/NESC 3162.03: Advanced Animal Behaviour

PSYO/NESC 3165.03: Neuroethology

PSYO/NESC 3180.03: Psychoneuroimmunology/Ecological Immunology

PSYO/NESC 3670.03: Genes, Brain and Behaviour

#### 4000 level

PSYO/NESC 4160.03: Topics in Behavioural Biology

BIOL 4060.03: Marine Mammalogy

BIOL 4800.06: Special Topics (Animal Behaviour topic)

BIOL 4806.03, 4807.03: Special Topics (Animal Behaviour topic)

3. A grade of B- in one half credit or more of independent research in Animal Behaviour.

The research topic must be pre-approved by the Certificate Coordinator prior to the start of their research class (i.e., PSYO/NESC 3000.06, PSYO/NESC 3001.03, PSYO/NESC 4500.06, BIOL 4800.06, BIOL 4806.03, BIOL 4807.03, or BIOL 4900.06). Honours students are encouraged to complete their Honours thesis on a topic in Animal Behaviour to fulfill this requirement.

Students are also encouraged to further develop their study design and analysis skills by taking additional classes such as BIOL 4061.03 (Design of Biological Experiments) or BIOL 4062.03 (Analysis of Biological Data).

4. Enrollment in the Certificate in Animal Behaviour program should be undertaken by students in their third or fourth year of studies when they are seeking approval of the research topic by the Certificate Coordinator.

The Certificate Coordinator will be named by the Animal Behaviour Working Group (S. Adamo, S. Gadbois, A. Horn, M. Leonard, C. Staicer).

## III. Class Descriptions

NOTE: Not all of the classes listed below are offered every year. Please consult the current timetable to determine if a class is offered.

In 2006/2007, the full-credit Introduction to Psychology classes were divided into two half-credit classes. PSYO 1000X/Y.06 became PSYO 1021.03 and 1022.03, and PSYO 1001X/Y.06 became PSYO 1011.03 and 1012.03. If a class now requires PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03 as prerequisites, this requirement may also be met by either PSYO 1000.06 or PSYO 1001.06.

### PSYO 1011.03: Introduction to Psychology and Neuroscience I: From Neuron to Person.

Material covered includes historical background, research methodology, neural mechanisms that underlie behaviour, sensory and perceptual processes, states of consciousness, learning, and memory. The class is taught by several different instructors with expertise in the topics covered. Biweekly labs add depth to the material covered in lectures.

NOTE: To enrol in 2000-level Psychology classes, a grade of B- is required in PSYO 1011.02 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03.

COORDINATOR: H. Schellinck

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, Required Biweekly Lab 1 hour

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1021.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33, SCIE 1515X/Y.36, SCIE 1520X/Y.30, SCIE 1540X/Y.27

### **PSYO 1012.03: Introduction to Psychology and Neuroscience II: From Social Interaction to Psychopathology.**

This class extends the coverage offered in PSYO 1011.03 or 1021.03 and includes material on development, cognition, intelligence, motivation, personality, social behaviour, and psychopathology. The class is taught by several different instructors with expertise in the topics covered. Biweekly labs add depth to the material covered in lectures.

NOTE: To enrol in 2000-level Psychology classes, a grade of B- is required in PSYO 1011.02 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03.

COORDINATOR: H. Schellinck

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, Required Biweekly Lab 1 hour

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1022.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33, SCIE 1515X/Y.36, SCIE 1520X/Y.30, SCIE 1540X/Y.27

### **PSYO 1021.03: Introduction to Psychology and Neuroscience I: From Neuron to Person.**

Material covered includes historical background, research methodology, neural mechanisms that underlie behaviour, sensory and perceptual processes, states of consciousness, learning, and memory. The class is taught by one or two different instructors with expertise in the topics covered. This class has no accompanying laboratory/tutorial.

NOTE: To enrol in 2000-level Psychology classes, a grade of B- is required in PSYO 1011.02 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1011.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33, SCIE 1515X/Y.36, SCIE 1520X/Y.30, SCIE 1540X/Y.27

### **PSYO 1022.03: Introduction to Psychology and Neuroscience II: From Social Interaction to Psychopathology.**

This class extends the coverage offered in PSYO 1011.03 or 1021.03 and includes material on development, cognition, intelligence, motivation, personality, social behaviour, and psychopathology. The class is taught by one or two different instructors with expertise in the topics covered. This class has no accompanying laboratory/tutorial.

NOTE: To enrol in 2000-level Psychology classes, a grade of B- is required in PSYO 1011.02 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

EXCLUSION: PSYO 1000X/Y.06, PSYO 1001X/Y.06, PSYO 1010X/Y.06, PSYO 1012.03, SCIE 1500X/Y.30, SCIE 1501X/Y.27, SCIE 1503X/Y.21, SCIE 1504X/Y.27, SCIE 1510X/Y.33, SCIE 1515X/Y.36, SCIE 1520X/Y.30, SCIE 1540X/Y.27

### **PSYO 2000.03: Methods in Experimental Psychology.**

The class provides a thorough grounding in scientific research methods used by psychologists. Lectures explore analytic procedures commonly employed to investigate human and animal behaviour. Students conduct and analyze in written reports a series of experiments in the laboratory to illustrate important concepts discussed in class.

NOTE: Restricted to students registered in Psychology Major or Honours programs. Students should endeavor to take PSYO 2501.03, Statistical Methods I, or STAT 2080.03 concurrently with PSYO 2000.03. Students must attend the first lecture session.

INSTRUCTOR(S): S. Gadbois, J. Christie

FORMAT: Lecture 3 hours, Lab 2 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

EXCLUSION: NESC 2007.03

### **PSYO 2080.03: Social Psychology.**

The class undertakes a critical analysis of social theory and research promoting a close and skeptical evaluation of our knowledge, our obedience and rebellion, our affections and hostilities, our willingness to help and injure, our attempts to explain ourselves and others, our erotic orientations, and our gender roles.

INSTRUCTOR(S): J. Stamp

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

### **PSYO 2090.03: Developmental Psychology.**

People change with age. This class examines the changes that occur in humans from conception through adolescence. Biological, social, cognitive, and linguistic aspects of development are considered. Theory, research, and practical implications are integrated throughout the class.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

### **PSYO 2130.03: Introduction to Cognitive Psychology.**

Lectures focus on the processes involved in transforming sensory information into the meaningful everyday world that we know. Initially, emphasis is on the visual system, and how information within that system is structured and organized, followed by a consideration of the character of internal representations used in thinking and remembering.

INSTRUCTOR(S): O.E. Krigolson

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

CROSS-LISTING: NESC 2130.03

### **PSYO 2140.03: Learning.**

Lectures focus on several goals: (1) providing general principles of learning; (2) understanding the behaviour of particular species; (3) direct application to human problems. Emphasis is on understanding why researchers in animal learning do what they are currently doing (given the goals and the historical context).

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

CROSS-LISTING: NESC 2140.03

### **PSYO 2150.03: Perceptual Processes.**

Perception deals with the way in which our senses provide us with information about our environment. This class focuses on the process by which sensory experiences are coded, how they are interpreted by the nervous system, and how experience modifies perception.

INSTRUCTOR(S): N. Crowder

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better), or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03

CROSS-LISTING: NESC 2150.03

EXCLUSION: PSYO/NESC 3005.03

### **PSYO 2160.03: Animal Behaviour.**

Using concepts from behavioural biology and psychology, animal behaviourists attempt to explain why animals behave the way they do. The class examines topics such as mating and social systems, mate choice, the evolution of behaviour, and animal communication. The behaviour of a wide range of animals is studied.

INSTRUCTOR(S): S. Adamo or S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better), or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03

CROSS-LISTING: NESC 2160.03

### **PSYO 2170.03: Hormones and Behaviour.**

How chemical signals of the neural, endocrine, and immune systems interact to influence the brain and behaviour. How neurotransmitters, cytokines, and

hormones control neural and behavioural development, sexual, aggressive, and maternal behaviour. Hormone receptors in the brain, reproduction, puberty, brain sex differences, and stress are also examined.

INSTRUCTOR(S): R.E. Brown

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better), or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03

CROSS-LISTING: NESC 2170.03

### PSYO 2220.03: Abnormal Behaviour.

This class involves the study of a broad range of manifestations of abnormal behaviour in adults (e.g., anxiety disorders, substance abuse/dependence, schizophrenia, affective disorders, personality disorders). Causes of abnormal behaviour and the scientific techniques developed to better understand and intervene with various forms of behavioural dysfunction are appraised.

INSTRUCTOR(S): S. Sherry

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

### PSYO 2470.03: Systems Neuroscience.

This class provides an introduction to the functional systems of the brain. We examine neural systems (e.g., the sensory systems, motor system, neurotransmitter-specific systems) individually. We explore their anatomy and function, neurobiological properties that make each unique, and factors that are common to all neural systems (e.g., development and plasticity).

INSTRUCTOR(S): D. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2570.03 or instructor's consent

CROSS-LISTING: NESC 2470.03

EXCLUSION: PSYO 2770.03

### PSYO 2500.03: Contemporary Research Problems in Psychology.

A continuation PSYO 2000.03, this class introduces prospective Honours students to the design, execution, and analysis of independent research projects. Each student works with a supervisor on a one-to-one basis preparing a research project that the student then conducts and describes in a formal written report.

FORMAT: Lecture 2 hours, Lab 2 hours

PREREQUISITE: PSYO 2000.03, with grade of B or better, and permission of the instructor

### PSYO 2501.03: Statistical Methods I.

This class provides an introduction to research design and statistics within Neuroscience and Psychology. Particular emphasis is placed on conducting and interpreting various statistical procedures, including descriptive and inferential statistics (z-test, t-test, ANOVA, chi-square tests), frequently used in these fields. NOTE: Only students undertaking a Major or Honours degree in Psychology or Neuroscience are eligible for enrolment. This class does not fulfil any part of the Faculty of Science Mathematics requirement.

INSTRUCTOR(S): S. Jacques

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 (may be taken concurrently), or instructor's consent

EXCLUSION: PSYO 3501.03, STAT 2080.03

### PSYO 2570.03: Cellular Neuroscience.

This class explores the brain at the neuronal level. Material covered includes: the ionic basis of resting potentials; the electrical activity of neurons; synaptic transmission and plasticity; synthesis and action of synaptic transmitters; and drug actions. Cellular phenomena relevant to healthy and neurologically-dysfunctional systems are also discussed.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.27 or 1540X/Y.27 or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: NESC 2570.03, PHYL 2570.03

### PSYO 2770.03: Brain and Behaviour.

This class examines the brain's role in controlling experience and behaviour in both animals and humans. It focuses on the functional anatomy of brain systems:

in particular on neural pathways involved in motivation, mood, memory, and sensation/perception. Recent research findings and methodologies for studying brain systems are emphasized.

NOTE: This class is designed for students in Psychology Major and Honours programs. Students planning to take advanced Neuroscience classes should register for NESC/PSYO 2470.03.

INSTRUCTOR(S): S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better)

EXCLUSION: PSYO/NESC 2470.03, PSYO/NESC 2270.03

### PSYO 3000X/Y.06: Independent Research in Modern Psychology.

Primarily for Honours students wishing research experience. Requirements include a minimum grade of B in PSYO 2000.03, a high level of performance in other Psychology classes, an overall B+ (GPA 3.30) average, and securing a faculty advisor to supervise the research project.

Note: This class cannot be used to fulfill the department's research laboratory requirement.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, previous or concurrent enrolment in two other PSYO/NESC 3000-level classes, and Coordinator's consent.

CROSS-LISTING: NESC 3000X/Y.06

EXCLUSION: PSYO/NESC 3001.03

### PSYO 3001.03: Directed Project in Psychology.

Primarily for Honours students wishing research experience. Requirements include a minimum grade of B in PSYO 2000.03, a high level of performance in other Psychology classes, an overall B+ (GPA 3.30) average, and securing a faculty advisor to supervise the research project.

Note: This class cannot be used to fulfill the department's research laboratory requirement.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

NOTE: This class provides only a half-year research experience. Students wanting a full-year research experience in a lab should register for PSYO 3000X/Y.06.

FORMAT: Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, previous or concurrent enrolment in two other PSYO/NESC 3000-level classes, and Coordinator's consent.

CROSS-LISTING: NESC 3001.03

EXCLUSION: PSYO/NESC 3000X/Y.06

### PSYO 3010X/Y.06: Advanced General Psychology.

An active learning class for suitably-qualified senior students. Students complete a series of oral and written assignments designed to consolidate critical thinking and communication skills in Psychology/Neuroscience. After instructional training, assignments include preparing and delivering lab material to a small group (~ 30) of PSYO 1011.03 and 1012.03 students.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): H. Schellinck

FORMAT: Lecture/Seminar 2 hours, Skills Lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, advanced classes in Psychology or Neuroscience, and instructor's consent.

CROSS-LISTING: NESC 3010X/Y.06

### PSYO 3030.03: Psychometrics.

This class focuses on the theory and method of psychological measurement. Basic and advanced analytic methods employed in quantifying human abilities, traits, and syndromes are examined. Students contribute to the design of, and report on, a new measure of behaviour in the laboratory component of the class.

INSTRUCTOR(S): Staff

FORMAT: Lecture 2 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2501.03 or STAT 2080.03

**PSYO 3043.03: Neurobiology of Learning.**

This class examines the neurobiological processes underlying various forms of learning such as classical and operant conditioning, song learning by birds, spatial learning, and fear conditioning. Different methods used to study the neurobiology of learning, and the evolutionary origins of these systems are also considered.

INSTRUCTOR(S): L. Phillmore

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2140.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3043.03

EXCLUSION: PSYO 3041.03

**PSYO 3044.03: Laboratory Methods of Learning and Conditioning.**

A hands-on class on techniques used to test learning and memory in animals, including operant conditioning and spatial memory, and an exposure to the neurobiological systems involved. Students work in pairs to conduct a series of experiments, analyze data as a class, but write individual laboratory reports on each experiment.

NOTE: Students should be aware that some data collection occurs outside of class time.

INSTRUCTOR(S): L. Phillmore

FORMAT: Research Lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and one of PSYO/NESC 2140.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3044.03

EXCLUSION: PSYO 3042.03

**PSYO 3051.03: Sensory Neuroscience I. Vision.**

This class examines the neural basis for the perception of light, colour, movement, depth, and form. The class covers developmental events important for vision, and the extent to which vision is constrained by anatomical and physiological development.

INSTRUCTOR(S): N. Crowder

FORMAT: Lecture 3 hours, Research Lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 or PSYO 2770.03, and PSYO/NESC 2150.03

CROSS-LISTING: NESC 3051.03

**PSYO 3052.03: Sensory Neuroscience II. Hearing and Speech.**

This class explores hearing at levels that include stimulus parameters and their psychophysical correlates, middle ear function, cochlear biophysics, central auditory neurophysiology, and principles of speech perception. We emphasize mechanisms of normal hearing and speech, but address pathology wherever it helps us understand the relation between neurophysiology and perception.

INSTRUCTOR(S): D.P. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03

CROSS-LISTING: NESC 3052.03

**PSYO 3082.03: Experimental Social Psychology.**

This class attempts to develop students' skill level in empirical analysis of social psychology phenomena. Students complete two research projects during the term. The projects involve testing subjects, coding data, computer data analysis, and report writing. Familiarity with computer-based statistical analysis and text processing is strongly recommended.

INSTRUCTOR(S): J. Stamp

FORMAT: Lecture 1 hour, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO 2080.03

**PSYO 3084.03: Social Cognition.**

This class focuses on the understanding people develop of themselves and others as social beings. The contributions of evolution, historical, and cultural factors are considered. The ways in which human development of social perception and cognition differs from that of other species are also examined.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO 2080.03 or PSYO 2090.03 or PSYO 2220.03

**PSYO 3091.03: Methods in Developmental Psychology.**

This class provides a survey of research methods in developmental psychology. It assumes knowledge of basic methodology and design, and concentrates on methods of relevance to the study of human development. In addition to lectures, students conduct a number of research exercises to gain experience in conducting research with children.

INSTRUCTOR(S): S. Jacques

FORMAT: Lecture 2 hours, Research Lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO 2090.03

**PSYO 3092.03: Early Development.**

This class examines development in infancy and the preschool period. The main theme of the class is to examine the integration of perceptual, cognitive, emotional, social, and linguistic changes occurring during the first five years of life.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2090.03

**PSYO 3093.03: Development of Language and Literacy Abilities.**

This class examines the cognitive and linguistic processes underlying language acquisition and how they interact in influencing the development of language and literacy abilities.

INSTRUCTOR(S): S. H. Deacon

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2090.03

**PSYO 3122.03: Methods in Experimental Clinical Psychology.**

Students learn how to conduct research on topics in applied clinical psychology. Students conduct a series of research projects in the laboratory by serving both as subjects and experimenters, and analyze the results of these studies in written lab reports. Research studies serve to illustrate concepts discussed in class.

INSTRUCTOR(S): S. Barrett

FORMAT: Lecture 2 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO 2220.03

**PSYO 3129.03: Childhood Psychopathology.**

This class examines a wide range of mental health disorders in children (e.g., reading disability, autism, ADHD). The goal is to gain a better understanding of the nature of these disorders, to learn about evidence-based assessment and treatment, and to review research findings in relation to children's mental health.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03; PSYO 2220.03 is recommended

**PSYO 3131.03: Research Methods in Attention.**

The methods, findings, and theories that underpin our understanding of attention (alertness, preparation, selection, and control of information processing) are covered. Behavioural and neuroscientific evidence as well as computational models are examined in the lectures. Laboratories emphasize behavioural methods used to isolate and reveal the components of attention.

INSTRUCTOR(S): R. Klein

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO/NESC 2130.03 or PSYO/NESC 2150.03

CROSS-LISTING: NESC 3131.03

EXCLUSION: PSYO/NESC 3130.06

**PSYO 3132.03: Research Methods in Visual Cognition.**

Visual cognition is the study of how we extract meaning from our visual environment and use it to direct our behaviour. Emphasis is placed on object, face, and word recognition as revealed by normal behaviour, and by neuroimaging techniques and neuropsychological studies of brain-damaged individuals who have lost these recognition abilities.

INSTRUCTOR(S): P. McMullen

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO/NESC 2130.03 or PSYO/NESC 2150.03  
 CROSS-LISTING: NESC 3132.03  
 EXCLUSION: PSYO/NESC 3130.06

### **PSYO 3133.03: Research Methods in Memory.**

This class examines human memory from the perspective of cognitive psychology and, to a lesser extent, cognitive neuroscience. Lectures emphasize cognitive approaches to the study of memory with an explicit focus on empirical research methods, data, and interpretation of results.

INSTRUCTOR(S): T. Taylor-Helmick

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO/NESC 2130.03

CROSS-LISTING: NESC 3133.03

EXCLUSION: PSYO/NESC 3130.06

### **PSYO 3134.03: Research Methods in Psycholinguistics.**

Provides hands-on experience with various methodologies employed in the study of language processing, and uses these to explore topics in psycholinguistics in greater depth. Methods covered may include reaction time, priming, self-paced reading, computational modeling, corpus-based research, and event-related brain potentials. Students serve as experimenters and participants in class experiments.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO/NESC 3190.03

CROSS-LISTING: NESC 3134.03

EXCLUSION: PSYO/NESC 3130.06

### **PSYO 3137.03: Research Methods in Cognitive Neuroscience.**

An overview of neuroimaging and other techniques of cognitive neuroscience (including fMRI, ERP, and others) focusing on how they work, how they are applied, and their inherent limitations. Labs include experience collecting and analyzing ERP data, demonstrations of fMRI scanning, and analysis of fMRI data.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours, Research Lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, and PSYO/NESC 2130.03

CROSS-LISTING: NESC 3137.03

### **PSYO 3161.03: Measuring Behaviour.**

Measuring behaviour is essential in the study of ethology, behavioural neuroscience, developmental, social and clinical psychology. The function of this laboratory class is to teach methods of observing and scoring behaviour using qualitative and quantitative methods. Sampling methods, behaviour description and analysis will be done in laboratory and naturalistic settings.

INSTRUCTOR(S): R. E. Brown

FORMAT: Research Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03

CROSS-LISTING: NESC 3161.03

### **PSYO 3162.03: Advanced Animal Behaviour: Theories and Applications.**

This class focuses on advanced theories and applications of animal behaviour, with a focus on proximate, integrative and applied questions. It offers a more in-depth analysis of topics covered in PSYO/NESC 2160.03 and explores trends and issues in contemporary ethology, animal psychology and behavioural ecology.

INSTRUCTOR(S): S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or BIOL 3062.03 or BIOL 3630.03, and PSYO/NESC 2160.03

CROSS-LISTING: NESC 3162.03

### **PSYO 3165.03: Neuroethology.**

Neuroethology explores how assemblies of neurons work together to produce behaviour. Neural control of selected behaviours from a wide range of animals, both invertebrate and vertebrate, are examined. From this comparative perspective an attempt is made to tease out common themes in the physiological control of behaviour.

NOTE: All experiments in the accompanying lab involve insects. Students are required to handle insects during the lab.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 2 hours, Research Lab 2 hours

PREREQUISITE: PSYO/NESC 2160.03 or BIOL 3062.03; and PSYO/NESC 2570.03 or BIOL 3078.03 and 3079.03, or MARI 3074.03 and 3076.03; and PSYO 2000.03 or NESC 2007.03 or one of following Biology classes: 2003.03, 2004.03, 2020.03 2030.03 2060.03

CROSS-LISTING: NESC 3165.03

### **PSYO 3180.03: Psychoneuroimmunology/Ecological Immunology.**

Our behaviour can influence how well we resist disease, and infection can alter behaviour. This class examines how immune systems and nervous systems interact in both vertebrates and invertebrates. Evolutionary forces that have led to the existence of these interactions are also examined.

INSTRUCTOR(S): S. Adamo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either PSYO 2770.03 or PSYO/NESC 2470.03 or MICI 2100.03; OR BIOL 2020.03

CROSS-LISTING: NESC 3180.03

### **PSYO 3190.03: Psycholinguistics.**

Explores the cognitive and neural bases of human language processing. Topics include: human language and other communication systems; phonology; morphology; semantics; syntax; discourse; first and second language acquisition; relationship of language to general cognitive functions such as music and mathematics; signed languages such as American Sign Language; and non-linguistic gesture.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2130.03

CROSS-LISTING: NESC 3190.03

EXCLUSION: PSYO/NESC 2190.03

### **PSYO 3220.03: Clinical Psychology.**

A survey of professional issues relevant to the practice of clinical psychology in hospitals, private practice, schools, the court system, and the community. Students gain knowledge about psychological services, and an understanding of the training, ethics, and expertise that clinical psychology brings to the delivery of mental health and healthcare.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03

EXCLUSION: PSYO 2120.03

### **PSYO 3224.03: Forensic Psychology.**

This class provides an introduction to the application of psychology to the various areas of the criminal justice system (i.e., courts, corrections, policing). In addition, consideration is given to professional and ethical issues that arise when psychological knowledge is applied in forensic contexts.

INSTRUCTOR(S): J. Christie

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03 or PSYO 1021.03 and PSYO 1012.03 or PSYO 1022.03, or SCIE 1515X/Y.36, 1520X/Y.30 or 1540X/Y.27 (with a grade of B- or better), AND any 2000-level Psychology class.

### **PSYO 3225.03: Health Psychology.**

A study of psychological influences on how people stay healthy and how they respond when they become ill. Using a biopsychosocial model, this class examines topics such as health behaviours and prevention, stress and coping, the patient in treatment settings, and management of chronic and terminal illness.

INSTRUCTOR(S): N. Rosen

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03

### **PSYO 3227.03: Principles of Human Neuropsychology.**

Clinical neuropsychologists study the organization of cognitive, emotional, and social functions in the brain to understand how brain damage alters human behaviour across the lifespan. We examine how clinicians diagnose and rehabilitate persons with brain diseases and disorders. Assignments emphasize application of textbook/lecture-based knowledge, critical thinking, and group presentation skills.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 or PSYO 2770.03; PSYO/NESC 2130.03 is helpful  
CROSS-LISTING: NESC 3227.03

### **PSYO 3237.03: Drugs and Behaviour.**

An introduction to behavioural psychopharmacology. The lectures involve basic anatomy, physiology, and chemistry of the nervous system. Behavioural effects and underlying mechanisms of various psychoactive drugs are discussed. Specific topics covered are alcohol, tobacco, amphetamines, cocaine, opiates, hallucinogens, tranquilizers, and antipsychotic drugs.

INSTRUCTOR(S): S. Barrett

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2170.03, 2470.03, 2570.03, or PSYO 2770.03

CROSS-LISTING: NESC 3237.03

### **PSYO 3260.03: Biological Rhythms.**

Daily (circadian) clocks generate rhythms in many functions, including sleep, reproduction, and intellectual performance. This class examines the nature of these biological clocks, their neural mechanisms, and their roles in regulating sleep and other aspects of physiology and in pathological conditions, including sleep disorders, jet lag, and psychiatric disorders.

INSTRUCTOR(S): B. Rusak

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, and one of PSYO/NESC 2170.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3260.03

### **PSYO 3264.03: The Science of Sleep.**

This class reviews: how sleep is studied; sleep characteristics across the lifespan and among species; cultural and societal impacts on human sleep; circadian, homeostatic, neural and endocrine mechanisms that regulate sleep; functions of sleep; impacts of sleep loss. Sleep disorders may be discussed to illuminate aspects of sleep regulation.

INSTRUCTOR(S): B. Rusak

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either PSYO 2770.03 or PSYO/NESC 2470.03; OR BIOL 2020.03

CROSS-LISTING: NESC 3264.03

### **PSYO 3270.03: Developmental Neuroscience.**

This class presents the fundamentals of development in complex and simple nervous systems. Cell differentiation, pattern regulation, proliferation, migration, and circuit development are discussed. Special attention is given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-target interactions, and synapse formation.

INSTRUCTOR(S): K. Duffy

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 and PSYO/NESC 2570.03

CROSS-LISTING: NESC 3270.03

### **PSYO 3280.03: Personality.**

Personality deals with questions such as: Is a science of persons possible? Are there types of personalities, or is each individual's personality unique? Is an individual's life history an expression of his or her personality, or is personality description merely a summary statement of behaviour whose cause lies elsewhere?

INSTRUCTOR(S): S. Sherry

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO 2080.03 or PSYO 2090.03 or PSYO 2220.03

### **PSYO 3370.03: Neuroscience Laboratory I.**

Introduction to several neurophysiological techniques used in contemporary neuroscience, employing extracellular and intracellular electrical recording and stimulation methods on nervous system preparations, both sensory and motor. After introductory instruction, students in groups of 2 or 3 get to perform quite sophisticated practical experiments themselves, enabled by computer-based data acquisition.

INSTRUCTOR(S): Staff

FORMAT: Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or PSYO/NESC 3270.03

CROSS-LISTING: NESC 3370.03

### **PSYO 3371.03: Neuroscience Laboratory II.**

Introduction to several techniques used in contemporary neuroscience. Students work under supervision in groups of 2 or 3 in regular labs that introduce neuroanatomical analyses using the following: Golgi impregnation, immunocytochemistry, dye-tracing of connections, electronmicroscopy of the retina, and neurotransmitter determinations using HPLC.

INSTRUCTOR(S): I. Meinertzhagen

FORMAT: Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or PSYO/NESC 3270.03

CROSS-LISTING: NESC 3371.03

### **PSYO 3390.03: Cognitive Development.**

In this class we trace the development of the child's knowledge from birth to adolescence. Piaget's theory provides the background for the study of recent progress in our understanding of children's concepts of the physical world.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2090.03

### **PSYO 3502.03: Statistical Methods II.**

This class is the continuation of PSYO 2501.03, with the examination of more complex, but commonly used, inferential statistics. Topics include factorial ANOVA, ANCOVA, and multiple regression. This class is intended primarily for Honours students in Psychology or Neuroscience. Class work includes computer-based assignments.

INSTRUCTOR(S): J. Christie

FORMAT: Lecture 4 hours, Skills Lab 1-2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03 or STAT 2080.03, or instructor's consent

### **PSYO 3581.03: History of Psychology I.**

Drawing on writings from antiquity to the early years of the 20th century, we explore the nature of historical explanation, explanation in science, knowledge and truth, life, human nature, the domains of animal and man, neuroscience, and personality. Usually offered in the Fall term.

INSTRUCTOR(S): T. Juckes

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or Instructor's consent

EXCLUSION: PSYO 3580.06

### **PSYO 3582.03: History of Psychology II.**

Drawing on writings from antiquity to the early years of the 20th century, we explore the nature of learning, thinking, memory, intelligence, mental illness and treatment, the unconscious, dreams, development, and the self. Usually offered in the Winter term. Familiarity with ideas developed in PSYO 3581 is helpful.

INSTRUCTOR(S): T. Juckes

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or instructor's consent

EXCLUSION: PSYO 3580.06

### **PSYO 3670.03: Genes, Brain and Behaviour.**

The application of genetic techniques to the study of cognitive abilities, psychopathology, personality disorders, stress-related illnesses, and ethical issues in genetic research. The role of genetic factors in eating and drug abuse problems, as well as methods used to study gene-environment interactions are explored.

INSTRUCTOR(S): I. Weaver

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2470.03 or PSYO 2770.03, AND BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 or SCIE 1515.X/Y36, 1520X/Y.30, or 1540X/Y.27 (with a grade of B- or better); BIOL 2020.03 and BIOL 2030.03 are useful

CROSS-LISTING: NESC 3670.03

EXCLUSION: PSYO/NESC 2670.03

### **PSYO 3770.03: Behavioural Neuroscience.**

Behavioural neuroscience explores the neural and hormonal mechanisms underlying a variety of behavioural phenomena. The class focuses on neural correlates of social and emotional behaviour, motor behaviour and patterns, and behavioural toxicology processes (neurotoxins and endocrine disruptors).

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3770.03



**PSYO 3775.03: Behavioural Neuroscience Laboratory.**

Students motivated to pursue a career in Neuroscience, or in a related biomedical discipline, gain direct experience studying the nervous system in relation to behaviour. Students acquire skills in animal handling, ethics, and measuring behaviour. Emphasis is placed on histological/molecular analysis of the brain including examining protein and/or mRNA levels.

SIGNATURE REQUIRED

INSTRUCTOR(S): T. Perrot

FORMAT: Research Lab 3+ hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 or PSYO 2770.03, PSYO 2501.03, and one of PSYO/NESC 2160.03 or PSYO/NESC 2170.03 or PSYO/NESC 3237.03 or PSYO/NESC 3770, and instructor's consent

CROSS-LISTING: NESC 3775.03

**PSYO 3790.03: Neurolinguistics.**

The class covers: (1) brain damage and language disorders; (2) aphasia; (3) localization of lesions in the human brain; (4) neuroimaging; (5) intracranial electric stimulation experiments; (6) event-related brain potential experiments; (7) PET, fNMR scan experiments; (8) neural models of language processing.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3790.03

**PSYO 3970.03: Molecular Neuroscience.**

This class examines the development, function, and pathology of the brain at the molecular level. Model systems are examined from the perspective of ion channels, messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The concepts underlying basic cellular and molecular neuroscience tools are emphasized.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2570.03

CROSS-LISTING: NESC 3970.03

**4000-Level Seminars**

The following seminars are intended for fourth-year Honours students. Third-year Honours students are eligible provided they obtain permission from the instructor, and the needs of all the fourth-year Honours students have been met. The topics covered in these classes vary from year to year. Go to the departmental website (<http://psychology.dal.ca/>) for more detail about the topics to be covered in the current academic year.

**PSYO 4000.03: Senior Seminar.**

An individually tailored reading or study class designed to allow Honours students to focus on a particular issue, or a set of related issues, that are not part of the regular program. Enrolment is contingent upon securing a faculty member to supervise the study program.

SIGNATURE REQUIRED

COORDINATOR: J. Stamp

CROSS-LISTING: NESC 4000.03

**PSYO 4001.03: Contemporary Issues in Psychology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4040.03: Learning Applications in Clinical and Social Psychology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4050.03: Topics in Perception.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO/NESC 3051.03

CROSS-LISTING: NESC 4050.03

**PSYO 4070.03: Chemical Neurobiology.**

The goal is to acquaint the student with neurotransmitters (excitatory amino acids, acetylcholine, monoamines, neuropeptides). Anatomical, biochemical, physiological, pharmacological, behavioral, and clinical aspects of individual neurotransmitter systems are discussed. Lectures are given by the instructors. Students are expected to write an examination and a review, and give a presentation.

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO/NESC 2470.03 and 2570.03, or PSYO/NESC 3270.03, or instructor's consent

CROSS-LISTING: NESC 4070.03/5070.03, ANAT 5070.03

**PSYO 4080.03: Topics in Social Psychology and Personality.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4090.03: Development of Social Behaviour.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4092.03: Topics in Developmental Psychology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4120.03: Topics in Clinical Psychology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4130.03: Topics in Human Information Processing.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: NESC 4130.03

**PSYO 4140.03: Animal Learning Topics.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

**PSYO 4160.03: Topics in Behavioural Biology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: NESC 4160.03

**PSYO 4170.03: Topics in Behavioural Neuroendocrinology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: NESC 4170.03

RESTRICTION: Restricted to PSYO/NESC Honours Students

**PSYO 4224.03: Topics in Forensic Psychology.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

RESTRICTION: Restricted to Psychology Honours students

**PSYO 4230.03: Human Performance Topics.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

CROSS-LISTING: NESC 4230.03

**PSYO 4500X/Y.06: Honours Thesis.**

Under a staff member's supervision, each student conducts original research in experimental psychology. Students meet to describe their proposed research and progress. A formal written report of the completed research is required. The final grade is based on originality and skill with emphasis on the written and oral reports.

SIGNATURE REQUIRED

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): P. McMullen, T. Perrot

PREREQUISITE: Fourth-year Honours students, and instructor's consent

CROSS-LISTING: NESC 4500X/Y.06

RESTRICTION: Restricted to Honours students in their graduating year

**PSYO 4740.03: Topics in the Neurobiology of Learning and Memory.**

SIGNATURE REQUIRED

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO/NESC 2470.03, PSYO/NESC 2140.03

CROSS-LISTING: NESC 4740.03

# Science, Interdisciplinary

## Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

## I. Class Descriptions

### SCIE 1111.03: Writing for the Sciences.

This class satisfies the Faculty of Science Writing Requirement. The class covers the history of writing and information theory, grammar and punctuation, sentences and paragraphs, scientific style, proposals, the scientific paper, citations and references, graphics, posters, and ethics. Weekly assignments/quizzes develop and reinforce writing skills introduced in lectures.

INSTRUCTOR(S): T. Juckes

FORMAT: ✍ Writing requirement for Faculty of Science BSc students only.

Lecture 3 hours/tutorial 1 hour (mandatory)

### SCIE 1515X/Y.36: Integrated Science.

This full-time program provides comprehensive first-year preparation for any science major or honours degree. Concepts and techniques at the first-year introductory level are integrated across Biology, Chemistry, Mathematics, Physics, Earth Science, Psychology, and Statistics. This program is a full credit overload and includes a full-year writing class and a research project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: Writing requirement. Lecture approx. 17 hours/lab and other activities approx. 12 hours/tutorials 4 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

### SCIE 1520X/Y.30: Integrated Biomedical Science.

This full-time program provides comprehensive first-year preparation for major or honours degrees in the life sciences and Medicine, with full-years of physics and calculus. Introductory level concepts and techniques are integrated across Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics, a full-year writing class, and a research project in the winter term.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: ✍ Writing requirement. Lecture approx. 15 hours/Lab and other activities approx. 8 hours/tutorials 4 hours (optional)

PREREQUISITE: Grade 11 or 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

### SCIE 1530X/Y.27: Integrated Physical Science.

This full-time program provides comprehensive first-year preparation for any major or honours degree in the physical sciences. Introductory level concepts and techniques are integrated across four full-year components (Chemistry, Mathematics, Physics, Earth Science), two half-year components (Biology and Statistics), a full-year writing class, and a research project in the winter term.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: ✍ Writing requirement. Lecture approx. 13 hours/Lab and other activities approx. 9 hours/Tutorials 4 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1030.03, CHEM 1011.03/1012.03, EARTH 1080.03/1090.03, MATH 1000.03/1010.03, PHYC 1190.03/1290.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

### SCIE 1540X/Y.27: Integrated Life Science.

This full-time program provides comprehensive first-year preparation for any major or honours degree in the life sciences. Introductory level concepts and techniques are integrated across three full-year components (Biology, Chemistry, and Psychology), four half-year components (Mathematics, Physics, Earth Science, and Statistics), a full-year writing class, and a research project.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

FORMAT: ✍ Writing requirement. Lecture approx. 12 hours/Lab and other activities approx. 8 hours/tutorials 2 hours (optional)

PREREQUISITE: Grade 12 Physics. Students lacking this prerequisite should take a university preparation course in Physics, such as PHYC 0010.00 (<http://collegeofcontinuing.dal.ca>) or the equivalent

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, EARTH 1080.03, MATH 1000.03, PHYC 1190.03, PSYO 1011.03/1012.03, SCIE 1111.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

### SCIE 2000X/Y.06: Introduction to the History of Science.

This class is a broad introductory survey of the central developments in the history of science, open to first and higher level students whatever their fields, and may be an introduction to further study in the history of science. It examines the most revolutionary figures from the Greeks to the modern period. The work of each of these had such a profound influence upon their own era and upon subsequent times that students in the humanities will find this class clarifies the nature of science and its cultural importance. Students in the sciences will recognize that their contributions have been permanently woven into the fabric we call science. In uncovering the sources and character of each of these transformations in the theory and practice of science, the class will challenge conventional views about the nature and place of science. This class may be taken as an arts or science credit.

NOTE: Credit can only be given for this class if X and Y are completed in consecutive terms and partial credit cannot be given for a single term.

INSTRUCTOR(S): D. Lehoux, S. Snobelen, G. McOuat

FORMAT: Lecture/tutorial

CROSS-LISTING: BIOL 3503X/Y.06, HIST 3074X/Y.06, HSTC 1200/2200X/Y.06

EXCLUSION: HSTC 2201.03, BIOL 3502.03, HIST 3072.03, SCIE 4000.03

### SCIE 2800.00: Science Co-op Seminar Series.

This class is designed to introduce Science Co-op students to aspects of career development and preparation for their work terms. This class is a prerequisite to the first work term and is a mandatory component of the Science-Cooperative Education program; all Science Co-operative Education students are required to register for and attend in the fall term of the year they join Science Co-op. A grade of Pass is required before students undertake the first work term experience. SCIE 2800.00 is a required non-credit class which is offered in the fall term only. Co-operative Education seminars are required by the Canadian Association for Co-operative Education. Students are required to have a Dalhousie University e-mail address with their name in it. Students must be able to check their e-mail every weekday. See [www.sciencecoop.dal.ca](http://www.sciencecoop.dal.ca) for further information

INSTRUCTOR(S): L. Galway, T. Myra

FORMAT: Seminars, 3 hours each

### SCIE 3600.03: Exploring Geographic Information Systems.

This class provides a general overview of Geographic Information Systems (GIS), examining what GIS is, what it can do, and how it works. The class is aimed at students studying in all disciplines and will involve creating, understanding, manipulating and displaying geographic data. Topics will include data models, analysis of vector and raster data, creation of spatial databases, the Global Positioning System and other aspects of spatial data. Lectures (3 per week) will explore basic aspects of GIS in detail and introduce material to be covered in the labs. Labs are held once per week and will provide practical experience in data manipulation and problem solving.

INSTRUCTOR(S): C.C. Walls

PREREQUISITE: Two years of university study

EXCLUSION: EARTH 3500.03, ENVS 3500.03, GEOG 3500.03, EARTH 5600.03

### SCIE 4001.03: History of Marine Sciences.

Oceanography did not take definable form until late in the 19th century. Its roots lie not in the Challenger Expedition of the 1870s, the popular stereotype, but partly in ancient cosmologies and geography. In this class, the history of marine sciences, including oceanography, is traced from the ancients to the 20th century. The cosmologies of the ancient world, voyages of discovery from the 15th through the 18th centuries, the scientific revolution of the 17th century, the development of biology, physics, chemistry and geology in the late 18th and 19th centuries, all contributed to a gradual enlargement and transformation of human interest in the oceans.

INSTRUCTOR(S): E.L. Mills

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4664.03, OCEA 4331.03/5331.03, HIST 3073.03, HSTC 3331.03, MARI 4664.03

## Statistics

Location: Chase Building  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2572  
Fax: (902) 494-5130

### Dean

Moore, C., BA (Hons), PhD (Cambridge), Professor (Psychology)

### Chair of the Department

Dilcher, K., PhD (Queen's)

### Director of Division

Gu, H., MSc (Peking), PhD (Hong Kong)

### Faculty Advisor

Dowd M., MBA, PhD (Dalhousie) (Co-op Academic Advisor)

### Professor Emeritus

Field, C.A., MSc, PhD (Northwestern)

### Professors

Hamilton, D. C., MA, PhD (Queens)

Smith, B., MSc (Calgary), PhD (Berkeley)

Susko, E., PhD (Waterloo)

Thompson, K., MSc (Manchester), PhD (Liverpool) - (jointly with Oceanography)

### Associate Professors

Beiko, R., PhD (Ottawa) - (cross appointment with Computer Science)

Bielewski, J., MA, PhD (Texas A & M) - (jointly with Biology)

Dowd M., MBA, PhD (Dalhousie)

Gu, H., MSc (Peking), PhD (Hong Kong)

Herbinger, C., MSc (Paris), PhD (Dalhousie) - (jointly with Biology)

Mills-Flemming, J., MSc (TUNS), PhD (Dalhousie)

Zhao, Y., MSc (Western Kentucky), PhD (British Columbia) - (cross appointment with Management)

### Assistant Professors

Kenney, T., BA (Hons), MMath, PhD (Cambridge) (cross appointment with Mathematics)

Sarhan, A., PhD (Ghansk)

### Adjunct Professors

Cole, D. (U of T)

Gupta, R. P. (Dalhousie)

Millar, M. (MSVU)

Sneddon, G. (MSVU)

Yung, W. (StatCan)

### Postdoctoral Fellow

Wang, H., PhD (Ottawa)

Xu, Ximing, PhD (Toronto)

### Statistical Consultant

Jones, C., MSc (Dalhousie)

Please refer to the entry for the Department of Mathematics & Statistics in this calendar for a full listing of the members of the Department and information on other programs offered by the Department.

## I. Degree Programs

Statistics is the discipline which is concerned with the collection, organization, display and interpretation of data. Statisticians are in high demand in government, industry and in research institutions.

There are several honours programs, and a 20 Credit Major program in Statistics available to students. In addition, there is a Co-op program. Any student interested in such a class of study should consult the Undergraduate Advisor for Statistics, Department of Mathematics & Statistics.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 131 of this calendar.

## A. Honours in Statistics

The Honours program in Statistics will provide students with a comprehensive knowledge of both theoretical and applied statistics and will enable students to move easily into challenging employment or graduate work in statistics.

### Departmental Requirements

#### 1000 level

- MATH 1000.03 or MATH 1215.03/1010.03
- STAT 1060.03\*
- CSCI 1100.03/1101.03\*\*

#### 2000 level

- MATH 2001.03
- MATH 2002.03
- MATH 2030.03/2040.03 or 2135.03
- STAT 2060.03
- STAT 2080.03\*\*\*
- Two to five other half credits in Statistics at or above the 2000 level but not including classes listed below.

#### 3000 level

- STAT 3340.03
- STAT 3350.03
- STAT 3360.03
- STAT 3380.03
- STAT 3460.03
- Two 3000 level Mathematics classes chosen in consultation with the statistics honors advisor.

#### 4000 level

- STAT 4066.03
- One of STAT 4350.03 4390.03 4620.03
- STAT 4950.03

## B. Combined Honours

Students interested in taking honours in Statistics combined with another subject should consult the Faculty Advisor through whom a suitable class of study can be arranged.

## C. BSc or BA (20 credit) Major in Statistics

### Departmental Requirements

#### 1000 level

- MATH 1000.03/1010.03
- STAT 1060.03\*
- CSCI 1100.03/1101.03\*\*

#### 2000 level

- MATH 2001.03
- MATH 2002.03
- MATH 2030.03/2040.03 or 2135.03
- STAT 2060.03
- STAT 2080.03

#### 3000 level

- STAT 3340.03
- STAT 3360.03
- STAT 3380.03 or 3350.03
- STAT 3460.06
- At least two more credits in Statistics at or above the 3000 level

\*The requirement to take STAT 1060.03 may be waived for students entering the program in their second year.

\*\*Math 3210 may be taken in place of CSCI 1101

\*\*\*Some students may take STAT 2080.03 in the first year of their degree program.

It is recommended that students take CSCI 3111.03/MATH 3170.03 in the third year of their degree program.

Students interested in double major with statistics as the second subject should consult the Faculty Advisor through whom a suitable class of study can be arranged.

## D. BSc (15 credit) Minor in Statistics

Please see requirements below, section H. Minor in Statistics.

## E. Co-op Education in Science

Co-operative Education in Science (Science Co-op) is a program where academic study is combined with paid career related work experience. Students alternate three to four work terms throughout their academic study terms and graduate with a Bachelor of Science Co-op. Science Co-op enables students to apply their knowledge directly while providing them with work experience that assists in making educated career choices. Students apply to join Science Co-op before their second year of study. If accepted into the Science Co-op program, students are required to register for and attend the Science Co-op Seminar Series (SCIE 2800.00) in the fall term of the year they join.

The scheduling of Science Co-op work terms must be taken into account in planning class selection. Consult with the Statistics Co-op Academic Advisor for your work term sequence.

See the "Co-operative Education in Science" section of this calendar, or <http://www.sciencecoop.dal.ca>, for information on Science Co-op such as Science Co-op requirements, eligibility, how to apply, deadlines and other related information.

For further information, please see <http://www.sciencecoop.dal.ca>

Co-op Academic Advisor in Statistics:

Dr. Dowd (494-1048) [mdowd@mathstat.dal.ca](mailto:mdowd@mathstat.dal.ca)

## F. Honours Co-op in Statistics

### Departmental Requirements

Same as for the regular Honours in Statistics as above with the addition of the following:

- Three Co-op Work Terms: STAT 8891.00, 8892.00, 8893.00
- Co-op Seminar: SCIE 2800.00

## G. Major Co-op in Statistics

### Departmental Requirements

Same as for the regular Major in Statistics with the addition of the following:

- Three Co-op Work Terms: STAT 8891.00, 8892.00, 8893.00
- Co-op Seminar: SCIE 2800.00

More details on the Co-op program appear under the Co-operative Education in Science entry in this calendar.

## H. Minor in Statistics

- three credits in statistics at the 2000 level or above, of which one credit must be at the 3000 level or above.
- Students whose major or honours area of concentration is other than Mathematics may count MATH 2001 and MATH 2003 among the three credits.

## I. Other Programs

### Minors

Minor programs allow students to develop subject specialties, especially ones taught outside their main faculty, that complement their major or honours subjects. Minors are normally added to a four-year major or concentrated honours program. If a minor is added to a double major or a combined honours program, students may find that they need to take more than 20 credits to complete all of their degree requirements. Combined with a four-year degree program in Statistics, minor programs are available in the following subject areas.

### Minor Subject Areas

- Business (BA or BSc)
- Canadian Studies (BSc only)
- Community Design (BA or BSc)
- Computer Science (BSc only)
- Environmental Studies (BA or BSc)
- Film Studies (BA or BSc)
- Food Science (BSc only)
- Health Studies (BA only)
- Journalism (BA or BSc)
- Law and Society (BA or BSc)
- Management (BA or BSc)

Any student wishing to pursue a minor in these subjects should consult with the College of Arts and Science Degree Requirements section of the Undergraduate Calendar, starting on page 131, as well as the particular subject area of the calendar.

### BSc/Engineering or BA/Engineering Concurrent Programs

Students will normally complete the requirements for a 15 Credit BSc or 15 Credit BA, and the first two years of engineering studies leading to the Diploma in Engineering. The concurrent program can be completed in three years. Details are provided in the College of Arts and Science Degree Requirements on page 131 of the calendar.

### Diplomas, Certificates, and Language Proficiency Certificates

In combination with a BA or BSc there are certificates or diplomas that can be obtained to emphasize areas of proficiency. For a complete list and details refer to the College of Arts and Science Degree Requirements on page 131 of the calendar.

## II. Class Descriptions

Certain classes have been approved for use in fulfilling the educational requirements of the Associate Statistician (A.Stat.) designation of the Statistical Society of Canada (SSC). See the Department or the SSC website (<http://ssc.ca/en/accreditation/apply/suggested-classes-use-towards-astat-designation>) for details.

Credit may not be obtained twice for the same class even if the numbers have been changed.

### SCIE 2800.00: Science Co-op Seminar Series.

This class is designed to introduce Science Co-op students to aspects of career development and preparation for their work terms. This class is a prerequisite to the first work term and is a mandatory component of the Science-Cooperative Education program; all Science Co-operative Education students are required to register for and attend in the fall term of the year they join Science Co-op. A grade of Pass is required before students undertake the first work term experience. SCIE 2800.00 is a required non-credit class which is offered in the fall term only. Co-operative Education seminars are required by the Canadian Association for Co-operative Education. Students are required to have a Dalhousie University e-mail address with their name in it. Students must be able to check their e-mail every weekday. See [www.sciencecoop.dal.ca](http://www.sciencecoop.dal.ca) for further information.

INSTRUCTOR(S): L. Galway, T. Myra

FORMAT: Seminars, 3 hours each

### STAT 1060.03: Introductory Statistics for Science and Health Sciences.

This class gives an introduction to the basic concepts of statistics through extensive use of examples. The topics include experimental design, descriptive statistics, simple linear regression and the basics of statistical inference. Students will learn to use the statistical package MINITAB.

NOTE: Students who have already taken university level Calculus should consider taking STAT 2060.03 instead of STAT 1060.03.

FORMAT: Lecture 3 hours, tutorial 1 hour, MLC

PREREQUISITE: Academic or advanced Grade 12 Mathematics (or pre-calculus) or equivalent

CROSS-LISTING: MATH 1060.03

EXCLUSION: COMM 2501.03, MGMT 2501.03, DISP

### STAT 2060.03: Introduction to Probability and Statistics.

Rigorous introduction to probability and statistical theory. Topics covered include elementary probability, random variables, distributions, estimation and hypothesis testing. Estimation and testing are introduced using maximum likelihood and the generalized likelihood ratio. Natural sequels for this class are STAT 2080.03 and 3360.03

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: MATH 1000.03 or MATH 1215.03 and either MATH 1010.03 or 2030.03, or DISP (except SCIE 1540X/Y.27)

CROSS-LISTING: MATH 2060.03, ECON 2260.03

EXCLUSION: ENGM 2032.03

### STAT 2080.03: Statistical Methods for Data Analysis and Inference.

The usual sequel to STAT 1060.03 or STAT 2060.03. This class introduces a number of techniques for data analysis and inference commonly used in the experimental sciences. Topics covered include model building in linear models, multiple regression, analysis of variance, factorial designs, analysis of covariance using the general techniques for linear models and two and three way tables along with logistic regression. A natural sequel for this class is STAT 3340.03.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: STAT 1060.03 or STAT 2060.03 or DISP

CROSS-LISTING: MATH 2080.03, ECON 2280.03

EXCLUSION: COMM 2502.03, MGMT 2502.03

### STAT 2300.03: Introduction to Mathematical Modelling I.

See class description for MATH 2300.03 in the Mathematics section of this calendar.

### STAT 2600.03: Theory of Interest.

See class description for MATH 2600.03 in the Mathematics section of this calendar.

PREREQUISITE: MATH 1010.03 or Equivalent

### STAT 3340.03: Regression and Analysis of Variance.

A thorough treatment of the theory and practice of regression analysis. Topics include: fitting general linear models using matrices, optimality of least squares estimators (Gauss-Markov theorem), inferences, simple and partial correlation, analysis of residuals, case-deletion diagnostics, polynomial regression, transformations, use of indicator variables for analysis of variance and covariance problems, model selection, and an introduction to nonlinear least squares. This class makes extensive use of computer packages.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2080.03, MATH 2030.03 and either MATH 1010.03 or STAT 2060.03 or DISP (except SCIE 1540X/Y.27)

CROSS-LISTING: MATH 3340.03

### STAT 3345.03: Environmental Risk Assessment.

Statistical methods for assessing risk are discussed, including dose-response models, survival analysis, relative risk analysis, bioassay, estimating methods for zero risk trend analysis and association risks. Case studies are used to illustrate the methods.

PREREQUISITE: MATH 1000.03 or MATH 1215.03, STAT 2080.03 or equivalent

### STAT 3350.03: Design of Experiments.

The aim of the class is to develop the fundamental statistical concepts required for designing efficient experiments to answer real questions. The first main subject is unit variation and control. The basic concepts of replication, blocking and randomization are each examined. The second main subject is treatment questions and structure. The ideas of factorial designs, split-plot and incomplete plot designs are presented. We conclude with a look at response surface methodology.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2080.03, MATH 2030.03 and either MATH 1010.03 or STAT 2060.03 or DISP (except SCIE 1540X/Y.27)

CROSS-LISTING: MATH 3350.03

### STAT 3360.03: Probability.

The concepts and application of probability. Topics include the classical discrete and continuous distributions, including the binomial, hypergeometric, multinomial, Poisson, uniform, exponential and normal; definitions and properties of random variables; independence; sums of independent random variables,

including the law of large numbers and central limit theorem; conditional probability; and the bivariate normal distribution. Examples will be taken from the natural and physical sciences.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2060.03 and MATH 2001.03

CROSS-LISTING: MATH 3360.03

### **STAT 3380.03: Sample Survey Methods.**

The development of design and analysis techniques for sample surveys. Topics include simple, stratified and systematic random sampling, ratio and regression estimation, sub-sampling with units of equal and unequal size, double-multistage and multiphase sampling, non-sample errors and non-respondents.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 2060.03

CROSS-LISTING: MATH 3380.03

### **STAT 3460.03: Intermediate Statistical Theory.**

This class provides an intermediate level coverage of statistical theory to provide a framework for valid inferences from sample data. The methods developed are based on the likelihood function and are discussed from the frequentist, likelihood, and Bayesian approaches. The problems of point estimation, interval estimation and hypothesis testing and the related topics of sampling distributions, sufficiency, and Fisher Information are discussed.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3360.03

CROSS-LISTING: MATH 3460.03

### **STAT 4066.03: Advanced Statistical Theory I.**

This class, together with STAT 5067.03 provides a solid basis in the theory of statistical inference. After a review of some probability and distribution theory, the Bayesian and classical theories of estimation and testing are introduced.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3460.03 or instructor's consent

CROSS-LISTING: MATH 4066.03/5066.03, STAT 5066.03

### **STAT 4070.03: Multivariate Distributions.**

This class deals with the distribution theory of the observations on more than one variable. Topics covered include: The multivariate normal distribution, the Wishart distribution, Hotelling's  $T^2$  distributions associated with regression, canonical correlations and discriminant analysis.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3460.03

### **STAT 4090.03: Probability.**

The theory of probability in Euclidean space. Topics include measure and integration, probability measures, the definitions and properties of random variables and distribution functions, convergence concepts, Borel-Cantelli lemmas, laws of large numbers, characteristic functions and central limit theorems, conditional probability and expectation.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3360.03 and a third year analysis class, instructor's consent

CROSS-LISTING: MATH 4090.03/5090.03, STAT 5090.03

### **STAT 4100.03: Survival Analysis.**

This class is an introduction to survival analysis methods and will cover both the statistical theory behind the methods, and the application of various techniques. Topics to be discussed include survivorship and hazard functions and their relationship to lifetime distributions and densities; modes of censoring; the Kaplan-Meier estimate of the survivor function; parametric survival time distributions; proportional hazard models and their semi-parametric estimation; accelerated life models, log rank tests, including the Mantel-Haenszel test; and goodness of fit measures.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3340.03 and STAT 3460.03, or equivalent

CROSS-LISTING: STAT 5100.03

### **STAT 4210.03: Time Series Analysis in Oceanography and Meteorology.**

CROSS-LISTING: STAT 5210.03

### **STAT 4300.03: Topics in Statistics and Probability.**

CROSS-LISTING: STAT 5300.03

### **STAT 4350.03: Applied Multivariate Analysis.**

The class deals with the stochastic behaviour of several variables in systems where their interdependence is the object of analysis. Greater emphasis is placed on practical application than on mathematical refinement. Topics include classification, cluster analysis, categorized data, analysis of interdependence, structural simplification by transformation or modelling and hypothesis construction and testing.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3340.03 and MATH 2135.03 or 2040.03

CROSS-LISTING: STAT 5350.03

### **STAT 4360.03: Robust Statistics.**

Robust statistics are those which provide protection against violation of assumptions underlying the statistical procedure. We will develop basic concepts including sensitivity, influence and breakdown of estimates and tests. Classical procedures will be evaluated in terms of robustness and alternate techniques developed based on weighted least squares and/or median based generalizations. We will also consider robust techniques in time series.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3460.03 and 3340.03

CROSS-LISTING: STAT 5360.03

### **STAT 4370.03: Stochastic Processes.**

The theory and application of stochastic processes. Topics to be discussed include the Poisson process, renewal theory, discrete and continuous time Markov processes, and Brownian motion. Applications will be taken from the biological and physical sciences, and queueing theory.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3360.03 or instructor's consent

CROSS-LISTING: STAT 5370.03

### **STAT 4390.03: Time Series Analysis I.**

Time series analysis in both the time and frequency domain is introduced. The class is applied and students are required to develop their own computer programs in the analysis of time series drawn from real problems. Topics to be discussed include the nature of time series, stationarity, auto and cross covariance functions, the Box-Jenkins approach to model identification and fitting, power and cross spectra and the analysis of linear time-invariant relationships between pairs of series.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3340.03, 3460.03, or instructor's consent

CROSS-LISTING: OCEA 4210.03/5210.03, STAT 5390.03

### **STAT 4570.03: Statistical Genetics.**

Statistical aspects of several ideas in genetics are discussed. Topics of some or all the following: gene frequency estimation, Hardy-Weinberg equilibrium, linkage analysis, association studies, quantitative traits, microarrays.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3460 or permission of instructor

CROSS-LISTING: STAT 5570

### **STAT 4620.03: Data Analysis.**

A variety of statistical models which are useful for the analysis of real data are discussed. Topics may include: generalized linear models, such as logistic regression and Poisson regression, models for multidimensional contingency tables, ordered categories and survival data.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3340.03, 3460.03, or instructor's consent

CROSS-LISTING: STAT 5620.03

### **STAT 4701.03: Actuarial Models I.**

This class develops the theoretical basis of a number of probabilistic models useful for the study of life contingencies, including survival models, Markov chains, Poisson processes, with application to life insurances and annuities.

FORMAT: Lecture - 3 hours

PREREQUISITE: STAT 3360.03

### **STAT 4703.03: Actuarial Models II.**

This class focuses on the development of statistical methods for the estimation and validation of actuarial models. Topics to be discussed include: methods of estimation, properties of estimators, goodness of fit, credibility theory, survival estimators, measures of risk, estimation of severity and ruin models.

FORMAT: Lecture 3 hours

PREREQUISITE: STAT 3460 or STAT 4701.03

**STAT 4950.03: Honours Research Project.**

This class is required for students in the honours program. It will consist of a research project carried out under the supervision of a faculty member. The results of the research will be submitted to the statistics honours advisor as a written report. Students wishing to enroll in this class must have a suitable background in statistics, and must meet with, and obtain the approval of, the statistics honours co-ordinator before undertaking their project.

**STAT 8892.00: Co-op Work-Term II.****STAT 8893.00: Co-op Work-Term III.**

## Centres and Institutes

A number of centres and institutes for study and research in specific fields are based at the University. These are:

### Atlantic Health Promotion Research Centre

Managing Director: Sandra Crowell, MPA  
Scientific Director: Lois Jackson, PhD  
Other: Project Coordinators, Research Associates, Research Assistants, and students  
Tel: (902) 494-2240  
Fax: (902) 494-3594  
Website: <http://www.ahprc.dal.ca>

The Atlantic Health Promotion Research Centre (AHPRC) is a leading Canadian health promotion research centre based at Dalhousie University. AHPRC was established in 1993 to conduct interdisciplinary, collaborative population health and prevention research that informs policies and programs to improve the health of Canadians.

The centre is conducting research on health services and health systems, healthy eating and physical activity, knowledge translation, prevention of chronic illness and disability, oral health of seniors, youth obesity, aboriginal health, and harm reduction.

The AHPRC is currently supported by the Faculties of Health Professions, Dentistry and the Office of the Vice President Academic and Provost at Dalhousie University. Support for specific research projects comes from agencies such as Canadian Institutes for Health Research, Social Sciences and Humanities Research Council of Canada, Nova Scotia Health Research Foundation, and Heart and Stroke Foundation of Canada.

### Atlantic Institute of Criminology

Director: D.H. Clairmont, BA, MA, PhD

The Atlantic Institute of Criminology (AIC) is a research institute that is heavily policy-oriented in the field of crime and the criminal justice system. Its mandate is to foster the exchange of information among researchers and policy makers in those areas. Consultative services are provided to fellow scholars and researchers, including graduate students and visiting professors, with respect to the planning and execution of research projects and related undertakings. The AIC is an entity that itself conducts extensive research in criminology, especially with respect to policing, the administration of justice, youth justice issues, race, ethnic and equity issues in justice. It has produced a significant body of policy-oriented research on Aboriginal and African-Canadian justice issues. The AIC Dalhousie website (Dalhousie - SOSA-AIC), which is regularly updated, provides a clear indication of the research products of recent years even though the website is largely restricted to research output that does not include articles in professional journals or edited books available elsewhere.

### Atlantic Research Centre (ARC)

Director: Neale Ridgway  
Phone: (902) 494-7133  
Website: <http://arc.medicine.dal.ca/>

Established in 1967, the ARC conducts basic biomedical research in the fields of lipid metabolism and cell signalling, areas of fundamental importance to a variety of disorders including cancer, neurological, heart and infectious diseases. It also provides education and expertise in these fields to undergraduate and graduate students, other researchers, and the general public. The ARC houses state-of-the-art facilities for biochemical and molecular biological research, including a regional proteomics service facility (DalGEN, <http://genomics.medicine.dal.ca/pms>), and is affiliated with the IWK Cheminformatics & Drug Discovery

Laboratory. The Centre's staff hold appointments in the Departments of Pediatrics and Biochemistry & Molecular Biology in the Faculty of Medicine. Research at the ARC is supported by agencies such as the CIHR, NSERC, CFI, Heart and Stroke Foundation, National Cancer Institute, Atlantic Innovation Fund, and the IWK Health Centre.

### Brain Repair Centre

Chair: Dr. Ivar Mendez, (Professor and Head, Division of Neurosurgery, Department of Surgery and Cross-appointment in Department of Medical Neuroscience, Faculty of Medicine)  
Website: <http://www.brainrepair.ca/>

The Brain Repair Centre (BRC) is a collaboration of Dalhousie University, the Capital District Health Authority and the IWK Health Centre. The BRC is a multi-disciplinary unit focusing on research that can lead to the diagnosis, treatment, and repair of the brain to overcome the effects of neurological and psychiatric disorders such as Parkinson's disease, Huntington's disease, Amyotrophic Lateral Sclerosis (ALS), Epilepsy, Muscular Sclerosis (MS), stroke and spinal cord injury. The BRC grew out of the clinical Neural Transplantation Program, collaboration between basic neuroscientists and clinicians interested in treating Parkinson's disease. The success of the Neural Transplantation Program led clinical and basic neuroscientists to decide to form the Brain Repair Centre. The BRC was formed in 1999 and has focused on stem cell transplantation, Parkinson's disease, spinal cord injury, psychotic disorders, stroke and neuroimaging as areas of innovation at Dalhousie University, Capital Health and the IWK Health Centre.

Examples of BRC achievements include:

- Attracted capital funding from private donors, institutions and the public sector to support construction and fit-up of the new Life Sciences Research Institute scheduled to open in early 2011. When the LSRI is completed, the Brain Repair Centre will become the anchor tenant of this new research and commercialization building with state-of-the-art research, equipment and facilities.
- Establishment of collaboration agreements with research teams at McLean Hospital/Harvard University; Jilin University, China; Cardiff University, Wales; and Neurodyn, Inc.
- Establishment of a \$12 million magnetic resonance imaging facility with the national Research council's Institute for Biodiagnostics (NRC-IBD).
- In 2006, the BRC was awarded \$5.5 million for infrastructure from the Canadian Foundation for Innovation, the largest such award to date in Atlantic Canada. Also in 2006, BRC received a \$3 million Atlantic Innovation Fund award for research, a follow-on to an earlier \$3 million research award.
- Dr. David Clarke, a member of the Brain Repair Centre used a virtual model of a patient's brain to remove a simulated brain tumour before removing the actual tumour the following morning. Developed by a partnership of the National Research Council and a team of about 50 people in 10 Centres across Canada, this was the first such surgery performed in the world.
- Medtronic Canada, Capital District Health Authority, QEII Foundation, and the Brain Repair Centre established a Canadian Centre of Excellence and Training at the Halifax Infirmary. This new \$3.5 million centre provides important new clinical facilities for training and development in imaging, spinal cord and neuromodulation.
- In the neurotransplantation field, the BRC is unique in Canada and one of only four centres worldwide involved in clinical application of neural transplantation, with the "Halifax Protocol" accepted as the world gold standard.
- The BRC is an innovative collaboration that integrates its research expertise with pioneers in the fields of imaging, neurology, stem cell neurobiology, vision, molecular neurobiology, pharmacology, psychiatry, clinical trials and cognitive neuroscience.
- The BRC brings together the expanding fields of neuroimaging and stem cell technologies with application to the treatment of neurological and psychiatric disorders.
- The BRC is the Atlantic Canada presence in the Stem Cell Network, a National Centre of Excellence in stem cell research.

The BRC places emphasis on moving basic science research from the bench to the clinical bedside and from the bedside back to the bench. A key objective of the BRC is to produce innovative technologies that will be commercialized.



## Canadian Institute of Fisheries Technology (CIFT)

Director: A.T. Paulson, PhD  
 Telephone: (902) 494-3280  
 Fax: (902) 420-0219  
 Website: <http://cift.engineering.dal.ca>

CIFT was established in 1979 at the former Nova Scotia Technical College (later TUNS). The federal Department of Fisheries and Oceans provided much of its early specialized laboratory and seafood pilot scale processing equipment, and Industry Canada provided start-up funding and designated CIFT a centre of excellence. As a government-approved laboratory for advanced technology, it also provides R&D services on a cost-recovery basis to industry and to various governmental agencies. The Institute promotes technology transfer and the development of advanced technologies aimed at more effective commercial utilization of both marine and terrestrial resources in Canada and throughout the world.

In addition, CIFT offers unique opportunities for post-graduate training and research through the Food Science program. Major areas of emphasis are: food biochemistry and microbiology; fats, oils, nutraceuticals and other bioactives; physical properties of foods; fish/food process engineering; food safety and preservation; food rheology, food fermentation and beverage science.

### Facilities

CIFT is located in the MacDonald building of Sexton Campus at 1360 Barrington Street in downtown Halifax. The Institute's facilities include:

- fats and oils laboratory
- food chemistry laboratory
- food development laboratory
- sensory evaluation laboratory
- food process engineering pilot plant
- low temperature storage facility
- food physical properties laboratory
- food microbiology laboratory

These areas contain specialized instrumentation and food processing equipment to enable experimental processing, laboratory analysis, and product storage evaluation. In addition to a computer-controlled cold-storage facility, the pilot plant is equipped for experimental processing including freezing, chilling, thermal processing, drying, centrifugal separation, and meat-bone separation.

The pilot plant is well equipped for thermal processing with an automated retort capable of steam, steam-air, or water immersion processing research. The specially designed cold-storage facility is computer controlled and particularly useful for the study of changes in foods as a result of frozen storage history. The pilot plant is also equipped with a custom-built computer-controlled heat pump dryer that is used in food dehydration experiments.

Specialized laboratory equipment includes: automated high performance and fast protein liquid chromatography systems, gas chromatography/mass spectroscopy system, preparative ultracentrifuge, multi-purpose refrigerated centrifuge, microtube centrifuge, analytical and preparative electrophoretic/isoelectric focusing equipment, pulsed field electrophoresis system, thermocycler, DNA gel electrophoresis, Hoefer Daltsix for 2D electrophoresis, Image Master 2D elite software, capillary electrophoresis system, ultra-low temperature freezer, universal texture testing machine, various colorimeters, U.V. and visible spectrophotometer, spectrofluorometer, electrokinetic analyzer, workstation for mathematical modelling and computer simulation, Linkham shearing stage/microscope, Nikon microscope (various attachments), controlled stress rheometer with a high temperature/pressure attachment, controlled rate rheometer, Viscomat, and a rolling ball viscometer.

### Educational Opportunities

Graduate (MSc and PhD) programs are available through the Food Science and Technology program. Also post-doctoral research opportunities are offered. Graduate level class work and research opportunities relate to food science, seafood processing technology, marine oils, engineering design, packaging technology, fish post-mortem biochemistry, food microbiology, food rheology and food process science. Students with degrees in food science, engineering, chemistry/biochemistry, microbiology or biology are invited to apply.

## Centre for African Studies

Phone: (902) 494-3814/1377  
 Fax: (902) 494-2105  
 Director: Theresa Ulicki, PhD

This Centre, established in 1975, advances instruction, publication, research and development education programs in African Studies. Associated faculty offer classes through the Departments of History, International Development Studies, Political Science, French, Sociology and Social Anthropology and Philosophy. The Centre organizes academic and informal seminars and public policy conferences on Africa and encourages interdisciplinary interaction at all levels on African subjects and issues. It co-operates with the International Development Studies department and with the International Research and Development office.

## Centre for Comparative Genomics and Evolutionary Bioinformatics

Director: Andrew J. Roger, PhD  
 Coordinator: Wanda Danilchuk  
 Phone: (902) 494-2620  
 Fax: (902) 494-1355  
 Website: <http://www.cgeb.dal.ca>

The Centre for Comparative Genomics and Evolutionary Bioinformatics (CGBE) at Dalhousie University encompasses an interdisciplinary group of researchers in the Faculties of Medicine, Science and Computer Science. Although microbial genome evolution and diversity is at the heart of many of the CGBE researchers' activities, our work spans computational biology, computer science, statistical modeling and comparative genomics, with a strong focus on method and theory. The application of DNA sequencing technologies to characterize the genomes of a wide diversity of microbes has generated vast quantities of genome sequence data. Now the intellectual challenge is to develop from this enormous resource more comprehensive and theoretically robust phylogenetic, genetic and ecological models to further our understanding of the many roles of microbes in the biological world.

CGBE researchers are united by the common goal of using this vast resource of genomic information to elucidate evolutionary patterns and processes: the pathways by which microbial organisms have diversified over the last 3.5 billion years of Earth's history and through which they continue to shape the global environment. Only through the integration of experimental genomic approaches and sophisticated bioinformatic modeling will we be able to achieve this goal.

CGBE researchers and trainees are supported by grants from the Canadian Institutes for Health Research (CIHR), Natural Sciences and Engineering Research Council (NSERC), the Nova Scotia Health Research Foundation (NSHRF). The Centre itself is supported by funding from the Tula Foundation (<http://www.tula.ca>), the Faculties of Medicine, Science and Computer Science. CGBE is also supported by a large grant from the Tula Foundation (<http://www.tula.ca>) that provides funds for training top-notch postdoctoral and graduate trainees in the CGBE research specialties. We also have a regular seminar series that brings world renowned scientists to speak at Dalhousie University and interact with faculty members and trainees.

## Centre for Environmental and Marine Geology

Director: Professor D. B. Scott

This Centre was originally founded as the Centre for Marine Geology in 1983 to promote interdisciplinary studies of various types of problems in marine Geology, capitalizing on our unique position in Canada with links to related departments such as Oceanography, Physics, Biology, the Bedford Institute of Oceanography and our hosting of the Canadian office of the Ocean Drilling Program. Since 1983 the role of the Centre has changed, reflected in the new name, which better describes the work being done now where marine geology is combined with environmental problems. We have three new faculty that expand our expertise into new chronological techniques and permafrost as well as strengthening our capacity in the petroleum-related environmental geology. Some of the objectives of the Centre are to: 1) continue to expand our participation in a revitalized east coast offshore energy related problems; 2) continue our climate-change work with a variety of approaches both offshore and on land; 3) expand into Arctic regions both with major oceanographic and shore-based programs; and 4) expand our capacity to help solve some of the many environmental geology problems associated with urbanization.

## Centre for European Studies

Co-Directors: Julia Wright and Jerry White  
(Canada Research Chair in European Studies)  
Email: jerry.white@dal.ca

The Centre for European Studies was established in 2007 to promote research on all aspects of European society and its relations with the rest of the world. The Centre facilitates the work of Europeanist scholars at Dalhousie, including the participating Canada Research Chairs in European Studies, enables research collaboration with scholars from Canada and around the world on projects related to Europe and the European Union.

## Centre for Foreign Policy Studies

Director: David R. Black, PhD  
Lester B. Pearson Professor, International Development Studies

Established in 1971 the Centre is concerned with teaching, research, publication, policy advice and other professional activities in the various aspects of foreign policy, security studies, development studies, and international politics.

The Centre's work is concentrated in the areas of Canadian and comparative maritime security and oceans policy, Canadian and American foreign and security policies, and global security and international development. Its geographical specializations include Canada, North America, Europe, and the South (especially Africa, Asia, and the Caribbean). The Centre encourages activities in these areas by Faculty, Research, and Doctoral Fellows, and advances communication among local and international communities in these fields through seminars, workshops conferences and colloquia, often in collaboration with local, national, and/or international organizations. It publishes occasional papers and monographs on Maritime Security, Canadian Defence and Security, and Global Security issues.

The Centre is an integral part of the Department of Political Science. Centre faculty offer classes through the Department in foreign and defence policy, international relations and development, and maritime affairs at both undergraduate (majors & honours) and graduate (MA and PhD) levels. They also supervise masters and doctoral theses in these fields.

For further information, consult the Centre's website:  
<http://centreforforeignpolicystudies.dal.ca>

## Centre for Innovation in Infrastructure

Director: John Newhook, PhD, P.Eng.  
Location: Room B233, Sexton Campus  
1360 Barrington Street  
PO Box 1000  
Halifax, NS B3J 2X4  
Phone: (902) 494-2847  
Email: forgeron@dal.ca

The Centre for Innovation in Infrastructure is an industry-oriented research centre with the Faculty of Engineering and with strong affiliations with the Department of Civil and Resource Engineering. Established in 1983 as the Nova Scotia CAD/CAM Centre, the Centre originally focussed on assisting Atlantic Canadian industry with the integration of computer added manufacturing and computer aided design technology in their operations. Since the 1990's the Centre has continued to evolve to meet the needs of industry in other areas and to take a more active role in research and development in civil infrastructure.

Today the Centre act as a focal point for research, innovation and technology transfer in Civil Infrastructure related areas. The major funding partnerships are with the Atlantic Canadian departments of transportation, industries related to bridge and structural engineering and with companies developing new materials and products for infrastructure.

Our combined areas of expertise and research interests include:

- Structural Analysis and Design
- Structural Health monitoring
- Bridge engineering and innovations
- Soil-steel structures
- Fibre reinforced polymers
- Fibre reinforced concrete
- NDT of bridge decks and pavements
- Sustainable asphalt technology

The Centre has acquired and maintains significant testing equipment related to these research areas and contributes to the maintenance and operation of the research facilities within the Department of Civil and Resource Engineering.

## Centre for International Trade and Transportation

Location: 6100 University Avenue  
Suite 2060  
PO Box 15000  
Halifax, NS B3H 4R2  
Director: Daniel Lynch, PhD  
Phone: (902) 494-6248  
Email: dan.lynch@dal.ca  
Student Exchange Coordinator: Tim Richard  
Phone: (902) 494-2224  
Email: tim.richard@dal.ca

Fax: (902) 494-1483  
Website: <http://citt.management.dal.ca>

The Centre was established in 1975 with a mission to foster international business teaching and research and enhance Canada's global competitiveness through innovative programs and outreach services. CITT supports a wide range of learning experiences including academic exchanges, the Student Research Symposium, the International Case Competition. The Centre recently partnered with Michigan State University's Canadian Studies Program to work towards increasing global trade between the US and Canada (the world's largest trading partners).

## Centre for Marine Vessel Development and Research (CMVDR).

Contact: Josh Leon, Dean of Engineering  
The mandate for this Centre is under review.

## Centre for Water Resources Studies

Location: Office D-514  
1360 Barrington Street  
Telephone: (902) 494-607  
Email: cwrs@dal.ca

The Centre for Water Resources Studies was established in December, 1981, by a resolution of the Board of Governors (TUNS). The objectives of the Centre are to carry out applied research which contributes to the effective and sustainable protection of water resources in Atlantic Canada, nationally and internationally, and to facilitate the transfer of new knowledge to potential users. Research programs directed by the Centre address the design of cost-effective on-site wastewater systems, soil erosion processes, drinking water treatment, the use of roofwater cisterns for domestic water supply, eutrophication, watershed management and the computer modeling of hydrodynamic and hydrochemical processes. The Centre also has a number of research advisory panels, which involve professionals from industry, government and academia in applied research related to water use and water management.

### Facilities

The Centre for Water Resources Studies is located on the fifth floor of "D" Building on Sexton Campus. Laboratory and office space is available for specific graduate research topics, as well as ongoing research carried out by Centre personnel. Analytical equipment includes instrumentation for determining low levels of major ions and nutrients, as well as trace quantities of metal ions in water. The Centre has apparatus for laboratory investigation and pilot scale testing of innovative water treatment methods using Dissolved Air Floatation (DAF) and ozonation and has worked with local consultants and municipalities to develop new applications of the technologies. The Centre is a North American leader in the development of on-site sewage disposal and has had an active research program in this area since 1987. In conjunction with the Nova Scotia Agricultural College, the Centre has a field laboratory investigating sloping sand filters and septic disposal.

### Educational Opportunities

The Centre co-operates with academic units in the training of undergraduate and graduate students who have an interest in water resources. The Centre also participates in the program leading to a dual degree in water resources engineering and planning, in conjunction with the School of Planning into the Faculty of Architecture and Planning.

## Dalhousie Institute for Society and Culture (DISC)

Director: Associate Dean  
Research in the Faculty of Arts and Social Sciences  
Email: [discfass@dal.ca](mailto:discfass@dal.ca)  
Website: <http://arts.dal.ca/Research>

Established in 2008, the Dalhousie Institute on Society and Culture serves as the virtual home for the many divergent research activities and initiatives within the Faculty of Arts and Social Sciences. Its primary function is to support research within the Faculty through various fellowship programs, publicity and fund raising initiatives, publishing ventures, conferences and lecture series, and cross-disciplinary exchanges.

The Institute encompasses two broad and overlapping research clusters: *Societies in Local, National, and Global Contexts*, and *Cultural Representations and Presentations*. The former cluster aims to develop new knowledge about political, social, and economic transformations, about national and regional identities, and about global relations, whereas the latter seeks to investigate and preserve cultural traditions, literatures, and languages, to foster studies and theories of cultural identity, to stimulate artistic innovation, to examine the shaping influence of beliefs and religions, and to contribute to the cultural life and profile of the province. These two clusters, with a flexibility and breadth unequalled in Eastern Canada, are uniquely equipped to analyze social and cultural change.

## Eco-Efficiency Centre, Faculty of Management

Program Manager: Penny Slight  
Phone: (902) 461-6704  
Website: <http://www.dal.ca/eco-efficiency>

The Eco-Efficiency Centre (EEC) was established in 1998 as a partnership with Nova Scotia Power, Inc., and in 2005 was approved as a university centre in the Faculty of Management. It is currently linked to business, engineering, and resource and environmental studies programs. The EEC has achieved a national and international profile for its work in promoting research and action in relation to eco-efficiency and industrial ecology, especially in its application to industrial parks.

The objectives of the Centre are to:

1. develop and sustain eco-efficiency, industrial ecology, and corporate sustainability research programs at Dalhousie University;
2. provide education, research and employment opportunities for students;
3. develop and provide information and resources related to eco-efficiency, industrial ecology and corporate sustainability to business and government;
4. develop models of environmentally sustainable industrial development thereby improving environmental and financial performance of small and medium enterprises (SMEs) and larger corporate entities; and
5. foster sustainable business practices as models and develop local case studies for teaching purposes.

The research of the Centre provides small and medium-sized enterprises (SMEs) with the tools necessary to increase the overall sustainability of their operations by investigating and applying techniques such as pollution prevention, life cycle analysis and eco-industrial networking. At the same time the Centre researches the drivers and barriers to sustainability strategies providing data that influences the development of new government policies at all levels. The EEC provides opportunities for students to learn, faculty to collaborate in new action research initiatives and businesses to improve their environmental performance.

Areas of collaboration in research include:

**Environmental Studies** - Life cycle analysis, energy and material metabolism, industrial symbiosis, ecological footprint analysis.

**Business** - input/output analysis, supply chain management, reverse logistics, environmental accounting, eco-efficiency studies, supply chain management, education of personnel, and corporate sustainability.

**Engineering** - process optimization, energy and material balances, pollution prevention, industrial symbiosis, environmentally friendly building materials, product and process design.

**Planning** - green building design and construction, industrial park planning, zoning, land use standards, infrastructure design.

**Information Management** - geographic information systems, life cycle and industrial metabolism database management.

**Public Policy and Law** - economic and industrial development policies, regulations, economic instruments.

The continuing involvement of students and the increased focus on graduate research and research partnerships will assist in developing the research capacity and promote long term progress towards sustainability in Atlantic Canada and Canada generally. Co-op students from the Faculty of Management and Faculty of Engineering are hired regularly as are interns from the Master of Resource and Environmental Management and Master of Environmental Studies Programs.

Sustainability has been identified as a priority at all levels of government, particularly the federal government and agencies such as the Atlantic Canada Opportunities Agency and Industry Canada. The Centre has had working relationships with the Atlantic Canada Opportunities Agency, Natural Resources Canada's Office of Energy Efficiency, Environment Canada, the Nova Scotia Department of Environment, the Nova Scotia Department of Economic and Rural Development, and the Resource Recovery Fund Board Nova Scotia Inc.

## European Union Centre of Excellence

Director: Ruben Zouoth  
Phone: (902) 494-7558  
Fax: (902) 494-1909  
Email: [euce@dal.ca](mailto:euce@dal.ca)  
Website: <http://www.euce.dal.ca>

Established in 2006, the European Union Centre of Excellence (EUCE) seeks to promote greater awareness of the European Union (EU) in Canada. The centre coordinates academic and public outreach activities such as exchanges of faculty and students, conferences, workshops, symposia, and other projects involving the Faculties of Arts and Social Sciences Law, Management, and Science. The Centre supports research in areas such as Canada and EU Arctic policy, transatlantic trade negotiations, migration policies in Europe, EU Copyright legislation, the EU and the economic crisis, public health policy in EU and Canada.

## Global Health Office

Director: Shawna O'Hearn  
Location: C-241 5849 University Avenue  
PO Box 1500  
Halifax, NS B3H 4R2 Canada  
Phone: (902) 494-1965  
Fax: (902) 494-2799  
Email: [gho@dal.ca](mailto:gho@dal.ca)  
Website: <http://gho.medicine.dal.ca>

Working through an interprofessional lens, the Global Health Office is committed to training global health leaders who strengthen health systems for vulnerable populations in Canada and abroad. The office prepares students, residents and faculty doing clinical electives, training or research with our international partners as well as leads summer programs in Tanzania, Thailand and The Gambia.

- Events focusing on relevant and timely global health issues are organized through the office including journal clubs, speaker series, conferences.
- Opportunities to become involved in research and mentorship.
- In 2012, the innovative "Advocates in Global Health" program was started to encourage leadership within the student population in core global health competencies.
- Annual awards are presented to a student, resident and faculty member who demonstrate leadership in global health
- Partnerships with organizations strengthen the global reach including CSIH (Canadian Society for International Health), CCGHR (Canadian Coalition for Global Health Research), National Network on MNCH (Maternal, Newborn and Child Health), ACIC (Atlantic Council for International Cooperation), GHEC (Global Health Education Consortium), and International Centre (Dalhousie)

## Health Law Institute

Director: Constance MacIntosh, BA, MA, LLB  
Location: Dalhousie University  
6061 University Avenue  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-6881  
Fax: (902) 494-6879  
Email: [hli@dal.ca](mailto:hli@dal.ca)  
Website: <http://www.dal.ca/hli>

An Interdisciplinary Institute of the Faculties of Law, Medicine, Health Professions, and Dentistry, the Institute is committed to the advancement of health law and policy and the improvement of health care practice and health systems through scholarly analysis, professional education, and public service. Its objectives are:

1. To foster strong and innovative health law and policy scholarship by:
  - contributing to research in health law and policy
  - providing external consultation services on matters having a significant impact on health law or policy
2. To advance health law and policy education by:
  - designing and implementing education programs for law, medicine, health professions and dentistry students
  - providing continuing education opportunities for health professionals and legal practitioners
3. To serve the public in our areas of expertise by:
  - contributing to the societal understanding of health law and policy issues
  - providing expertise to organizations in the public sector
  - engaging in the policy-making process at local, regional, and national levels.

## Institute for Research in Materials (IRM)

Director: Richard A. Dunlap, PhD  
 Administrative Offices: 6414 Coburg Road  
 PO Box 15000  
 Halifax NS B3H 4R2  
 Phone: (902) 494-6373  
 Fax: (902) 494-8016  
 URL: <http://irm.dal.ca>

Established in 2002, IRM is made up of over 100 faculty members in seven faculties (Science, Engineering, Dentistry, Medicine, Architecture and Planning and Management and Health Professions) and 17 departments. The goals of the Institute include advancing the collective interdisciplinary research efforts in materials science and engineering at Dalhousie University, facilitating interdisciplinary teaching in materials science within the existing discipline structure, and enhancing interactions between materials researchers at Dalhousie University with relevant government laboratories and industry, especially within the region. The Institute leads collaboration within the university on interdisciplinary applications to funding agencies for major equipment and research infrastructure, and collaborates with external organizations to pursue research opportunities.

All Dalhousie University faculty members carrying out research in the area of materials are eligible to be Members of IRM. Postdoctoral fellows and graduate students associated with these research groups are invited to become Associate Members of IRM.

In addition to equipment operated by individual members of the Institute, IRM has established (2003) the Facilities for Materials Characterization, an \$11 million suite of instruments managed by the Institute.

The equipment includes:

- High-field solid-state NMR spectrometer (managed jointly with the Nuclear Magnetic Resonance Research Resource)
- Scanning electron microscope
- Focused ion beam
- X-ray photoelectron spectrometer (XPS)
- Secondary ion mass spectrometer (SIMS)
- Sputtering system
- Ultra-high speed optical systems
- Physical property measurement system (PPMS)
- Scanning thermal microscope (SThM)
- Ultrasonic immersion testing equipment
- Hot press
- Grindo Sonic
- High-speed motion recorder/analyzer.

These facilities are open to external users. Please contact [IRM@dal.ca](mailto:IRM@dal.ca) for details.

IRM offers an NSERC CREATE program called DREAMS (Dalhousie Research in Energy, Advanced Materials and Sustainability). Students accepted into the program carry out collaborative interdisciplinary research in world-leading laboratories with innovative new classes and direct experience working with

industrial partners. DREAMS scholarships are available to graduate students in Chemistry, Physics and Mechanical Engineering. See DREAMS website for details at [DREAMS.irm.dal.ca](http://DREAMS.irm.dal.ca)

## Law and Technology Institute

Director: Robert J. Currie, BA, MA, LLB, LLM  
 Associate Director: Michael Deturbide, BSc, BJ, LLB, LLM  
 Location: Schulich School of Law  
 6061 University Avenue  
 PO Box 15000  
 Halifax, NS B3H 4R2  
 Phone: (902) 494-1469  
 Fax: (902) 494-1316  
 Email: [lynda.corkum@dal.ca](mailto:lynda.corkum@dal.ca)  
 Website: <http://law.dal.ca/lati/>

The Law and Technology Institute was established at Dalhousie Law School in 2001 to provide teaching, research, and continuing education on technology law issues to students, faculty members, and the practicing Bar. The Institute participates, with the faculties of Computer Science and Management, in Dalhousie's Master of Electronic Commerce Program, and has been involved in collaborative projects with the private sector and governments on information technology issues. Also, in conjunction with Dalhousie's Industry Liaison and Innovation Office, the Institute offers a student placement program in intellectual property and commercialization. Its faculty members provide graduate supervision to students interested in the developing field of technology law issues, and are active in law and technology organizations, such as IT.Can, and the International Society for Law and Technology. Faculty members of the institute are writers of the English edition of IT.Can bi-weekly newsletter. The Institute hosts an Eminent Speakers Series, which brings leading IT lawyers and academics to Dalhousie to share their expertise. The Institute is home to the Canadian Journal of Law and Technology, co-edited by Professors Deturbide and Reynolds. The CJLT is the pre-eminent technology law review in Canada.

### Classes Offered:

- Law and Technology
- Internet and Media Law
- Privacy Law
- Intellectual Property Law
- Information Technology Transactions
- Entertainment Law
- Intellectual Property and Commercialization Placement
- Special Topics on Intellectual Property (IPII)
- Copyright Law
- Patent law

Students also have the opportunity to pursue specialized interests in fields such as health law and alternate dispute resolution, as they relate to law and technology.

## Marine & Environmental Law Institute

Location: Schulich School of Law  
 6061 University Avenue  
 PO Box 15000  
 Halifax, NS B3H 4R2  
 Phone: (902) 494-1988  
 Fax: (902) 494-1316  
 Email: [MELAW@dal.ca](mailto:MELAW@dal.ca)  
 Website: <http://www.dal.ca/law/MELAW>

The Institute, which is housed in the Law School, carries out research capacity-building and consultancy activities and also directs the MELP academic specialization. MELAW provides a specialization in marine and/or environmental law to JD students. In addition to their scholarly research and publication activities, MELAW faculty, associates and staff carry out research projects and provide advisory services to agencies of the United Nations, international non-governmental organizations, and regional organizations as well as assisting government departments, private sector institutions and non-governmental organizations in Canada and overseas.

The Marine & Environmental Law Institute is also the editorial office of the Ocean Yearbook, a major international interdisciplinary annual, devoted to ocean affairs published in collaboration with the International Ocean Institute in Malta. Dalhousie law students have the chance to gain experience working as research

assistants on the Institute's research projects and workshops, and assisting with editing the Ocean Yearbook.

MELAW supports student collaboration in addressing environmental issues through the Environmental Law Students Society and the East Coast Environmental Law Association, a non-governmental organization dedicated to environmental law education and advocacy. MELAW encourages interdisciplinary collaborations within the Dalhousie community including the School for Resource and Environmental Studies (SRES), the Marine Affairs Program (MAP), the International Development Studies (IDS) Program, the Centre for Foreign Policy Studies, the Ocean Tracking Network (OTN) led by the Department of Oceanography and the recently established Halifax Marine Research Institute. MELAW also promotes national collaborations, for example, through the Ocean Management Research Network (OMRN). International linkages include among others, the Global Forum on Oceans, Coasts and Islands and the IUCN Academy of Environmental Law as well as numerous sister institutions in Asia, Caribbean, Europe, South America and the United States.

## Minerals Engineering Centre

Director: Georges J. Kipourou, PhD, PEng  
Phone: (902) 494-6100  
Location: 1360 Barrington Street  
G. Building, Sexton Campus  
PO Box 15000  
Halifax, NS B3H 4R2  
Phone: (902) 494-3955  
Fax: (902) 494-3506  
Website: <http://minerals.engineering.dal.ca>  
Email: [mec@dal.ca](mailto:mec@dal.ca)

The Minerals Engineering Centre was established from the Laboratory for the Investigation of Minerals. The Minerals Engineering Centre provides research, analytical and advisory services to industries, universities, and government bodies in Atlantic Canada, Canada and International. The Centre is located in G Building on Sexton Campus and is affiliated with the Materials Engineering program. The services offered include:

- Sample preparation of ores, soils, silts, rocks, cores, clay fraction and wood pellets
- Size analysis, including screening, sieving, and sub-sieve analysis
- Minerals separation using dense liquids
- Physical and chemical analytical methods using atomic adsorption, XRD, ICP-OES, AA, x-ray fluorescence spectrophotographic, wet chemical techniques and carboy/sulphur analysis
- Analysis of samples including geological, metalliferous ores, industrial minerals, coals, metals, alloys and water
- Mineral processing test work covering the whole range of investigative techniques from bench scale to pilot plant, including crushing, grinding, classification, gravity separation, dense medium separation, magnetic separation, electrostatic separation, flotation, flocculation, thickening, filtration, and drying
- Evaluation of biomass fuels calorific value of raw material and wood pellet.

The Minerals Engineering Centre provides opportunities for undergraduate and graduate students to learn various analytical and testing techniques applicable in their course of studies. It also offers services to faculty members to assist in their teaching and research activities.

Further information may be obtained from the Director of the Centre.

## Neuroscience Institute

Director: Alan Fine, V.M.D., PhD  
Contact: [neuroscience.institute@dal.ca](mailto:neuroscience.institute@dal.ca)  
Website: <http://www.neuroscience.dal.ca>

The Neuroscience Institute was founded in 1990 to promote and coordinate research in neuroscience, the modern interdisciplinary study of the brain and nervous system.

It serves as an umbrella organization to foster research and training in neuroscience at Dalhousie. A major objective is to increase understanding of the functions of the nervous system in health and disease. To this end, the Institute coordinates the activities of neuroscientists in the Faculty of Medicine, the Faculty

of Science, the Faculty of Computer Science and the School of Biomedical Engineering, facilitating collaboration between clinical and basic scientists in these Faculties. Some foci of current research activity include: development and plasticity of the nervous system; cognitive neuroscience; motor control; autonomic function; synaptic function; and sensory physiology. The Institute also provides a vehicle to seek new sources of funding, and encourages new initiatives in all areas of neuroscience research at Dalhousie. In addition, the Institute promotes and coordinates training programs in neuroscience currently offered through its constituent departments at both the undergraduate and graduate levels. It sponsors seminar series annually, and coordinates a variety of community outreach events.

## Norman Newman Centre for Entrepreneurship

Director: Ed Leach, BComm (Dalhousie), MBA (Ivey), PhD  
(Nova Southeastern)  
Coordinator: Paulette Dun  
Entrepreneur in Residence: Brian Lowe  
Lead Researcher: Dr. Mary Kilfoil  
Phone: (902) 494-6975  
Website: <http://entrepreneurship.dal.ca>

The mission of Norman Newman Centre for Entrepreneurship (NNCE) is "To build a vibrant entrepreneurial culture among students, faculty and the community at large that embraces innovation in creating value for society led by leaders who manage with integrity, focus on sustainability and make things happen."

This will be accomplished by:

- Supporting the academic programs and courses taught within the Rowe School of Business
- Supporting the entrepreneurial community.
- Providing opportunities for Dalhousie students to work with the entrepreneurial community.
- Facilitating the incubation of student business ideas.

The NNCE is attached to the Rowe School of Business, within the Faculty of Management, Dalhousie University. NNCE promotes entrepreneurship in its many forms, through innovative curriculum, applied research and collaborative extension work (outreach). Our definition of entrepreneurship is broad and includes the development or growth of enterprises for profit, for social benefit and for sustainability. Our research is field-based and involves working with real ventures, on real projects, using state-of-the-art methodologies. Our extension work is multi-disciplinary and ranges from internships with entrepreneurs to collaborations with other faculties throughout the university.

All of our programs are designed to enhance the student's entrepreneurial knowledge, skills, and networks. In addition to supporting technology and technical start-ups through mentoring, coaching and training efforts, the NNCE will provide mentoring, coaching and training to entrepreneurial students, create exemplars of technology and technical entrepreneurship through research projects and further expand the relationship with the business community.

## Nuclear Magnetic Resonance Research Resource (NMR3)

Director: J. K. Rainey, BSc, MSc, PhD  
Facility Coordinator: M. D. Lumsden, BSc, PhD  
Solid-state NMR Coordinator: U. Werner-Zwanziger, BSc, PhD

Established in 1982 with assistance from the Natural Sciences and Engineering Research Council, the Resource is located in the Department of Chemistry and is used by faculty, researchers and graduate students in all Maritime universities, the NRC, local industry and many Dalhousie Departments. It is concerned with applications of magnetic resonance spectroscopy to problems in chemistry, materials science, biology, biochemistry and related areas. Its current instrumentation includes Bruker AC-250 (Tecmag upgrade), Avance 300 and Avance 500 NMR spectrometers for liquids and Bruker Avance DSX 400 and Avance 700 NMR spectrometers for solids. NMR-<sup>3</sup> users also have direct access to a Bruker Avance III 700 NMR spectrometer with cryoprobe capabilities for liquids experiments. The Avance 500 and Avance 700 NMR spectrometers were

installed in 2003 with funding from NSERC, the Canadian Foundation for Innovation and the Atlantic Innovation Fund. The cryoprobes on the Avance III 700 were purchased in 2009 by Dalhousie University through an Atlantic Canada Opportunities Agency Grant. The Resource offers facilities for hands-on use by researchers and also provides NMR spectra and expertise to scientists throughout the Atlantic Region and beyond.

For more information see: <http://nmr3.chemistry.dal.ca>

### **Trace Analysis Research Centre**

Director: A. Doucette, BSc, PhD

The Trace Analysis Research Centre (TARC) was established in 1971 with the assistance of a grant from the National Research Council. Its mission is to train analytical chemists and, through research, to contribute to the advancement of analytical chemistry. Members of TARC from Dalhousie and associated institutions comprise a group with expertise in a wide range of chemical analysis techniques in areas such as spectroscopy, chromatography, mass spectrometry, electrochemistry, and nuclear analytical chemistry.

# Resources and Services

## 1. Advising and Access Services Centre (AASC)

Our academic advising team provides advising, academic planning and personal coaching to current Dalhousie University students. The Advising and Access Services Centre is also Dalhousie's centre for expertise for student accessibility and accommodation. As part of our ongoing efforts to facilitate a successful transition to and throughout your university experience, we offer several points of contact for students including summer transitions/orientation programs, ABLE @ Dal - a workshop exclusively for students with disabilities, and one-on-one advising appointments, all delivered through a 'coaching as advising' model to help students develop strategies for academic success from first-year to graduation.

We help you build on your ability to make decisions that positively impact your academic and career success. We promote the Learn Well @ Dal philosophy by providing accessible and thorough advising and coaching for students accessing our services.

Early consultation is encouraged to ensure appropriate planning for your needs which may include accommodations. AASC Advisors meet with you to determine areas to facilitate your success, and if accommodations are required, we ensure those accommodations are put into place by working with your course instructors.

For further information, please visit our website [www.dal.ca/learnwell](http://www.dal.ca/learnwell), call (902) 494-3077 or email [access@dal.ca](mailto:access@dal.ca).

## 2. Alumni Association/Alumni Relations

The Alumni Association is comprised of over 110,000 graduates of Dalhousie University. A global network of volunteers keeps alumni informed and involved with the university. By providing many programs and services, the Association fosters a strong relationship between Dalhousie and its alumni.

Dalhousie alumni play a vital role in the health and future of the university. Many alumni return to Dalhousie regularly to hire graduating students. They also serve as advocates, ambassadors and student mentors. The financial support provided by our alumni helps ensure that Dalhousie will continue to provide exceptional post-secondary education to future generations.

The Alumni Association's Board of Directors works with the Dalhousie Alumni Relations Office, located in the Macdonald Building (902 494-8801/1-800-565-9969/[alumni@dal.ca](mailto:alumni@dal.ca)). Together, the Association and Alumni Relations strive to identify opportunities for alumni involvement, and to foster an environment that invites alumni to participate fully in Dalhousie's well-being. Visit the website at [www.dal.ca/alumni](http://www.dal.ca/alumni).

## 3. Athletics and Recreational Services

Dalhousie offers a wide array of programs, facilities and services to suit the diverse sport, recreation and wellness needs of our students. Located on the Studley Campus, Dalplex is the university's primary fitness centre. Dalplex membership is included in full-time student fees, so students can simply bring their DalCard and swipe it in the turnstile for access to: the Cardio Plus Centre, two climbing facilities, two weight rooms, over 35 weekly fitness classes, an eight lane, 50m indoor pool, a 1/6 mile indoor track, drop-in times for recreational basketball and volleyball, racquet courts, an outdoor tennis and beach volleyball court and the Fun Zone play area for children. The F.H. Sexton Memorial Gymnasium includes a fitness centre, a gym with hardwood courts, group fitness classes, two squash courts and change rooms with lockers for easy access for students on the Sexton Campus. The Langille Athletic Centre is the sport and recreation facility for students on the Agricultural Campus.

Athletics and Recreational Services also offers many climbing, fitness and outdoor recreation programs, classes and trips each term, along with a broad range of intramural leagues and tournaments. Intramural sports are fun, free and an excellent way to meet other students. Sports offered include soccer, flag football

and hockey in the fall, to curling, basketball and inner tube water polo in the winter term - and that's just the tip of the iceberg! Dalhousie offers you the opportunity to take part in more than 20 different recreational and competitive sports clubs, which are organized and run by students. The Rams varsity program represents the Agricultural Campus, offering competitive teams in badminton, basketball, women's rugby, soccer, women's volleyball and woodsmen. The Tigers varsity program on the Halifax campus consists of 14 teams (men's and women's basketball, cross country, hockey, soccer, swimming, track and field and volleyball) who compete regionally in the Atlantic University Sport (AUS) conference and nationally in Canadian Interuniversity Sport (CIS). For more information about sport, fitness and recreation opportunities at Dalhousie visit [www.athletics.dal.ca](http://www.athletics.dal.ca).

## 4. Black Student Advising Centre (BSAC)

The Centre strives to foster a sense of community among all students, especially those who are Black/African descent. The BSAC hosts programs such as peer and professional mentorship, in-house tutoring and writing support as well as events to promote intercultural awareness. Providing confidential counselling services, personal and community support, advocacy, and relevant resource materials are a few of the roles of the BSAC Advisor. The Advisor also provides information about scholarships, bursaries, employment and makes referrals to additional resources for student success. The BSAC includes a study space, a small computer lab and a lounge. For further information, drop by the Centre in room 418 of the Student Union Building, contact us at (902) 494-6648 or [bsac@dal.ca](mailto:bsac@dal.ca) or visit us online at [www.dal.ca/bsac](http://www.dal.ca/bsac).

## 5. Career and Leadership Development Centre

The Career and Leadership Development Centre assists you in:

- exploring a full range of career and work possibilities that match your career goals;
- preparing job-search documents to present yourself effectively as a candidate for employment;
- obtaining information on employment opportunities and prospective employers;
- connecting with career opportunities through campus interviews, job and volunteer listings, referrals, direct application, networking, job search events, publications, and/or information technology; and
- developing and maintaining relationships with organizations that provide career development and employment opportunities for you.

Drop by the Career and Leadership Development Centre on the fourth floor of the Student Union Building in Halifax or in the Dairy Building on the Agricultural Campus, or visit us online at [www.dal.ca/cldc](http://www.dal.ca/cldc) for more information on programs and services.

## 6. Centre for Learning and Teaching

The Centre for Learning and Teaching (CLT) works in partnership with academic units, faculty members, and graduate students to enhance the practice and scholarship of learning and teaching at Dalhousie University. CLT takes an evidence-based approach to advocating for effective learning and teaching practices, curriculum planning, services to support the use of technology in education, and institutional policies and infrastructure to enhance the Dalhousie learning environment.

*Programming:* Workshop series, presentations, discussion groups, and demonstrations are scheduled to address the full spectrum of educational issues, including curriculum design, evaluation of student learning, teaching and learning strategies, and the effective integration of instructional technology.

*Confidential Consultations:* Educational developers at CLT provide confidential consultation services to teaching assistants, faculty, and administrators on a wide range of learning and teaching issues.

*Annual Events:* On an annual basis, CLT coordinates New Academic Staff Orientation, TA Days, Teaching Dossier Workshops, and the Dalhousie Conference on University Teaching and Learning that brings together presenters from across the University and the country to explore issues related to specific themes. CLT also administers several university-wide teaching awards, including the Dalhousie Educational Leadership Award, the Alumni Award of Excellence for Teaching, Sessional and Part-Time Instructor Award of Excellence for Teaching, and the President's Graduate Teaching Assistant Award.

*Certificate in University Teaching and Learning:* The Certificate program is offered to graduate students by the CLT in collaboration with the Faculty of



Graduate Studies. The purpose of the program is to assist academic departments in preparing students for their teaching responsibilities and to enhance their professional development opportunities for other careers.

*Student Ratings of Instruction (SRI):* Higher education institutions in Canada and abroad encourage faculty to use teaching evaluations to rate their teaching for effectiveness. The CLT is responsible for the administration of the university-wide Student Rating of Instruction. The ratings are administered online towards the end of each term. Quantitative and qualitative data are collected and the opportunity for departments and individual instructors to add questions to the form is available. Students may access the universal question part of the form when individual instructors opt-in to release the results of their own course(s).

*Grants:* The CLT administers the Teaching and Learning with Technology grants that are intended to encourage and support faculty members who are seeking new and innovative ways to incorporate technology into their teaching practice.

*Publications:* The CLT newsletter, Focus on University Teaching and Learning, is published three times a year and is available online on the CLT website ([www.learningandteaching.dal.ca](http://www.learningandteaching.dal.ca)). CLT's lending library includes both print and video resources on topics related to teaching that may be borrowed by faculty, teaching assistants, and administrators. CLT's LibGuide of links to electronic sources can be found at <http://dal.ca/libguides.com/clt>

*Teaching and Learning with Technology:* A division of the Centre for Learning and Teaching, Instructional Media Services (IMS), offers expertise and support to the university in the areas of classroom design, media production, presentation technology, and technical services.

- IMS supplies equipment, training, and support to students, staff, and faculty. AV Staff provide technical support for classrooms and operate equipment loan pools on Studley and Sexton campuses, as well as assist with classroom design and equipment installations across all three campuses.
- Video and Audio Production Services offers a full range of creative and production services for educational or other academic purposes.
- Technical Services repairs and services electronic equipment and provides expert advice on the design and installation of classroom technology systems. For IMS locations and contact information see <http://learningandteaching.dal.ca/ims.html>.

For further information, teaching resources, or a confidential consultation, you are invited to contact the Centre for Learning and Teaching, located at Suite G90, Killam Library, 6225 University Avenue, (902) 494-1622, [CLT@dal.ca](mailto:CLT@dal.ca), or you can visit the CLT website at: <http://learningandteaching.dal.ca>

## 7. Counselling Services

As a student you'll find that most of the time you can deal with the everyday issues that pop up while attending university. But, life can sometimes challenge you in unexpected ways and when it does, the Dalhousie Counselling Services Centre can help. We can help you resolve problems and learn new skills in a confidential, supportive environment. Also, if you are struggling with your classes or assignments and suspect you may have a learning disability, staff in the Counselling Centre can pre-screen for learning disabilities, attention-deficit hyperactivity disorder (ADHD) and/or Asperger's disorder, and can suggest various learning strategies that you may find helpful. Career Counselling is a confidential and collaborative process we offer, in which you work with a career counsellor who assists you in your educational and career decision-making.

Counselling is provided by professionally trained counsellors and psychologists and is available for individuals and on a group basis.

For information about the making an appointment, hours of operation or any of the other services, programs and events provided by the Dalhousie Counselling Centre, please visit us online at [www.dal.ca/counselling](http://www.dal.ca/counselling).

## 8. Dal Allies/LGBTQ Support

At Dalhousie we encourage and support a respectful and inclusive campus community. Allies work with students, staff and faculty to offer programs, services, training, support, referrals and resources to members of the Dalhousie Rainbow community. For confidential discussions feel free to contact Dalhousie's Peer Ally ([peerally@dal.ca](mailto:peerally@dal.ca)). We can help, if you:

- question (or have questions about) sexuality or gender identity and need information
- need support in coming out
- need help dealing with issues you are experiencing on campus

- want to be yourself and not have to hide your identity when seeking services or support
- want to discuss issues without fear of judgment

Contact us [dalally@dal.ca](mailto:dalally@dal.ca) or visit us online at [www.dal.ca/dalally](http://www.dal.ca/dalally) for more information.

## 9. DalCard

The DalCard (also referred to as the Dalhousie University ID Card) is a convenient multi-purpose card, which gives the cardholder access to various facilities and services on and off campus. The DalCard is an identification card and also serves as a debit card for retail and vending purchases on and off campus; for printing at Academic Computer Labs; printing and photocopying at the Libraries; Dalplex membership and access card; and a residence meal plan and access card - all in one! The DalCard must be presented to write an officially scheduled examination or to use the library facilities. In addition, some services such as the issuance of bursary or scholarship cheques, require the presentation of a valid DalCard.

The DalCard Office is located at 1443 Seymour Street. Students on the Sexton campus may obtain the DalCard at the Student Service Centre, B Building, 1360 Barrington Street (accessible location). See [www.dal.ca/dalcard](http://www.dal.ca/dalcard) for more information.

## 10. Dalhousie Arts Centre

Designed as a multipurpose facility, the Dalhousie Arts Centre is home to four University departments: Dalhousie Arts Centre (Rebecca Cohn Auditorium), Dalhousie Art Gallery, and the two academic departments of Music and Theatre. The Arts Centre is an integral part of the cultural experience in our community and stands as the only arts complex of its kind in Nova Scotia.

Of the numerous performing arts spaces in the Dalhousie Arts Centre, the Rebecca Cohn Auditorium, is the most familiar and prestigious. The 1,040 seat concert hall is the home of Symphony Nova Scotia, as well as the venue of choice for a wide variety of performers ranging from The Royal Winnipeg Ballet to Blue Rodeo, The Chieftains, and Stomping Tom to name a few. Other performing and visual arts spaces in the Arts Centre include: The Sir James Dunn Theatre (240 seats), the David Mack. Murray Studio, Studio II, The MacAloney Room, and the Art Gallery.

The Dalhousie Art Gallery offers the public access to national and international touring exhibitions and initiates many ambitious and exciting exhibition programs.

The Dalhousie Music Department presents weekly noon hour recitals in the Arts Centre. The Department also maintains a full production season including a faculty recital series and student ensemble concerts with music ranging from classical to jazz and contemporary. Further information on the Music and Theatre Departments can be found in their separate listings.

## 11. Dalhousie Multifaith Centre

The Dalhousie Multifaith Centre strives to explore the fundamental issues and concerns of the world from a religious perspective in a setting that encourages open and free discussion, values the raising of questions and doubts, and appreciates divergent histories, attitudes, options, and values. A complete education addresses the whole person: body, mind, and spirit.

The Centre is a non-threatening space where students, staff, and faculty can address the basic questions of meaning and purpose in their lives - no matter what their faith, philosophy, or doubt may be.

For more information about the services and supports we offer, or to speak with a chaplain, drop by the Centre at 1321 Edward Street or visit us online at [www.dal.ca/dmc](http://www.dal.ca/dmc).

## 12. Dalhousie Student Union

Every Dalhousie student is automatically a member of the Dalhousie Student Union. The Student Union is recognized by an agreement with the University Administration and by an Act of the Nova Scotia legislature as the single voice of Dalhousie students. All student activities on campus are organized through the Student Union, and the Student Union is the focus of all student representation. The business of the Student Union is conducted by a Council made up of 40 members. Every student is represented by one or more representatives of their faculty, elected within their faculty in the spring. As well, a number of other



constituency groups are represented on the Council because they are uniquely affected by many campus issues. Also on the Council are the student representatives elected to the Senate and Board of Governors.

One of the most important resources of the Student Union is the Student Union Building (SUB) located at 6136 University Avenue between Seymour and LeMarchant Streets. The SUB, which is owned by the University and administered, managed and controlled by the Student Union and is paid for through Student Union fees, was opened in 1968 as a centre for student activity on campus. The Student Union Building provides a wide range of services for students including the Student Advocacy Service, Travel Cuts, The Grawood, Campus Copy, food services, and much more. Every student has the opportunity to take advantage of the Union's financial, physical and organizational resources. Students have an opportunity to become involved in committees dealing with various student issues. The DSU also offers over 175 clubs, societies and organizations for students to participate in. All students are invited to satisfy their curiosity by visiting the Student Union Council offices. The Student Council office is located on the second floor of the SUB in room 222 and is open from 8:30 am to 4:30 pm Monday through Friday, telephone number (902) 494-1106 or email [dsu@dal.ca](mailto:dsu@dal.ca). Check out the website at [www.dsu.ca](http://www.dsu.ca), or [my.dsu.ca](http://my.dsu.ca).

### 13. Housing/Residence Services

The University is pleased to guarantee residence in University-owned properties for all new Dalhousie undergraduate students who complete the residence application process by June 30th. It's important that students planning to attend Dalhousie think well in advance about their accommodation needs.

Students should be aware of several important points of reference in regard to residence accommodation. Upon admission to a program of study, all students will receive university residence information. They will also be asked to pay an admission deposit. It's important to apply to residence (online) and to pay the admission deposit promptly as the dates these are received will determine when the Residence Application is considered. Residence applications will not be considered from individuals who have not gained admission to a program of study, or paid their admission deposit and residence application fee.

Students with disabilities are encouraged to contact the Residence Office at (902) 494-1054, or email: [residence@dal.ca](mailto:residence@dal.ca), for information and assistance.

The traditional style residences at Dalhousie are chiefly for undergraduate students. All students living in traditional style residences are required to purchase one of the meal plan options available.

The information below gives a description of 1. traditional on-campus residences, 2. non-traditional on-campus residences, which includes apartment style housing owned by the university, 3. the services offered by the Off-Campus Housing office, and 4. general information. For information on residence fees, see the Fees section of the Calendar.

It is the responsibility of the individual student in all cases to make a separate online application to the university housing of her/his choice, or utilize the services provided by the Off-Campus Housing office.

#### 1. Traditional On-Campus Residence

##### A. Studley (Main) Campus

###### i. Howe Hall

Howe Hall is centrally located on Studley Campus and is the largest residence. Howe Hall is broken into six houses: Bronson House (1959), Cameron House (1967), Fountain House (2002), Henderson House (1964), Smith House (1958), Studley House (1967). Each house has its own identity and student government. The houses are all co-ed and feature a single and double (two single beds) rooms. Facilities include a 24-hour front desk, dining hall, television lounges, kitchenettes, a large multi-function study area/common lounge, laundry rooms, hockey equipment and bike storage room.

###### ii. Shirreff Hall

Shirreff Hall provides accommodation to 440+ students. Located in a quiet corner of the campus, it is minutes from classes, the library, Dalplex and other facilities. Shirreff Hall is divided into four areas: the Annex, Newcombe House (female only), while Old Eddy & New Eddy are co-ed. Old Eddy and New Eddy have mostly single and double rooms while Newcombe and the Annex have single rooms only.

Shirreff Hall offers a dining room, an elegant library and visitors' lounge, study areas, games room, television lounges, kitchenettes, laundry room, and 24-hour front desk. ResNet (high speed Internet/wireless), local telephone service and cable TV service are provided within each room. Students also have access to a piano.

###### iii. Eliza Ritchie Hall

Opened in 1987, Eliza Ritchie Hall is a co-ed residence. It provides traditional residence accommodation for 92 students in predominantly single rooms.

This three-storey building is located close to the Dalplex and to Shirreff Hall, where students normally have their meals. Facilities include study rooms, a multipurpose room, reception area, laundry facilities, leisure lounges with kitchenettes and, within each room, ResNet (high speed Internet/wireless). Local telephone service and cable TV service are also provided.

###### iv. Residence Houses

Dalhousie also has two residence houses, which are co-ed. Formerly single family homes, each house has kitchen, living room and washroom facilities, which are shared among the residents in the house. The character of these homes has been maintained as much as possible.

These houses have only single rooms, each with a bed, wardrobe, study desk, lamp and chair. Linen, cooking utensils and small appliances are not provided. The Residence Houses are now part of the Mini-Residence community. All houses require meal plans and have full kitchens, ResNet (high speed Internet), local telephone service and cable TV service are provided in each room.

###### v. Risley Hall

Risley Hall is located on LeMarchant Street, behind the Student Union Building, and offers 490 single rooms, primarily to undergraduate students. Services include a dining room, laundry rooms, television lounges, and a 24-hour front desk. Each room comes equipped with ResNet (high speed Internet/wireless), local telephone service and cable TV service.

###### vi. Lyall House, DeMille House, Colpitt House

These properties, which were former faculty offices, have been converted into three mini-residences with a shared courtyard. There are a total of 49 single rooms in a co-ed living environment, with comfortable common space available to residents of each house. As in other traditional residences, a meal plan is required and meals can be eaten at any dining hall. Services include a shared laundry area and ResNet (high speed Internet), local telephone service and cable TV service are offered in each room.

#### B. Sexton Campus

##### i. Gerard Hall

Gerard Hall is a 12-story traditional style co-ed residence that houses 241 students in single, super single, and double rooms. It is located in the heart of downtown Halifax on the corner of Morris and Queen Streets. Gerard Hall offers laundry facilities, a big screen TV, DVD player and satellite access in the main lounge. Within residence rooms, ResNet (high speed Internet/wireless), local telephone service and cable TV service are provided. Gerard Hall residents commonly use the O'Brien Hall dining hall, only seconds away, or may use the dining halls in Howe, Risley or Shirreff Halls.

##### ii. O'Brien Hall

O'Brien Hall is a co-ed residence located in the heart of downtown Halifax. There are approximately 115 Dalhousie students residing in a combination of single and double rooms in O'Brien.

Facilities include a dining hall and laundry facilities. Within residence rooms, ResNet (high speed Internet/wireless), local telephone service and cable TV service are provided.

#### C. Agricultural Campus - Truro

There's no better way for you to get connected to university life than by living in one of our three residences located on campus: Trueman, Fraser and Chapman Houses all offer co-ed living with the option of same sex and quiet sections. These three houses are conveniently located within a few minutes walk of classes, labs, meal hall, the library, the farm and our athletic center. Residence is a great place to meet new friends while developing a good study routine. The residence complex and dining hall are located together around Horseshoe Crescent and are minutes from classes, the athletic center and the library. All houses offer co-ed and female

sections. Meal plans are mandatory. Each room is equipped with ResNet (high speed internet/wireless), local phone and cable TV service.

#### **i. Fraser House**

Fraser House accommodates 125 students in single, super single, and double rooms. Services include comfortable lobby area, TV/games lounge, quiet/study lounge, laundry room and kitchenette.

#### **ii. Chapman House**

Chapman House accommodates 133 students in single, super single, and double rooms. Services include comfortable lobby area, TV/games lounge, quiet/study lounge, laundry room and kitchenette.

#### **iii. Trueman House**

Trueman House accommodates 79 students in single, super single and double rooms. It is the smallest house in the complex and tends to offer quieter atmosphere. Services include comfortable lobby area, TV/games lounge, two small quiet/study lounges and a laundry room.

## **2. Non-Traditional On-Campus Housing**

### **A. Studley (Main) Campus**

#### **i. Glengary Apartments**

Located on the Studley Campus on Edward Street, Glengary Apartments is a four-storey brick building offering co-ed accommodation for 40+ students.

Glengary has 12 furnished apartments. Each apartment includes a kitchen, living room and bathroom. There are also four furnished bachelor apartments, which are always in high demand. Laundry facilities are located in the basement, where there is also a limited amount of storage space. ResNet (high speed Internet/wireless), local telephone and cable TV service are provided in all apartments.

### **B. Sexton Campus**

#### **i. Graduate House**

This residence is home to 13 returning students, normally in single rooms. It is located next door to O'Brien Hall and is a short walk from Gerard Hall on Morris Street. ResNet (high speed Internet/wireless), local telephone service and cable TV service are provided in each room.

Meal plans are not mandatory but may be purchased for use at any dining hall on campus including O'Brien Hall, which is next door.

### **C. Agricultural Campus - Truro**

#### **i. Trueman House Mature/Graduate Unit**

Located on the ground level in Trueman House, this unit accommodates 12 students in single and super single rooms. Services include a fully equipped kitchen, tv lounge and laundry room (shared with all students living in Trueman House). Each room is equipped with ResNet (high speed internet/wireless), local phone and cable tv service. A meal plan is not mandatory

## **3. Living Off-Campus**

Dalhousie's Off-Campus Housing has a website: <http://www.dal.ca/och>. The site features a wide variety of housing resources available for students on both the Halifax and Truro campuses.

There is an Off-Campus Housing office for the Halifax campuses located in Risley Hall and offers help to students in finding off-campus accommodations.

The Off-Campus Housing office provides centralized information on available housing in the Halifax metro area including apartments, shared accommodations, rooms, condos and houses. Telephones for calling landlords and material such as maps and transit schedules are available at the office.

Based on the relatively low vacancy rate in Halifax, it is advised that students start looking for off-campus housing well ahead of the academic year.

## **4. General Information**

A non-refundable \$50 fee is payable when applying for residence. If you are submitting your residence application online, you can make the payment at <http://www.dal.ca/studentaccounts>. Select "Payments" and follow the links to "Pay Online." If you are submitting a paper application, the fee can be paid using cheque or Money Order (payable to Dalhousie University), Visa, MasterCard or American Express.

All new Dalhousie undergraduate students are guaranteed a place in residence if they complete the residence application process by June 30<sup>th</sup>.

For further information on living at Dalhousie, or for a hard copy of the residence application form, do not hesitate to contact:

### **The Residence Office**

Halifax location: 1443 Seymour Street  
Dalhousie University  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-1054  
Email: [residence@dal.ca](mailto:residence@dal.ca)  
Website: [www.dal.ca/residence](http://www.dal.ca/residence)

Truro location: 10 Horseshoe Crescent  
PO Box 550  
Truro, NS B2N 5E3  
Telephone: (902) 893-7519  
Fax: (902) 893-4258  
Email: [residence.dal.ac@dal.ca](mailto:residence.dal.ac@dal.ca)

### **Assistant Vice President, Ancillary Services**

Halifax location: 1443 Seymour Street  
Dalhousie University  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-3365

### **Off-Campus Housing**

Location: Risley Hall, Room 1024  
1233 LeMarchant Street  
PO Box 15000  
Halifax, NS B3H 4R2  
Telephone: (902) 494-2429  
Email: [och@dal.ca](mailto:och@dal.ca)  
Website: [www.dal.ca/och](http://www.dal.ca/och)

## **14. Information Technology Services (ITS)**

Information Technology Services (ITS) empowers the success of students, faculty and staff through an overall focus on service, advising and consulting. ITS supports university instructional, research and administrative requirements. The department is responsible for all centrally managed computing, networking and telecommunications facilities including university email, MyDal, the central information system (Banner), online learning systems, wired and wireless network connections and student computer labs.

Need help with a technical problem? Visit one of three Help Desks located on the Halifax campus, or our Help Desk at the Dalhousie Agricultural Campus in Truro.

Personal computers and related supplies can be purchased by students and Dalhousie employees through PCPC, the campus computer store ([www.pcpc.dal.ca](http://www.pcpc.dal.ca)).

With a range of new and emerging technologies, ITS staff will help you explore options to make the most of your experience at Dalhousie. See [www.its.dal.ca](http://www.its.dal.ca) for more information.

## **15. International Centre**

The International Centre (IC) is committed to welcoming, supporting and serving the needs of new and continuing international degree-seeking and exchange students at Dalhousie. Advisors are available to meet with you on a variety of matters including finances, immigration, exchange opportunities, health insurance and personal issues. Referrals are made to other resources and services on campus when necessary. The IC organizes orientation activities that assist international and exchange students in adjusting to a new culture and in achieving their educational and personal goals. A variety of social, cultural and information programs are held throughout the year. During the fall and winter terms, an International Student Advisor is also available to meet, by appointment, at the Student Service Centre (Sexton Campus) at 1360 Barrington Street. Agriculture students may contact the International Student Coordinator on the Truro Campus at (902) 893-6905.

Student exchange and study-abroad services are facilitated by the Study Abroad and Exchange Advisors at the IC. This branch of the office promotes student mobility by assisting departments and faculties with the establishment of student exchange agreements; managing university-wide exchange programs; advising students on international study, work and volunteer opportunities; providing pre-departure and re-entry services; administering the Study Work International Fund (SWIF) and the George Burris Study in England Bursary; and maintaining the International Opportunities Resource Library.

Drop by the Centre at 1321 Edward Street in Halifax, or contact us at [International.Centre@dal.ca](mailto:International.Centre@dal.ca) or (902) 494-1566, or visit us online at [www.dal.ca/international](http://www.dal.ca/international).

## 16. Libraries

The Dalhousie University Library System is organized to accommodate the needs of the undergraduate teaching programs, graduate and faculty research projects, and professional schools. The Dalhousie Libraries are: [the Killam Memorial Library](#) - Humanities, Social Sciences and Science, [the Sir James Dunn Law Library](#), [the Kellogg Health Sciences Library](#), [the MacRae Library](#) - Agriculture, and the [Sexton Design and Technology Library](#) - Architecture, Engineering, and Planning, as well as the [University Archives](#) and [Geographical Information Sciences Centre](#) (both located in the Killam Memorial Library).

Staff in all five libraries provide reference and research services. Access to materials outside of the Dalhousie Libraries is available through the [Document Delivery Service](#). All of the libraries have public access computers and WiFi access. Most of the libraries have bookable study rooms for groups as well as individual carrels for private study. As of December 2012, the holdings of the Dalhousie Libraries include over 1,877,524 print and electronic monographs, 628,763 materials in alternate formats and 76,365 serials titles in print or electronic formats.

The website, [libraries.dal.ca](http://libraries.dal.ca), provides access to collections, databases, subject guides and other services. The Dalhousie University Library System also has a [Copyright Office](#) that provides guidance to students on copyright issues.

Dalhousie libraries participate in Novanet, a network of all Nova Scotian university and college libraries, which shares a single automated online catalogue of the holdings of the member libraries. Users borrow from Novanet libraries upon presentation of their University ID card.

## 17. Mature Student Services

Applicants who are Canadian Citizens or permanent residents and 21 years of age or older, by the first day of classes, and are not eligible for admission on the basis of regular admission requirements, may apply for admission as a mature applicant. In order to be eligible, the applicant must either have no university-level study, or have attempted less than one year of transferable classwork. The student cannot have been in full-time university-level study for a minimum period of two years.

Applicants must provide a completed application for admission, high school or post-secondary transcripts, any other relevant documents (e.g. SAT scores, if available), and a letter outlining life and work experiences since last attending full-time study. Applicants will be expected to clearly outline their education goals and motivation to succeed at university study. All factors will be considered in the admission decision.

Admission under this policy is restricted to first year of undergraduate programs. Applicants must have completed grade 12 English (or equivalent) with a minimum grade of 65. Admission to some programs will require completion of other required subjects.

A student admitted on this basis may be restricted in the number of classes he/she can register in during the first year. Otherwise, these students have the same rights, privileges and responsibilities as other students within their program.

Services include pre-admission counselling and university preparation classes such as Writing Skills for Academic Study, Chemistry, Physics, Academic Math and Pre-Calculus. For more information call (902) 494-2375 or visit <http://collegeofcontinuing.dal.ca>.

## 18. Native Post-Secondary Education Counselling Unit

The Native Post-Secondary Education Counselling Unit is open to students of First Nations descent. We can help you form support networks in your studies, and we also host social activities, cultural events and information sessions. Visit our Halifax office (6286 South Street, 2nd floor) to enjoy some coffee or tea, take advantage of advising with the Native Post-Secondary Liaison, and meet other Native students, or contact us by phone at (902) 494-8863. In Truro, Agriculture students can contact the Special Cohort Coordinator at [havery@dal.ca](mailto:havery@dal.ca)

## 19. Office of Human Rights, Equity & Harassment Prevention

The overall mandate of the Office of Human Rights, Equity & Harassment Prevention is to foster and support an inclusive working and learning environment where all members of the University community share responsibility for establishing and maintaining a climate of respect.

The Office is responsible for administering a number of University policies including: the Accommodation Policy; the Employment Equity Through Affirmative Action Policy; complaints based on the Statement on Prohibited Discrimination; the Personal Harassment Policy; and the Sexual Harassment Policy. The Human Rights & Equity Advisor and the Advisor, Harassment Prevention/Conflict Management also liaise with the Office of the Vice-President, Student Services, regarding the Code of Student Conduct.

Other initiatives in the Office of Human Rights, Equity & Harassment Prevention include education and training on topics such as diversity, accommodation, harassment awareness and prevention, conflict resolution and more. Workshops are offered regularly for students, faculty and staff.

The website for the Office of Human Rights, Equity & Harassment Prevention offers downloadable versions of each of the policies, information on the education and training opportunities offered, and additional resources including an annual Mosaic Calendar featuring a variety of religious and cultural holidays.

Contact: Lisa DeLong, Advisor, Human Rights & Equity  
(902) 494-2704  
Gayle Wishart, Advisor, Harassment Prevention/Conflict Management  
(902) 494-1137  
Phone: (902) 494-6672 (office line)  
Fax: (902) 494-1179  
Email: [hrehp@dal.ca](mailto:hrehp@dal.ca)  
Website: [www.hrehp.dal.ca](http://www.hrehp.dal.ca)

## 20. Office of the Ombudsperson

Our senior student Ombudspersons are advisors, mediators and investigators who recommend options and discuss solutions if you're having problems such as those associated with finances, academics, or accommodations. We have access to relevant information and resources across campus to help you. When you come to us with a question or complaint, we ensure the utmost in confidentiality and we consider all sides of a question in an impartial manner to try and find a resolution. Contact us by email at [ombudsperson@dal.ca](mailto:ombudsperson@dal.ca), by phone at (902) 494-6583 or visit us online at [www.dal.ca/ombudsperson](http://www.dal.ca/ombudsperson).

## 21. Registrar's Office

The Registrar's Office is responsible for high school liaison, admissions, awards and financial aid, registration, maintenance of student records, scheduling and coordinating formal examinations, and convocation. Of greater significance to students, however, is the role played by members of the staff who provide information, advice, and assistance. They offer advice on admissions, academic regulations and appeals, financial aid and budgeting and the selection of programs. In addition, they are prepared to help students who are not quite sure what sort of assistance they are looking for, referring them as appropriate to departments for advice about specific major and honours programs or to the office of Student Services or to specific service areas such as the Counselling Services Centre.

Students can access the services of the Registrar's Office at three locations. The main office is located in Room 133 of the Henry Hicks Academic Administration Building on the Studley Campus. Students attending classes on the Sexton or Agricultural Campus can also access Registrar's Office services in Building B

(Student Service Centre), Sexton Campus or Cox Institute (Enrolment Services Centre), Agricultural Campus.

Enquiries may be directed to:

The Registrar, Dalhousie University  
PO Box 15000  
Halifax, NS Canada B3H 4R2  
Telephone: (902) 494-2450  
Fax: (902) 494-1630  
Email: [admissions@dal.ca](mailto:admissions@dal.ca)

## 22. South House

A DSU service and Halifax's only full-time women's centre. A volunteer-driven, student-funded, gender-inclusive safe space for all members of the Dalhousie community. South House is a trans- and queer-positive, wheelchair-accessible space that offers a resource centre, library, and free meeting space for woman-positive and anti-oppression organizing and gathering. Visit us online at [www.dalwomenscentre.ca](http://www.dalwomenscentre.ca) or drop by the Centre on the first floor of 6286 South Street.

## 23. Student Advocacy Service

The Dalhousie Student Advocacy Service helps ensure that students receive fair and reasonable decisions on issues dealing with academic appeal and discipline matters. Our volunteer advocates advise students about their case, help them draft and edit any written submissions, prepare them for hearings and formal appeals, and provide support through the process and articulates matters of importance during the oral hearing. This year-round service is confidential and operated entirely by students. Contact us at the Student Union Building (Room 310), by phone at (902) 494-2205 or visit us online at [www.dsu.ca](http://www.dsu.ca)

## 24. Student Clubs and Organizations

Extracurricular activities and organizations at Dalhousie are as varied as the students who take part in them. Organizations range from small informal groups to large well organized ones; they can be residence- based, within faculties, or university wide and interest based. Some are decades old with long traditions, others arise and disappear as students interests change. A list of clubs, societies and organizations is available every fall to new students who are encouraged to select and participate, this list can be found at <http://tigersociety.dsu.ca>. If there is not a society that meets your interests, the Dalhousie Student Union encourages and will help you to make your own. For more information on DSU societies please contact the society co-ordinator at [society.coordinator@dal.ca](mailto:society.coordinator@dal.ca) or by telephone at (902) 494-1106 or visit [www.dsu.ca](http://www.dsu.ca).

## 25. Student Dispute Resolution

Dalhousie's Office of Student Dispute Resolution works with students, community and campus partners to help resolve disputes in a restorative and respectful manner. Referrals come from Campus Security, Code of Conduct Complaints, Halifax Regional Police and the Crown Prosecutors Office (as part of the Dalhousie Restorative Justice Pilot Project) and from Residence Life Managers. Following the principles of respect, responsibility and community, we work with groups to help restore relationships and find satisfactory resolutions. Visit us online to find out more about the resources available through the Student Dispute Resolution office at [www.dal.ca/think](http://www.dal.ca/think).

## 26. Student Health Promotion

Located in the Live Well @ Dal office just inside Dalplex's main lobby, Student Health Promotion staff and volunteers can give you unbiased advice and information to help you live a healthier lifestyle. Find out more about quitting smoking, rethinking your alcohol and substance use, managing your stress, increasing your personal fitness, coping with eating disorders and many other areas of student wellness by contacting us by phone at (902) 494-6830 or visit us online at [www.dal.ca/studenthealth](http://www.dal.ca/studenthealth).

## 27. Student Services

The Vice-President, Student Services (VPSS), is Dalhousie University's chief officer of student affairs. Working with an integrated team of specialists across campus, the office of the VPSS coordinates programs and delivers services in support of students' academic achievement, personal and professional development and community engagement.

Our efforts to enrich the Dalhousie student experience are focused in four key areas: Learning Connections; Community Connections; Wellness Connections;

and Leadership and Career Connections. Within each area, professionally trained staff, counsellors and advisors are available to assist you at every step of your journey here at Dal, providing information, resources, programs and services that are tailored to your individual needs and consistent with your educational and life goals.

## 28. Studying for Success (SFS)

Our primary goal is to assist you in becoming a more efficient and effective learner. Studying for Success offers workshops to small groups of students to develop or enhance personal learning strategies and, when applicable, workshops are customized to focus on particular disciplines or fields of study ensuring that the workshop content is relevant to your needs.

Topics regularly covered include time management, getting the most from lectures, critical reading, problem-solving, preparing for and writing exams. Study Skills coaches offer personal coaching either by appointment or on a drop-in basis during regularly scheduled hours, and will refer students to other academic resources when appropriate. For further information, drop by our office at the Killam Library, call (902) 494-3077 to book an appointment or (902) 494-2468 to speak with the SFS Coordinator, or visit us online at [www.dal.ca/sfs](http://www.dal.ca/sfs).

## 29. University Bookstore

The University Bookstore, owned and operated by Dalhousie, is a service and resource centre for the university community and the general public. The Bookstore has required and recommended texts, reference books and supplies, as well as workbooks, self-help manuals and other reference material. As well, you can find titles by Dalhousie authors.

The Bookstore carries all necessary and supplementary stationery and supplies. Also available are gift items, mugs, clothing and crested wear, cards, jewelry, class rings and backpacks with new items being introduced on a regular basis. A Special Order department is located within the main Bookstore where you can place orders for customized clothing and customized general merchandise. We can also order and ship almost any book worldwide and work with faculties and departments to meet their specific needs.

The main Bookstore is situated on the lower level of the Student Union Building on University Avenue, and is open year round, Monday to Saturday (hours vary throughout the year).

The Health Sciences Bookstore has the largest and most complete medical book section in Atlantic Canada, with over 2,000 titles in stock. Thousands of other titles are specially ordered annually, and the department ships out books to consumers and hospitals throughout the world. The Health Sciences Bookstore is located in the Dentistry building, 5981 University Avenue, and is open year round, Monday to Saturday. Hours vary throughout the year.

The Sexton Campus Bookstore is located in the Student Service Centre at 1360 Barrington Street (Building B) and is open from 9am - 4pm Monday to Friday. It supplies texts and reference books required for Architecture and Engineering students as well as crested clothing, stationery and other supplies.

The Dalhousie Agricultural Campus Bookstore is located in the Cox Institute at 50 Pictou Road, Room 142, Truro. The bookstore is open year round Monday to Friday. Hours vary throughout the year and is closed for a couple times during the summer months for about a week.

The Bookstore website has online ordering capabilities, for both textbooks and general merchandise. Visit the Bookstore online at [www.dal.ca/bookstore](http://www.dal.ca/bookstore).

## 30. University Health Services

The University operates a medical clinic in Howe Hall, 6230 Coburg Road (corner of LeMarchant and Coburg), staffed by family doctors and nurses. Further specialists' services are available and will be arranged through Health Services when indicated. Student information collected by Health Services is completely confidential and may not be released without signed permission of the student.

Appointments are made during the clinic's open hours, from 8:30 am to 10:00 pm, Monday to Friday and 10:00 am to 6:00 pm, Saturday and Sunday, by calling (902) 494-2171. In the event of an urgent medical problem, students may seek medical advice during clinic hours. After hours, students should seek assessment by calling 811 to speak to a registered nurse, or visit the local emergency room. The QEII emergency room on Summer Street is the closest emergency room for students on the Halifax campus. For students in Truro, the clinic accepts walk-in patients and appointments. For details on the hours the services are offered, please



visit Health Services online via [www.dal.ca/agstudentservices](http://www.dal.ca/agstudentservices). Any student who has had a serious illness within the last 12 months, or who has a chronic medical condition, may wish to contact and advise Health Services; preferably with a statement from the doctor.

All students must have medical and hospital coverage. All Nova Scotia students are covered by the Nova Scotia Medical Services Insurance. All other Canadian students must maintain coverage from their home provinces. This is especially important for residents of any province requiring payment of premiums. All non-Canadian students must be covered by medical and hospital insurance prior to registration. Details of suitable insurance may be obtained from the Student Accounts office prior to registration. Further information is available online at [www.dal.ca/healthservices](http://www.dal.ca/healthservices).

### 31. University Secretariat

The University Secretariat provides professional and administrative support and advice to the Board of Governors and University Senate so as to facilitate their effective governance of the University.

The Secretariat manages, coordinates and informs the effective operation of the Board and Senate by:

- Supporting the operations of the University's governance bodies and their respective standing and ad hoc committees;
- Proposing and developing objectives and plans to establish and achieve priorities;
- Advising on governance issues and developing and implementing policies, procedures and processes that reflect governance best practices;
- Developing, implementing, managing and coordinating the University academic integrity, student discipline & academic appeals policies and processes, and maintaining official records relative to these processes;
- Serving as a repository for University policies and information and data on matters relating to University governance; and
- Facilitating communication and collaboration with key stakeholders.

Visit the website at [www.secretariat.dal.ca](http://www.secretariat.dal.ca)

### 32. Writing Centre

The Writing Centre's programs recognize that students in all disciplines are required to write clearly to inform, persuade, or instruct an audience in term papers, laboratory reports, essay examinations, critical reviews and other academic assignments. Students benefit from discussing their work with supportive instructors and peer tutors.

The Centre currently offers a number of services. The main office in the Killam Library's Learning Commons allows students to obtain advice on writing issues. Tutors also work part of the week at Sexton and the Law School Library. Students on the Agricultural Campus can visit the Writing Centre on the main floor of the library. Seminars are held throughout the university year on topics such as essay writing, science writing, mechanics of writing, English as a second language issues, admission applications, etc.

Contact the Writing Centre by visiting the main office in the Killam Learning Commons, calling (902) 494-1963 or emailing at [writingcentre@dal.ca](mailto:writingcentre@dal.ca). For more information, online writing resources or to book an appointment online, visit [www.dal.ca/writingcentre](http://www.dal.ca/writingcentre).

# Fees

## Student Accounts Office

Mailing Address: Henry Hicks Academic Administration Building  
6299 South Street, Room 29  
PO Box 15000  
Halifax, NS B3H 4R2

Website: <http://www.moneymatters.dal.ca>

Service Location: **Studley Campus**  
Henry Hicks Academic Administration Building, Rm 29  
**Sexton Campus**  
Student Service Centre  
**Agricultural Campus**  
Cumming Hall

Telephone: (902) 494-3998

Fax: (902) 494-2839

Email: [Student.Accounts@dal.ca](mailto:Student.Accounts@dal.ca)

Office Hours: Studley Campus - Monday to Friday 9am - 4pm  
Sexton Campus - Monday to Friday 9am - 4pm  
Agricultural Campus - Monday to Friday 9am - 4pm

### 2013/2014 Important Dates:

#### September

20 Fees due for fall term  
Last day to pay without late registration fee of \$50  
Last day for complete refund

#### October

21 \$50 reinstatement fees assessed on all outstanding accounts over \$100

#### November

4 Last day for partial refund fall term

#### January

17 Fees due for winter term and second installment of regular session  
Last day to pay without late registration fee of \$50  
Last day for complete refund

#### February

17 \$50 reinstatement fee assessed on all outstanding accounts over \$100

#### March

10 Last day for partial refund for winter term

NOTE: Please consult the online summer school timetable for the summer school registration schedule.

### Website

<http://www.moneymatters.dal.ca>

## I. Introduction

The following section of the calendar outlines the University Regulations on academic fees for both full-time and part-time students enrolled in programs of study during the fall, winter and summer terms. A section on University residence and housing fees is also included. Students wishing to register for the summer term should consult the summer school timetable online at <http://www.dal.ca> for information on registration dates and fees.

All fees are subject to change with approval of the Board of Governors of Dalhousie University. The 2013/2014 Academic Fee Schedule will be available in June 2013, at <http://www.moneymatters.dal.ca>.

NOTE: Student tuition fees and other fees published herein are applicable only to regular students admitted to a program through the normal application process.

Other students who are admitted to Dalhousie under a special program or policy will be charged student tuition and other fees in accordance with such special program or policy. For further information regarding these fees, please contact Student Accounts or the Dean's office of the applicable faculty.

Students should make special note of the academic dates contained in the front section of the calendar as well as fee dates. Students should also be aware that additional fees and/or interest will be charged when deadlines for payment of fees as contained herein are not met.

All the regulations in this section may not apply to Graduate Students. Please refer to the Faculty of Graduate Studies section of the Graduate Calendar.

## II. University Regulations

The following general regulations are applicable to all payments made to the University in respect of fees. Please refer to our website for additional information on payment options: <http://www.moneymatters.dal.ca>.

- Fees must be paid in Canadian funds by cash, electronic bank transfer, interac, negotiable cheque or money order.
- Money transferred to a student's account should not exceed the annual charges associated with tuition and ancillary fees.
- If payment by cheque is returned by the bank as non-negotiable, there will be an additional fee of \$20 and the account will be considered unpaid. Furthermore, if the bank returns a cheque that was to cover payment of tuition, the student's registration may be cancelled and, if permitted to re-register, a late fee will apply.
- Accounts in arrears must be paid by cash, certified cheque, money order or interac prior to registration in a future term.

### A. Admission Deposits

A non-refundable deposit of \$200 is payable on acceptance to all new undergraduate and graduate programs. Undergraduate students admitted by April 20 are required to pay the deposit by May 15. Undergraduate students accepted after April 20 must pay the deposit within three weeks of receiving an offer of admission. Graduate students must pay the deposit within four weeks of receiving an offer of admission.

Undergraduate Medicine students are required to pay a \$500 non-refundable, admission deposit.

International Dentistry, Qualifying Dentistry and Internetworking students are required to pay a \$2,500 non-refundable admission deposit.

Admission deposits are credited towards tuition and fees for the applicable term.

### B. Registration

A student is considered registered after selection of class(es).

Selection of class(es) is deemed to be an agreement by the student for the payment of all assessed fees.

Non attendance does not constitute withdrawal. Students must ensure that they cancel registration in all classes if they choose to withdraw.

#### 1. Identification Cards (DalCard)

All full and part-time students should obtain identification cards upon registration and payment of appropriate fees. If a card is lost, a fee of \$15 is charged. Regular session ID cards are valid until August 31.

#### 2. Audit Classes

All students auditing a class pay one-half of the regular tuition fee plus full auxiliary fees, if applicable. In such cases, the student is required to complete the usual registration process.

A student who is registered to audit a class who during the session wishes to change their registration to credit must receive approval from the Registrar. This must be done on or before the last day for withdrawal without academic penalty. The same deadline applies for a change from credit to audit. Graduate students please see Section 6.6.4 for audit information.

### C. Late Registration

Students are expected to register on or before the specified registration dates. Students wishing to register after these dates must receive the approval of the Registrar. A late registration fee of \$50 will apply if registration and payment of

fees has not been completed by specified dates. This fee is payable at time of payment and will be in addition to regular fees.

## 1. Class Changes and Withdrawals

Please consult Student Accounts for all financial charges and the Registrar's Office for academic regulations.

Students withdrawing from all classes must submit written notification to the Registrar's Office. Non attendance does not constitute withdrawal, you must ensure classes are dropped. Refunds due to class withdrawals will be effective the date a class(es) is dropped online at <http://www.dal.ca/online> or written notification is received at the Registrar's Office. Please contact Student Accounts to have your refund processed.

In the Faculty of Health Professions, students who wish to withdraw from the University must obtain written approval from the appropriate school or college and submit the appropriate forms to the Registrar. Students in these faculties should continue to attend class until their withdrawal has been approved.

## D. Academic Fees

**Note: These rates are for 2012/2013 (for information only)**

### 1. Fee Schedule

Upon approval of the 2013/2014 academic fees, a complete schedule showing the required payments of the academic fees and deposits will be made available. The official schedule will be available in June 2013 at <http://www.moneymatters.dal.ca>. Students are advised that fees are subject to change by approval of the Board of Governors, and it is likely that tuition and fees will increase during each year of study.

NOTE: Students registered in more than one program are required to pay separate academic fees for each program. Additional course specific auxiliary fees may apply, as well as fees for online courses (or programs) related to distance delivery.

### APPROVED TUITION FEES 2012/2013

Degree Program	Program Fee	Per Class Fee
Architecture, Community Design		668.40
Arts and Social Sciences		639.60
Computer Science		725.70
Dentistry		
Dentistry	17,174	
Dental Hygiene Diploma	7,990	808.50
Dental Hygiene Degree		
International and Qualifying	40,000	
Engineering		725.70
Health Professions		
Disability Management Diploma		900.00
Emergency Health Services Management Diploma		700.00
Health Administration		725.70
Health Science		744.90
Health Services Administration Diploma		725.70
Nursing & Kinesiology		744.90
Pharmacy		767.10
Recreation & Health Promotion		744.90
Social Work		706.80
Law	12,984	
Management		
Commerce Co-op		732.00
Management		643.20
Medicine		
MD	16,113	
Post-Graduates	2,650	
Science		725.70
Sustainability		725.70
<b>GRADUATE</b>		
<b>Masters</b>		
Architecture and Planning		
Architecture (Post-Professional)	7,698	770.40
Architecture		
Environmental Design Studies	7,698	808.50
Planning		
Planning Studies	7,698	
Arts and Social Sciences	6,771	
Computer Science	7,698	

Dentistry		
MD/MSc (Oral and Maxillofacial)	17,667	
Prosthodontics	17,667	
Periodontics	17,667	
Electronic Commerce	8,532	
Engineering, Applied Science, Biomedical Engineering & Food Science	7,698	
Engineering - Internet Working (per class)		2,020
Health Informatics	8,532	
Health Professions		
Applied Health Services Research	6,870	
Clinical Vision Science	8,340	
Health Promotion, Leisure Studies	7,698	
Health Administration		776.70
Human Communication Disorders (Years 1 and 2)	9,666	
Human Communication Disorders (Year 3)	8,007	
Kinesiology and Nursing	8,340	
Pharmaceutical Sciences	9,662	
Occupational Therapy		
Entry Level	13,017	
Post Professional	9,662	
Physiotherapy		
Entry Level	13,017	
Rehabilitation Research	9,662	
Social Work		748.20
Law	9,488	
Management		
MBA Corporate Residency	20,160	
Environmental Studies	6,849	
Library and Information Studies		852.90
Public Administration		678.00
Resource and Environmental Management		678.00
Marine Management	6,849	
Medicine		
Community Health & Epidemiology	8,340	
Medicine - Except Community Health & Epidemiology	7,698	
Science	7,698	
<b>Doctorate</b>		
Arts and Social Sciences	7,107	
Computer Science	8,043	
Engineering, Applied Science & Biomedical Engineering	8,043	
Law	9,816	
Medicine	8,043	
Nursing	8,685	
Science	8,043	
<b>Continuing Fee</b>		
All Programs	2,106	
<b>International Student Differential Fee</b>		
All Programs except Graduate Thesis-based	7,962	
Graduate Thesis-based Programs	5,505	
International Dentistry, Qualifying Dentistry and Internet working are exempt.		
International Health Insurance	491 per year	
Note: Per class fees are based on a three credit hour class. Complete fee schedules are available online <a href="http://www.moneymatters.dal.ca">http://www.moneymatters.dal.ca</a> . The 2012/2013 fee schedule currently online is expected to be updated in June of 2013 with the approved academic fees for 2013/2014.		

## 2. Exchange Students

Outbound exchange students whose fees are paid to Dalhousie University will be assessed tuition and fees for 15 credit hours in their faculty.

## E. International Students

### 1. Differential Fee

Registered students, who are not Canadian Citizens or permanent residents are required to pay an additional "Differential Fee" to a maximum of \$3,981 per term, subject to increase in 2013/2014. There is a proportional charge for part-time international students. International Dentistry, Qualifying Dentistry and Internet working students are exempt. Graduate Students please see Section 5.7 of the Graduate Studies Calendar to determine the number of years a student is required to pay the differential fee.

If a student receives landed immigrant status, the differential fee will not be assessed for the current term and beyond. In order to process a retroactive reimbursement of differential fees in a current term, acceptable proof of residency must be submitted to the Registrar's Office prior to the last business day of December, April, and August for each term.

## 2. Health Insurance

International students will be charged for an International Student Health Insurance Plan when they register. If a student already has comparable health coverage, they can apply to opt out of the International Student Plan at the DSU Health Plan Office before September 20, 2013. Costs for the health plan change annually. More details on the international student health plan costs and opt out process can be found at [www.dsu.ca](http://www.dsu.ca). Full-time students will also be assessed the extended DSU Health and Dental plans, see 11.F.2.

Health Insurance - International Students (2012/2013 rates, for information only)

- Single - \$491 per year
- Family - \$1,227 per year

## F. Student Fees

In addition to tuition and course related fees, the following mandatory incidental fees may apply. These fees are non-refundable beyond the due date for each term. In cases of late cancellations or retro-active withdrawal, the mandatory incidental fees remain payable.

### 1. Student Union Fee

Every student registered at Dalhousie is a member of the Student Union and required to pay a Student Union fee as part of their registration procedure. These fees have been approved by students in referenda and, along with other revenue of the Union, are allocated each year by the Student Council budget.

For information only, 2012/2013 full-time student union fees are \$60.90 per term.

### 2. Health and Dental Insurance

Every fall term, full time students are assessed the DSU Health and Dental Plan. This provides extended coverage from September through August. The current rate is \$253 per year.

Students with separate health insurance may apply to the DSU for reimbursement. For more information please contact the Student Union Office in Room 222 of the Student Union Building (SUB), phone: (902) 494-2850 or visit their website at <http://www.dsu.ca>

### 3. Student Service Fee

Student Service provides and supports various Dalhousie Services including health services and athletics. For information only, 2012/2013 Student Service fee is \$123 per term for full-time students.

The following services will be provided without additional charges unless specified:

- Change from Audit to Credit
- Confirmation of Enrolment
- Confirmation of Fee Payment
- Dalplex Membership
- Leave of Absence Fee
- Letter of Permission
- Replacement Tax Receipt
- Transcripts (maximum of 5 requested at one time)

All students are assessed a facilities renewal fee of \$75 per term; \$25 per term for part-time students. 2012/2013 rates provided for information only; subject to increase with approval from the Board of Governors.

### 4. University Bus Pass Fee (UPass)

All eligible, full-time students will receive a Metro-Transit bus pass (UPass). The fee in 2012/2013 is \$142.50 and is effective September through April. Please refer to <http://www.upass.dal.ca> for further information.

### 5. Laboratory Deposits

A deposit for the use of laboratory facilities in certain departments is required. The deposit is determined and collected by these departments. Students will be charged for careless or willful damage regardless of whether or not a deposit is required.

### 6. Additional Student Fees

Departments may also charge additional fees on a cost recovery basis not included in the fee schedule. Examples include, but are not limited to, print or copy fees, transportation costs and material fees. Students registered in online classes and distance programs will be assessed additional fees for delivery of these classes.

Miscellaneous fees are charged as outlined in the table below.

Miscellaneous Fees 2012/2013		
Fee	Amount	Payable at
Late Registration	\$50	Student Accounts
Reinstatement Fee	\$50	Student Accounts
Returned Cheque	\$20	Student Accounts
Admission Deposit	\$200	Student Accounts
Undergraduate Medicine Admission Deposit	\$500	Student Accounts
Application Fee	*\$65	Registrar
Late Graduation Application	\$50	Registrar
Replacement ID	\$15	DalCard Office
Replacement Bus Pass	\$15	DalCard Office or Student Accounts
Transcript	**\$5	Registrar
Fax Fees		
Metro	\$5	Registrar
Canadian	\$10	Registrar
International	\$15	Registrar
Residence Application Fee	\$50	Residence
* Except for the following programs which require payment of a \$70 application fee: Occupational Therapy, Pharmacy, Physiotherapy, Social Work; Diploma programs in Meteorology, Outpost and Community Health Nursing, Health Services Administration; and all programs in the Faculties of Medicine, Dentistry (including Dental Hygiene), Law and Graduate Studies		
** Where appropriate, contact Registrar's Office for details		
Note: Fees are subject to change after publication of this calendar.		

## G. Statements and Monthly Notices

Students with current activity will be issued electronic statements. Students will be notified through their official Dalhousie email account when a new statement is available. Subsequent monthly payment reminders will be sent to the student's official Dalhousie email address. Refer to <http://www.moneymatters.dal.ca> for more information.

## H. Release of Student Financial Information

Student Accounts is often asked to disclose financial information on a student's account by parents and others so they can make accurate tuition payments.

University policy recognizes the financial account as belonging to the student and therefore, to protect student privacy, account information is considered confidential. For more information on granting permission for financial information to be released to a third party (such as a parent), please contact Student Accounts at (902) 494-3998 or visit our website at <http://www.moneymatters.dal.ca>.

## I. Payment

The payment of academic fees will be received at the Student Accounts Office located on the basement level of the Henry Hicks Academic Administration building or the Student Service Centre on Sexton Campus.

For the convenience of students, Canadian cheques and money orders, payable to Dalhousie University, are accepted by mail. Fees paid by mail must be received by Student Accounts on or before the term due date to avoid late payment and/or delinquency charges.

The following regulations apply to the payment of academic fees. For further information on regulations regarding withdrawal of registration, please refer to II.K:

- All students must pay the applicable deposit in accordance with Section A.
- Those holding external scholarships or awards paid by, or through, Dalhousie must provide documentation of the scholarship or award before term fees are due.
- Those whose fees are paid by a government (or other agency) must have the third party billing form completed and submit to Student Accounts by September 20 or January 17 for the respective term. This form is available online at <http://www.moneymatters.dal.ca>



- d. Those paying the account balance by Canada Student Loan must negotiate the loan by September 20 or January 17 for the respective term. Interest will be charged after these dates and a late registration fee will apply.
- e. Those whose fees are paid by Dalhousie University staff tuition fee waiver must present the appropriate waiver form and pay applicable incidental fees by September 20 or January 17, for the respective term.
- f. Those who are Canadian citizens (or permanent residents), 65 years of age (or over) and enrolled in an undergraduate degree program will have their tuition fees waived, but must pay the applicable incidental fees.
- g. Scholarships or awards paid by, or through, Dalhousie University will be applied to academic and residence fees.
- h. When a Canada Student Loan, provincial loan or co-payable bursary is presented at the Student Accounts Office, any unpaid charges will be deducted.
- i. Fees cannot be deducted from salaries paid to students employed at Dalhousie University.
- j. Any payments made to a student account is first applied to past due balances.

## 1. Canada Student Loans

Students planning to pay by Canada Student Loan should apply to their province in April or May so that funds will be available by the time payment is required. The University will deduct fees/charges from the loan at the time of endorsement. Please contact the appropriate provincial office to determine eligibility as well as course load requirements. A late fee of \$50 will apply if the loan is negotiated after September 20, 2013, (January 17, 2014 for students registered for winter term and May 12, 2014 for students registering for the summer term).

## 2. Provincial Bursaries and University Scholarships

These cheques are distributed by the Student Accounts Office. Any unpaid fees and/or temporary loans along with charges, if applicable, are deducted and payment will be issued following endorsement for any balance remaining. A valid Dalhousie University ID and Social Insurance Number must be presented in order to receive cheques. Please contact the appropriate provincial office to determine eligibility as well as courseload requirements for provincial bursaries.

For more information on student loans, bursaries or scholarships, inquiries should be directed to the Registrar's Office, Henry Hicks Academic Administration Building, Room 130.

## J. Receipts

The amount of academic fees constituting an income tax credit is determined by Canada Revenue Agency.

A special income tax certificate (T2202A) will be available annually through Web for Student at <http://www.dal.ca/online> no later than February 28 for the previous calendar year.

## K. Refunds

**Students withdrawing from all classes must submit written notification to the Registrar's Office. Non attendance does not constitute withdrawal, you must ensure classes are dropped. Refunds due to class withdrawals will be effective the date a class(es) is dropped online at <http://www.dal.ca/online> or written notification is received at the Registrar's Office. Please contact Student Accounts to have your refund processed.**

In the Faculty of Health Professions, students who wish to withdraw from the University must obtain written approval from the appropriate school or college and submit the appropriate forms to the Registrar. Students in these faculties should continue to attend class until their withdrawal has been approved.

### 1. Refund Conditions

Refunds will be processed as follows:

- a. Based on the withdrawal date, tuition is refunded based on percentages outlined in the refund schedule at <http://www.moneymatters.dal.ca>.
- b. No fee adjustment will be made for a student changing their degree or program as follows:
 

Regular (Sept - April) and Fall Terms	After September 20
Winter Term	After January 17
Summer Term	After May 12
- c. No refunds will be made for 30 days when payment has been made by personal cheque or 60 days for a cheque drawn on a bank outside of Canada.
- d. Refunds will be made to the appropriate Student Loan service provider if a student has paid with a student loan and no longer meets eligibility criteria.

- e. A student who is dismissed from the University, for any reason, is not entitled to a refund of fees.
- f. Refunds will be prorated on fees paid by Dalhousie scholarships and/or tuition waiver.
- g. A valid Dalhousie University ID must be presented in order for the student to receive a refund.

## 2. Refund Schedule

The most current version of the refund schedule is available at [www.moneymatters.dal.ca](http://www.moneymatters.dal.ca)

### Important Information Regarding Refunds

- A portion of fees as outlined in the refund schedule will be assessed if withdrawal from a class occurs after September 20 (Fall Term) and January 17 (Winter Term). Withdrawals before these dates will be completely refunded, but no substitutions will be allowed from a financial perspective after these dates.
- Non-attendance does not constitute withdrawal and fees will be payable.
- The refund schedule does not apply to the University of King's College Journalism Program.
- For financial charge inquiries, contact Student Accounts at (902) 494-3998 or [Student.Accounts@dal.ca](mailto:Student.Accounts@dal.ca).

## L. Delinquent Accounts

Accounts are considered delinquent when the balance of fees has not been paid by September 20 for the fall term or January 17 for the winter term.

Interest, at a rate set by the University, will be charged weekly on delinquent accounts for the number of days overdue.

Effective July 1, 2012 the rate of interest is 6.0% per annum, compounded monthly.

A student whose account is delinquent for more than 30 days will be denied University privileges including access to transcripts. A student will be reinstated upon payment of the fees outstanding, the arrears interest and a \$50 reinstatement fee. Students will not be permitted to register in future terms until all outstanding amounts are paid in full. Subsequently, if the bank does not honour the payment, the student may be deregistered.

Graduating students whose accounts are delinquent on April 15 will not receive their degree/diploma parchment. For fall graduation the deadline is September 1. Transcripts are withheld until payment is received in full.

Accounts which become seriously delinquent may be placed in collection or further legal action may be taken against the individual. Students will be responsible for charges incurred as a result of such action.

## III. Residence Fees

Residence rates vary depending on the location and style of accommodations available. For up-to-date residence options and rates, please visit <http://www.dal.ca/residence>. All residence rates include local telephone service with voice mail features, cable TV service and ResNet (high-speed Internet/wireless). Rates **do not** include the non-refundable \$50 Residence Application Fee or, in the case of traditional residences, the Residence Council Fee.

It is important to note that traditional residences have a mandatory meal plan; however, there are several options available for students. Traditional residences on the Halifax campuses include: Howe Hall, Risley Hall, Shirreff Hall, Eliza Ritchie Hall, Gerard Hall, O'Brien Hall, Mini Residences and Residence Houses. Traditional residences on the Truro campus include: Chapman House, Fraser House, and Trueman House. Non-traditional residence options on the Halifax campuses include: Glengary Apartments and the Grad House. On the Truro campus a section of Trueman House is reserved for non-traditional accommodations. Meal plans are not required in non-traditional residences but are recommended. For up-to-date meal plan options and rates, please visit <http://www.foodservices.dal.ca>.

Important:

- Once offered admission to an academic program of study at Dalhousie, students are eligible to submit a residence application with the required \$50 non-refundable fee. **The application will not be processed until both the \$200 admission deposit and \$50 residence application fee have been paid.**
- Students must be registered full-time at Dalhousie to apply to residence.

- No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Director, Residence Operations, in conjunction with the Director, Residence Life or their designates.
- All residence students, new and returning, who have received notification of their room assignment, must pay a \$500 deposit to confirm their acceptance. The deposit is due within the time frame specified by the Residence Office.
- The \$500 deposit is non-refundable.
- The \$50 residence application fee and \$500 deposit can be paid by credit card (Mastercard, Visa, Amex) by visiting <http://www.dal.ca/admissions.html>. For more payment options, please visit [www.dal.ca/admissions.html](http://www.dal.ca/admissions.html).
- No residence room will be held based on post-dated or “insufficient fund” cheques.
- Deposits or fees cannot be deducted from scholarships, fellowships, or similar awards.
- Residence agreements are for 8-month terms (September – April). Please note, residences close during the December break.

## A. Residence Term

The residence term commences the day before classes begin in September in the College of Arts and Science and ends on the last day of the examination period in the College of Arts and Science in April. Students must vacate the residence 24 hours after their last exam and residences are closed over the December break.

If required, an additional fee is payable by all residents who are registered in a Faculty where the academic session commences before or continues after the session of the College of Arts and Science. Special arrangements are to be made with the appropriate Residence Life Manager for accommodation for periods prior to or following the session as defined above.

## B. Payment of Residence Fees

Payment may be made in full at registration or in two instalments. The first instalment must be paid in full by September 20, 2013. Interest is assessed weekly at a rate as set by the University and will be charged on all accounts outstanding after September 20, 2013 and on any second instalment outstanding after January 17, 2014. The student will not be permitted to register for another session until all accounts are paid in full. A student whose account is delinquent for more than 30 days will be denied university privileges including access to transcripts. The student will be reinstated upon payment of the fees outstanding, the arrears interest, and a \$50 reinstatement fee. For additional information regarding outstanding or delinquent accounts, please see II. Fees, Section K.

All residence fees can be paid at the Student Accounts Office, the Student Service Centre (Sexton Campus), or online at <http://www.dal.ca/admissions.html>.

Students should make an appointment as soon as possible with the Assistant Manager of Student Accounts if they are having financial difficulties.

## C. Residence Communications

All residences are wired for high-speed Internet/wireless, local telephone service and cable TV access. The cost is included in residence fees. Check out the website at <http://www.dal.ca/rescomm>.

# Awards

## Scholarships, Awards, Financial Aid and Bursaries

The Registrar's Office is responsible for:

- Undergraduate Scholarships
- Undergraduate Bursaries
- Temporary Loans
- Canada Student Loans
- Provincial Loans
- US Dept. of Education Loans
- Awards and Financial Aid Advice & Information

**IMPORTANT NOTE:** The University is reviewing the policy governing undergraduate awards. Consequently, portions of the following statement of policy may be modified or substantially altered and may be implemented during the class of the academic year of this Calendar.

### A. Some Helpful Terms

#### 1. Admissions Average

This is the average of the subjects which were used for entry to the Dalhousie academic program and is governed by admission requirements for the degree/diploma selected.

#### 2. Adjusted Average

This number is the sum of the Admissions Average, plus points which are assigned to the level of class difficulty and the number of university-preparatory subjects beyond the minimum five.

#### 3. Faculty Groupings

There are eight: agriculture, architecture and planning; arts and social sciences; computer science; engineering; health professions; management; and science.

### B. Types of Awards

1. **Scholarships:** A monetary award, at entrance or in-class and/or graduating level based on academic excellence (in specific subject or group of subjects) and on the recognition of additional relevant attributes.
2. **Bursary:** An award granted on the basis of financial need.
3. **Medal:** An award based on recognition of an outstanding academic record at Dalhousie for a specific degree program in a particular subject.
4. **Prize:** A monetary award of any value, or a non-monetary award, based on general academic excellence, or proficiency in a specific area of study or competition.
5. **External Award:** An award given to the student of the university by an external agency. (The University may share in the selection, administration and/or payment of such an award).

### I. General Policy

Applicable to those awards administered by the Registrar's Office. Selection criteria may be different for those awards administered by individual faculties/schools/departments.

#### A. Where Dalhousie Scholarships can be Used

Dalhousie University scholarships can be used only at Dalhousie unless the Will or Trust Deed should otherwise permit. (The University of King's College has its own scholarship program.) Insofar as scholarships, bursaries and governmental student loans are concerned, Dalhousie and King's are separate. In order to receive Dalhousie funds you must be a registered Dalhousie University student.

### B. Portability of Undergraduate Scholarships

Many entrance and in-class scholarships are portable among all Dalhousie undergraduate programs. Please contact the Awards Office prior to changing programs.

### C. Scholarship Payments and Rebates

To receive scholarship funds, a student must be registered at least as a full-time student (minimum nine credit hours) at Dalhousie during the term(s) in which they are receiving the funds. Students registered in Graduate Studies, Medicine, Law and Dentistry (with the exception of Diploma in Dental Hygiene students), are ineligible to receive in-class scholarships or renew an existing scholarship. These faculties have their own awards programs.

1. **Payments:** Dalhousie University scholarships of \$3,000 or greater are credited towards students' accounts in two installments first and second term. Awards less than \$3,000 are credited in full first term. Awards are applied first to tuition and prescribed fees, and secondly for residence fees.
2. **Rebates:** The portion of scholarship money in excess of the above charges will be refunded to the student. Refunds are made by the Student Accounts Office in late October.

### D. Award Duration

Dalhousie offers both renewable and non-renewable Entrance Awards. Non-renewable awards are held for one year. Renewable entrance awards are typically renewable for a maximum of four years. Holders of renewable awards are notified of either the renewal or the non-renewal of their awards. Please note that holders of renewable scholarships are NOT also entitled to hold Dalhousie in-class scholarships. (Please also refer to section "Graduation and Renewable or In-Class Scholarships" on page 616.)

### E. Eligible Classes for Scholarship Assessment

The Registrar's Office (Awards) considers those Dalhousie classes which are taken for credit in a designated degree/diploma program during the academic year (or term in the Co-op program) as eligible classes for scholarship assessment.

Correspondence classes are considered for scholarship purposes.

Unless taken on Letter of Permission, transfer credits do not count towards the credit hours reviewed for scholarship assessment.

Please note that classes taken at other institutions are counted, to a maximum of one class per term, for scholarship assessment if such classes are taken on Letter of Permission towards an eligible degree/diploma at Dalhousie.

### F. Scholarship GPA Calculation

The Scholarship GPA (SGPA) will be calculated for students who have completed a minimum of 30 credit hours of work over two terms within the preceding academic year. The Scholarship GPA will include all eligible classes attempted during this time period. Please note that the Scholarship GPA and the Sessional GPA normally differ.

The Scholarship GPA, expressed to two decimal places, does **not** show on a student's transcript.

### G. Renewable Scholarships

Unless otherwise advised, an SGPA of 3.70 is required to maintain a renewable scholarship. Students must complete a full class load (a minimum of 30 credit hours) over two terms within the previous academic year and achieve a minimum SGPA of 3.70 to be considered eligible for renewal. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms to be eligible. Students completing two work terms within one academic year must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to be considered. In those cases where students have taken more than 30 credit hours, assessment is based on all classes taken within the term(s) being assessed. Transfer credits do not count towards the credit hours reviewed for scholarship assessment.

Students who fail to re-qualify for their renewable scholarship will be notified in writing or via email. If a student achieves the required 3.70 SGPA in the next academic year, or in any academic year within four of the original offer, the scholarship will be reinstated.

Students registered in Graduate Studies, Medicine, Dentistry (with the exception of Diploma in Dental Hygiene students), or Law are ineligible to receive in-class scholarships or renew an existing scholarship.

## H. Qualifying for In-Class Scholarships

All undergraduate Dalhousie students not on a renewable scholarship, in eligible programs in the participating faculties, who have completed a full class load (a minimum of 30 credit hours) over two terms within the previous academic year and achieved a minimum SGPA of 3.70 will be considered eligible for in-class scholarships. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms to be eligible. Students completing two work terms within one academic year must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to be considered eligible. In those cases where students have taken more than 30 credit hours, assessment is based on all classes taken within the term(s) being assessed. Transfer credits do not count towards the credit hours reviewed for scholarship assessment.

Students registered in Graduate Studies, Medicine, Dentistry (with the exception of Diploma in Dental Hygiene students), or Law are ineligible to receive in-class scholarships or renew an existing scholarship.

## I. International Exchanges

Students who have permission to study for one or two terms outside of Canada in an approved exchange program, and are considered to be full-time (normally 30 credit hours), can be considered eligible for in-class or renewable scholarship assessment.

Please direct specific questions to the Registrar's Office - Awards.

## J. Scholarship Assessment

Students on renewable scholarships will be assessed for renewal in either June or September depending on completion of two academic terms. All other undergraduate students are assessed for in-class scholarships in June or September depending on completion of two academic terms.

## K. Changing Degree Programs

Changing degree/diploma programs can have implications for scholarship consideration. Scholarship holders considering degree changes should consult the Registrar's Office - Awards.

## L. Reduced Class Load and Retention of Scholarship

Scholarship holders considering taking a reduced class load should consult the Registrar's Office - Awards. Students must complete a minimum of 30 credit hours over two terms within the academic year to qualify for renewal of their scholarships or an in-class scholarship. Also refer to sections G and H.

## M. Record of Scholarships

Awards are recorded on academic transcripts. The University retains the right to reassign the source funding of a student's scholarship as circumstances may warrant (but there would be no reduction in the amount).

## N. Graduation and Renewable or In-Class Scholarships

If you hold a renewable scholarship and you choose to graduate earlier than originally expected, and then you decide to return to upgrade your degree to a four-year degree, you must submit a request to access your scholarship for the final year. In addition, if you graduate and then decide to upgrade your degree, you cannot be assessed for an in-class scholarship until a further 30 credit hours over two terms within the same academic year is completed and a minimum SGPA of 3.70 is achieved.

## O. Transfer Students

With the exception of the First Nations & Indigenous Black Students Entrance Scholarship, transfer students are ineligible for scholarships in the year of transfer. After one full year, students would be considered on the same basis as other students for in-class awards. Please refer to section H. Qualifying for In-Class Scholarships.

## P. Taxation

As long as you are a registered full or part-time student, you are not required to claim financial awards (i.e. scholarships, bursaries) as income on your taxes.

## Q. Withdrawing

Award funds are credited to your student account with the expectation that you will remain registered at Dalhousie at least as a full-time student (minimum nine credit hours) within the applicable term. Therefore, if you reduce your class load or withdraw, these funds are expected to be returned to the University. However, depending on the time of the withdrawal, you may be entitled to retain a prorated portion of the scholarship. Contact us prior to your withdrawal and we can review your specific circumstances.

## R. Scholarship Appeals

The deadline to appeal a scholarship decision for an entrance/in-class/renewable scholarship or entrance bursary is October 31.

Students may appeal under the following grounds:

- extraordinary or compassionate circumstances;
- unfair scholarship decision under the circumstances; and/or,
- inconsistent scholarship decision compared to other offers/decisions

Students must submit their appeal, in written form, to the Assistant Registrar, Awards, in the Registrar's Office, by the deadline noted above. The letter should clearly outline the grounds for appeal and the remedy being sought. Students should include documentation, if applicable, to support the basis of their appeal. The decision of the Appeals Committee is final.

## II. Entrance Awards

(Applicable to those scholarships administered by the Registrar's Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

1. Entrance scholarships are available to students applying to Dalhousie directly from high school. Transfer students are not eligible for entrance scholarships with the exception of the First Nations and Indigenous Black Students Scholarship. Entrants coming from Year II of a CEGEP are considered to be transfer students.
2. To be considered for entrance awards, applicants must submit a completed Dalhousie application for admission, a scholarship application including supporting documents (available through DalOnline), and an official transcript to the Registrar's Office by **March 15th**.
3. Students must be admitted, with a minimum 80% admission average (or 26 predicted points for IB diploma candidates), to one of the following faculties to be eligible for entrance award consideration: Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Health Professions, Management or Science.
4. Students are first assessed for grades-based entrance scholarships using their first term final grades or midterm grades in the case of non-semestered schools.
5. An **admission average** is then calculated using the grades of the five classes required for admission to the applicable program.
6. An **adjusted average** is then calculated for all students which can add up to two additional points onto the admission average. Students can receive up to one additional point for taking/completing AP or IB level classes and up to another additional point for taking/completing more than the required five university-preparatory classes.
7. Eligible students who submit the scholarship application and supporting documents by March 15th will be evaluated for entrance awards based on some or all of the following criteria: academic merit, extra-curricular activities, financial need, initiative to fund your own education, and leadership experience. For more information visit [dal.ca/scholarships](http://dal.ca/scholarships).

## A. Entrance Scholarship Funds

It is University practice to distribute scholarships among as many students as possible.

Please note: Students entering the Faculty of Agriculture should refer to "Entrance Awards", "B. Faculty of Agriculture", page 614 ; for available entrance scholarships.

Please note: Students entering third year Engineering (including students entering from Associated Universities) should refer to “In-Class Scholarships”, section “F. Faculty of Engineering” for available scholarships.

## 1. Entrance Awards (application required)

Those awards marked with an asterisk (\*) are not administered by the Registrar's Office. All awards administered by the Registrar's Office require a minimum admission average of 80% and a General Entrance Award Application submitted by March 15th unless otherwise stated to be eligible.

### ***The Bissett Scholarship***

A scholarship valued at \$24,000 (\$6,000 per year) was established by Mr. David Bissett with the intention of encouraging scholastic achievement by providing an incentive to capable high school students. Candidates for the Bissett Scholarship must be graduating from Cole Harbour District High School in Nova Scotia and be eligible for admission to the first year of an undergraduate program leading to a first degree at Dalhousie University. They must also intend to pursue a program of full-time studies as Dalhousie. A nomination for a Bissett Scholarship will not interfere with consideration of the nominee for other University scholarships. A student may not, however, hold a Bissett Scholarship and another Dalhousie scholarship at the same time. Students must be nominated by their school to be considered for this scholarship.

### ***George Burris Scholarship\****

The scholarship was established by Mary Burris and Grace Burris in memory of their father, George Burris, to support Dalhousie students wishing to study in England as part of their academic program. Scholarships are awarded on the basis of academic and extracurricular excellence, financial need, and international experience.

Scholarships are open to Canadian students accepted into the First Year Study Abroad Program at the International Study Centre (ISC), at Herstmonceux Castle, England. Scholarship value: up to \$5,000. Interested students should complete an application a minimum of one month prior to departure, available from the International Student and Exchange Services Office.

### ***Dalhousie Alumni Leadership Association Scholarships***

A number of these scholarships, ranging in value from \$1,000 to \$2,000, are open to entering students who have achieved a good scholastic record at high school. An admissions average of at least 80% is required. Candidates must have played a leadership role in extracurricular activities such as community service, student government, athletics, or the visual or performing arts.

### ***DSU Accessibility Bursary***

The Dalhousie Student Union established this \$1,000 renewable bursary assistance for an entering Dalhousie student with a permanent disability and demonstrated financial need. This bursary is administered and awarded in combination with the Johnson Foundation Bursary. The recipient will typically receive \$1,000 from the DSU Bursary and an additional \$1,500 annually from the Johnson Foundation Bursary for a combined annual amount of \$2,500. To be considered, students must submit medical documentation regarding the nature of their disability, with a complete General Entrance Award application.

### ***Jeff D. & Martha Edwards Scholarship for Black Canadian & Bermudian Students***

Jeff Edwards was 21 in 1910 when he and many other blacks left Oklahoma for Canada seeking an escape from segregation and prejudice in the American South. He and his wife Martha homesteaded as pioneers at Amber Valley, Alberta where they raised 10 children and contributed enormously to the community. Mr. Edwards embraced his new citizenship with pride, and when he died in 1973 at the age of 90, was remembered as a proud Canadian citizen who epitomized the spirit of black pioneers who settled the Canadian West. While Hugh Maccagno established this scholarship to honour the memory of Jeff & Martha Edwards, he also dedicated it to his late father who in the late 1940's in a small northeastern Alberta town spoke to his sons of “a fine gentleman by the name of Mr. Jeff Edwards.” This scholarship, valued at \$8,000 (\$2,000 per year), is awarded to an entering Dalhousie student with preference to Canadian students of Black African descent (second preference to native Black Bermudian students). Scholarships will be awarded on the basis of financial need and citizenship.

### ***Evanov Radio Group Scholarship\****

Two annual \$2,000 scholarships will be awarded to students entering a Music degree program or Artist Diploma program. Students must demonstrate artistic excellence and a commitment to performing arts in the community. To be eligible,

students must be Canadian citizens or landed immigrants. Administered by the Department of Music.

### ***Facilities Management Employee Scholarship***

Established by the Department of Facilities Management employees at Dalhousie, this scholarship supports up to two entering students each year who are children, grandchildren or spouses of Facilities Management Employees. Selection is based on financial need and community involvement.

### ***Fairfax Financial Holdings Limited Entrance Award***

Two renewable awards of \$20,000 (\$5,000 per year) each, are awarded annually to assist worthy candidates entering an undergraduate program at Dalhousie University. The scholarships were established to encourage scholastic achievement by providing an incentive to capable high school students who wish to obtain a university education and who might otherwise be prevented due to the cost of attending the university. Candidates must be a Canadian citizen or have been granted permanent residence in Canada. Students will be selected on the basis of financial need but outstanding academic achievement, independently documented outstanding achievement, commitment in community and other extracurricular activities could also be influential. The scholarship is tenable for the duration of an undergraduate program or a maximum of four years (whichever comes first) based on a 3.00 SGPA over a full class load.

### ***First Nations & Indigenous Black Students Scholarships***

Ten renewable entrance scholarships of \$12,000 (\$3,000 per year) each are available to First Nations and Indigenous Black students, who are residents of Nova Scotia, New Brunswick or Prince Edward Island, and are entering Dalhousie for the first time. Scholarships are available to students who are applying directly from high school as well as those who have attended another post-secondary institution. Scholarships will be awarded on the basis of a student's financial need and academic standing.

### ***Forsyth Family Nova Scotia Undergraduate Scholarship***

A Dalhousie Law graduate established this scholarship in support of black high school students from Nova Scotia wanting to pursue post secondary education at Dalhousie. This is one of our highest valued scholarships for entering undergraduates at a value of up to \$20,000 per year to cover tuition, housing and books; recipients receive up to \$80,000 over four years. One entering student is selected each year based on academic excellence, financial need and demonstrated participation in extra-curricular activities, preferably leadership, and a social conscience within his or her community.

### ***General Dynamics Canada Corporate Partners Scholarship\****

The General Dynamics Canada Corporate Partners Scholarship in the amount of \$5,000 is awarded to a student who is entering any undergraduate program offered by the Faculty of Computer Science. The student will receive \$3,000 upon entering the program and will receive the remaining \$2,000 at the beginning of the second year of the program.

Applicants are required to have completed high school education in Nova Scotia and preference will be given to students who have successfully completed CP-12 university preparatory class in any Nova Scotia high school with an average of 80%, and has demonstrated initiative through volunteering and extra-curricular activities.

### ***International Baccalaureate (IB) Scholarships***

Renewable scholarships are offered to top students entering from high school who studied the International Baccalaureate program. Students should complete the General Entrance Award Application.

### ***International Baccalaureate (IB) Prizes***

Ten \$1,000 prizes will be awarded for the top short answer responses on the General Entrance Scholarship Application.

### ***Johnson Foundation Bursary***

Established by the Johnson Scholarship Foundation, this endowment provides four renewable bursaries of \$10,000 (\$2,500 per year) annually to students entering Dalhousie with permanent disabilities and demonstrated financial need. The number and value of bursaries may vary from year to year. To be considered, students must submit medical documentation regarding the nature of their disability, and a complete General Entrance Award Application.

### ***The Lockward Memorial Scholarships***

These scholarships have been established from an endowment by the late Reginald and Anne T. Lockward of Liverpool, NS Ten renewable scholarships

valued at \$16,000 (\$4,000 per year), plus a number of \$4,000 non renewable scholarships are awarded annually. Candidates for Lockward Memorial Scholarships must be graduates of a high school in Nova Scotia and be eligible for admission to the first year of an undergraduate course of study leading to a first degree at Dalhousie University. Preference will be given to students in Queen's County. Students will be selected on the basis of academic standing, character and financial need. Recipients of renewable scholarships may have an opportunity to access further funding if later admitted to the Faculty of Medicine at Dalhousie.

#### ***Harrison McCain Scholarships***

The Harrison McCain Foundation fund provides numerous renewable scholarships of \$16,000 (\$4,000 per year) to entering high school students; including one or more to students entering Nursing. Scholarships are awarded to students with demonstrated financial need, a recognized initiative to funding their own education and possess strong leadership abilities. **Please submit a complete Harrison McCain Scholarship application, available online at <http://dal.ca/scholarships>, by March 1.**

#### ***Helen C. McDowell Frandsen Memorial Scholarship***

Up to two scholarships of \$5,000 each are available to students entering Dalhousie who have been a resident of peninsular Halifax for at least the previous three years. Preferably, one will be awarded to a student entering a Bachelor of Science and another to a student entering a Bachelor of Arts. Applicants will be assessed on academic achievement, leadership and financial need.

#### ***Bazil & Madge Lund Scholarship in Business***

Established by David P. Lund in honour of his parents, this scholarship recognizes academic achievement and provides financial support to a student entering the Bachelor of Commerce. First preference is given to students entering Dalhousie directly from a high school within Greater Moncton, New Brunswick.

#### ***Constance "Teak" McKibbin Memorial Bursary***

A \$16,000 (\$4,000 per year) renewable bursary is awarded each year to a student entering Dalhousie with demonstrated financial need. Preference is given to students from Atlantic Canada who are the first in their family to attend a post-secondary institution.

#### ***Lottie M. Morrison Scholarship\****

This is an entrance scholarship intended to assist one student beginning the Bachelor of Science (Nursing) program who has the intention of furthering her/his studies in the area of mental health. Contact the School of Nursing for further information.

#### ***J & W Murphy Scholarships***

This scholarship fund was established by the J & W Murphy Foundation to provide renewable scholarships for Nova Scotia residents entering full-time studies in any undergraduate degree program at Dalhousie University. Six renewable scholarships of \$40,000 (\$10,000 per year) are awarded annually to worthy candidates based on community involvement, academic excellence and financial need. First preference will be given to students from Queens County and then to residents of the rest of Nova Scotia. Consideration will also be given to students who are the first in their immediate family to attend university. In addition, several one-time scholarships of \$6,000 are awarded each year to top candidates based on the criteria outlined above. The renewable scholarships are tenable for up to four years based on a 2.7 SGPA over a full class load.

#### ***Richard & Melda Murray Engineering Scholarships***

This scholarship provides the financial support for two Jamaican citizens to enter and complete their Bachelor of Engineering degrees at Dalhousie. Students may be entering the Faculty of Engineering directly from high school or transferring from another institution. Each scholarship will cover the cost of tuition and housing to a maximum of \$22,000 per year, for the duration of each recipient's degree.

#### ***Evelyn Negus Scholarship in Nursing***

This scholarship is awarded annually to a student(s) entering the Bachelor of Science (Nursing). First preference will be given to mature students and to aboriginal peoples (specifically members of the Mi'Kmaq community).

#### ***Warren Ogilvie Scholarships***

This endowment offers two Scholarships of \$16,000 (\$4,000 per year) to students entering the Bachelor of Commerce program. The primary consideration in awarding the scholarship shall be outstanding academic potential and performance and second consideration shall be financial need. Preference will be given to Nova Scotian applicants for at least one scholarship.

#### ***Edward A. Perkins Memorial Bursary***

Florence Perkins established this \$1,000 renewable bursary assistance in memory of her husband, Edward A. Perkins. This bursary is available to an entering Dalhousie student with a permanent disability and demonstrated financial need, with preference to students entering the Faculty of Science. This bursary is administered and awarded in combination with the Johnson Foundation Bursary. The recipient will typically receive \$1,000 from the Edward A. Perkins Memorial Bursary and an additional \$1,500 annually from the Johnson Foundation Bursary for a combined annual amount of \$2,500. To be considered, students must submit medical documentation regarding the nature of their disability, and a complete General Entrance Award application.

#### ***Poole Family Scholarship***

The Poole Family Scholarship, valued at \$5,000 per year and renewable for up to four additional years, is funded by a generous annual gift from the charitable trust established by Mr. Terry Poole, BCom '65 who now resides in Calgary, Alberta. The scholarship will be awarded annually to a full-time undergraduate student entering into their first year of study in any program. To be eligible, candidates must demonstrate financial need and scholarship standing. Preference will be given to candidates who reside in Newfoundland and Labrador, Atlantic Canada, and Alberta. The scholarship is renewable as long as candidates maintain scholarship standing.

#### ***Seymour Schulich Scholarship***

Seymour Schulich, one of Canada's leading philanthropists, established this scholarship fund in 2008 to honour his wife Tanna Goldberg Schulich and her family. The fund provides four renewable scholarships valued at \$39,000 each for students entering the Faculty of Computer Science; two based on academic achievement and two based on community involvement. In addition, several one-time scholarships of \$5,000 are awarded to students entering the Faculties of Computer Science or Science based on academic achievement and community involvement.

#### ***Shad Valley Scholarships***

Two renewable scholarships of \$16,000 (\$4,000 per year) are offered to top high school applicants who have participated in Shad Valley. Automatic consideration if indicated on admission application or contact the Assistant Registrar, Awards to be considered.

#### ***Shatford Memorial Trust Scholarships***

The J.D. Shatford Memorial Trust established a scholarship endowment fund in 1976 to provide assistance with the costs of attendance at Dalhousie University. The University's fund is independent of any other such trusts. Candidates must fulfill the following conditions: a) be coming directly to Dalhousie from high school, b) be undertaking studies leading to their first baccalaureate degree and c) be a bona fide resident of the bequest area (in Hubbards, NS area) for at least three years prior to applying to Dalhousie. A candidate's satisfaction of the residency requirement is currently confirmed by the J.D. Shatford Trust Advisory Committee in Hubbards. Subject to the availability of funds, these awards are renewable to the first degree (or four years maximum), based on a SGPA of 2.0, with a full class load. Please note that the value of a holder's scholarship may vary from year to year.

#### ***The Slight Family Foundation Scholarship for African Students***

The Slight Family Foundation Scholarship for African Students is a renewable scholarship valued at \$25,000 per year and is funded by a very generous gift by the Slight Family Foundation. The scholarship will be awarded annually to a full-time undergraduate student who resides in Africa and is either entering into their first year or returning (current) year of studies in any program at Dalhousie University. To be eligible, candidates must demonstrate financial need, hold good academic standing, and demonstrate involvement in their community.

#### ***Sigma Chi Leadership Award***

The Sigma Chi Leadership Award recognizes the qualities of entering students who meet the standards of Sigma Chi membership, as described by the Jordan Standard: being of high character, a student of fair ability, with ambitious purposes, a congenial disposition, possessed of good morals, having a high sense of honour, and a deep sense of personal responsibility.

#### ***Walker Wood Foundation Science Bursary***

The Walker Wood Foundation established this \$16,000 (\$4,000 per year) bursary in support of a student with demonstrated financial need who is entering the Faculty of Science at Dalhousie. Preference is given to students from high schools within Atlantic Canada.

### ***The Francis Hugh Bell Entrance Scholarship in Science***

This scholarship was established by a bequest from the estate of Barbara Bell who attended Dalhousie in 1923 as a music student. This scholarship is awarded annually to honour her father, the late Mr. Francis Hugh Bell who was one of Dalhousie's earliest graduates.

### ***R. Stanley Cumming Scholarship***

Established through a bequest from the Estate of Marion H. Cumming, in memory of her late husband Prof. R. Stanley Cumming, BA '35. This scholarship, valued at \$20,000 (\$5,000 per year), is awarded to a student entering the Bachelor of Commerce.

### ***Frank R. Davis Memorial Scholarships***

These scholarships are made possible by a fund established by Mrs. Davis in memory of her late husband, the Hon. Frank R. Davis, Minister of Public Health in the government of Nova Scotia and a graduate of this University. The scholarship will be awarded by the University to deserving graduates of Bridgewater High School, on the nomination of the Supervisor of Schools and the Senior High School Staff. In selecting candidates, the governing considerations will be scholastic standing, unselfishness of purpose, and interest in the common good. The fund may also be used for bursaries.

### ***Frederick S. Fountain Scholarship***

An endowment had been established by Frederick S. Fountain for residents of Atlantic Canada who have demonstrated all around distinction. Preference is given to students in the Faculty of Arts and Social Sciences. These scholarships are valued at \$32,000 (\$8,000 per year).

### ***Marjorie Manning Fountain Scholarships***

Two non-renewable entrance scholarships are awarded each year to students from Atlantic Canada enrolling in the Faculty of Management who have demonstrated a high level of academic achievement and financial need.

### ***R.C. Fraser Family Scholarship***

Robert Clifford Fraser (or R.C., as he was known) was born in Pictou County, attended New Glasgow High School and graduated with a Bachelor of Commerce from Dalhousie in 1952. He received his CA designation in 1958 and dedicated many of his working years to Nova Scotia Power, both in Pictou County and Halifax. RC's family ties to Dalhousie span many years and he enjoyed his time here tremendously. This scholarship is offered annually to a North Nova Education Centre, New Glasgow graduate who is entering the Bachelor of Commerce program.

### ***Rowland C. Frazee Scholarships in Business Administration***

Established by Mrs. Marie Frazee, and family, to honour the memory of her late husband Dr. Rowland Frazee (B Comm 1948, LLD 1980). Dr. Frazee was an outstanding alumnus of Dalhousie University and a business leader in Canada for many decades. He joined the Royal Bank of Canada in 1939 as a bank teller and rose to the position of Chairman and CEO in 1980. He attended Dalhousie University following his overseas service in World War II and rejoined the bank in 1948. He retired in 1986 living in Saint Andrew's, New Brunswick until his passing in the fall of 2007. Two scholarships of \$5,000 each are awarded annually to students entering an undergraduate program within the Faculty of Management.

### ***Milton G. Green Memorial Scholarship***

This scholarship, valued at \$8,000 (\$2,000 per year), was established in 1975 by Bowater Mersey in memory of the company's former President, Milton G. Green. Eligible students must have lived in the western area of Nova Scotia for at least three years prior to admission to Dalhousie. This scholarship is not awarded every year.

### ***C.D. Howe Scholarships in Engineering***

The C.D. Howe Memorial Foundation has established an endowment to provide a scholarship of \$6,000. The scholarship is open to matriculants from Nova Scotia high schools who have achieved high academic standing and who are enrolled full-time in the Bachelor of Engineering program. Where candidates are deemed to be of equal merit, preference will be extended to female students. The scholarship is renewable on an annual basis for the duration of the program provided that the holders maintain high academic standing and remain in the engineering program.

### ***Denton Hurdle Scholarship***

This scholarship was established in memory of Denton Gordon Clifford Hurdle, born in Bermuda in 1957, who graduated from Dalhousie in 1980 with a

Bachelor's Degree in Physical Education. He then returned to Bermuda and taught at Warwick Academy until his death in 1985.

One or more scholarships of at least \$2,000 each, are available to Bermudian citizens who are entering Dalhousie directly from high school. First preference will be given to students from Warwick Academy who are entering the School of Health and Human Performance (BSc in Health Promotion, Kinesiology or Recreation).

### ***Christine Irvine Memorial Scholarship***

This entrance scholarship, awarded to students who have demonstrated academic excellence, was established in memory of Christine Irvine, former Dean of Women at Dalhousie, by her brother Leslie M. Irvine. First preference will be given to students from Bridgetown, second preference Annapolis Valley and third preference Nova Scotia.

### ***The A. Murray MacKay Scholarship***

The Scots North British Society has established an annual scholarship of \$1,000 which is open to a student entering Dalhousie from Citadel High School. The Selection Committee will consider candidates on the criteria of academic ability, financial need and leadership. The criteria are weighted equally. The late Dr. MacKay was chairman of the School Board at the time when Queen Elizabeth High School was constructed.

### ***Barbara & James A. McNabb Scholarship***

Barbara McNabb was born in Trenton, NS in 1919 and her husband Jim in 1912. They lived their entire lives in Pictou County. A local businessman, Jim was Mayor of Trenton for 10 years during the 1960s and was also the first pilot trained in Pictou County. An accomplished violinist, Barb played in both the Pictou County Orchestra and the Nova Scotia Symphony. This scholarship is awarded to an entering student with preference given to Canadian citizens from Pictou County, NS.

### ***W.M. Nelson Scholarship***

Under the Will of the late Mr. William M. Nelson of Tatamagouche, funds have been made available to provide a scholarship to Dalhousie University open to students attending North Colchester High School.

### ***Nova Scotia Power Inc. Scholarship***

Since 1995, Nova Scotia Power Inc. has sponsored an annual scholarship in the amount of \$1,500 for full-time study in an undergraduate degree program. The scholarship will be renewable for up to three or four years depending upon the duration of the undergraduate program provided that the student maintains the required academic standing. Recipients are to be Canadian citizens (or landed immigrants) and residents of Nova Scotia for at least three years.

### ***The Hugh J. Potter Scholarship***

An endowment has been established to provide a scholarship to an entering Commerce student who has demonstrated a high level of academic achievement. First preference will be given to residents from Digby County who qualify based on their academic record. The scholarship honours the memory of Joseph Hugh Potter, a native of Digby County, who showed himself to be an exceptional initiator and developer of financial and commercial activity throughout this province in the fields of insurance, securities, shipbuilding, transportation and manufacturing.

### ***Lawrence and Mildred Ridgway Scholarship\****

This scholarship of \$1,000 is awarded on the basis of performance excellence to a student entering university for the first time directly from high school into a course of study leading to an undergraduate degree in music performance. It was established by Karen Woolhouse and Judith Wells in memory of their parents, who lived in Halifax for many years, enjoyed music, and were proud that their two daughters graduated from Dalhousie.

### ***Cicero T. Ritchie and Hazel Robertson Scholarship***

This scholarship was created at the bequest of Hazel Robertson in memory of her husband, a Dalhousie graduate. This \$1,500 entrance renewable scholarship is awarded each year to a student from Dartmouth High School enrolling in the Bachelor of Science. The scholarship is renewable to a maximum of four years provided a SGPA of 3.3 is maintained while carrying a full class load.

### ***The School of Nursing BScN Scholarship***

This entrance scholarship is awarded to the student in the Dalhousie University Basic BScN program with the highest high school academic average.

### ***The School of Nursing BScN Entrance Scholarship for Non-Traditional Students\****

This entrance scholarship is awarded to the student with the highest academic standing who has come to the basic BScN program neither directly from high school nor from a full year of university. Assessment is made by the School of Nursing. Application not required.

### ***School of Nursing BScN Entrance Scholarship for Students with Prior University Experience\****

This entrance scholarship is awarded to the incoming student in the Dalhousie University Basic BScN program with previous university experience and the highest cumulative GPA. Assessment is made by the School of Nursing.

### ***Alexander Sinclair Scholarship***

Under the Will of the late Evangeline Marion Winn, the University received an endowment for the purpose of providing scholarship awards to qualifying students from St. Mary's Municipality, Guysborough County, Nova Scotia. Candidates are recommended by St. Mary's Rural High School in consultation with the Registrar's Office - Awards.

### ***Stanley William Spavold Scholarship***

The purpose of this Scholarship is to honour the memory of Mr. Stanley William Spavold, BA ('51) MA ('53) and recognize the achievements of students entering Dalhousie from Halifax West High School.

Mr. Spavold became head of the Social Science Department at Halifax West in 1968 and was later named Vice Principal. This scholarship is awarded to a student entering the Faculty of Arts & Social Sciences or the Faculty of Management who has demonstrated high academic achievement and a well-rounded approach to their academic and extracurricular activities.

### ***The I.C. Stewart Trust Fund***

From the Estate of Georgie M. Stewart came a trust fund, the annual income from which is to be used for I.C. Stewart Scholarships to qualifying students from St. Mary's District in the County of Guysborough, Nova Scotia. Candidates are recommended by St. Mary's Rural High School in consultation with the Registrar's Office - Awards.

### ***L.A. & Edith Upham Scholarship***

A renewable scholarship valued at \$20,000 (\$5,000 per year) has been established to recognize the long association of the Upham family with Dalhousie University. This scholarship is offered to a Nova Scotia high school graduate enrolling in the Faculty of Arts and Social Sciences.

### ***Marguerite I. Vernon Scholarship***

A trust has been established under the Will of the late Marguerite Vernon whereby, from time to time, a scholarship will be assigned to Dalhousie University for an entering student.

### ***F. Hume Wells Scholarship\****

This scholarship of \$1,000 is awarded on the basis of performance excellence to a student entering university for the first time directly from high school into a course of study leading to an undergraduate degree in music performance. It was established by Judith Wells and Karen Woolhouse in memory of F. Hume Wells, a businessman in Halifax, who was interested in music and thought university education was important. Contact the Department of Music for more information.

### ***Don Wright Scholarship of Excellence\****

This annual scholarship funded by the Lillian and Don Wright Foundation, supports outstanding students who are entering the Department of Music. While preference shall be given to awarding the scholarship to one student per year, if no one student merits the awarding of the scholarship, the awarding committee has the authority to award two scholarships to students who have applied and been accepted to study with the Department of Music. Where there is more than one eligible candidate, first preference shall be given to the candidate deemed to have the most merit as judged by a majority of the Music Department Scholarships Committee.

## **2. Endowments and Annual Givings**

The following endowments and annual givings are used to fund a select number of our Dalhousie Entrance Award programs and are administered by the Registrar's Office in November. Unless noted, applications are not required.

### ***Robert Bruce Scholarships***

The University is a beneficiary of a bequest from the late Robert Bruce of Quebec whereby a portion of the annual income is to be used for both entrance and in-class scholarships, and for bursaries.

### ***James and Abbie Campbell Memorial Scholarships***

A bequest from the late Elsie Alma MacAloney of Halifax made provision for the establishment of the James and Abbie Campbell Memorial Fund. The purpose of this fund is to promote the University's music program through scholarships in music. Academically sound students who have demonstrated competency in music will be selected by the Department for one of several James and Abbie Campbell/Department of Music Scholarships. Other music students will be selected on the basis of their overall academic standing by the Registrar's Office. The fund also provides in-class scholarships also.

### ***Dalhousie Club of New York Scholarships***

A fund for this purpose, established by the Dalhousie Club of New York and placed in the hands of the Board of Governors of the University, endows several scholarships open to students entering the Faculties of Arts & Social Sciences or Science from high school.

### ***Ross Faulkner Scholarships***

The University received from the Estate of Julia L. Faulkner a bequest to provide scholarships in memory of her husband, Dr. Ebenezer Ross Faulkner.

### ***Dr. Mary G. Hickman Memorial Scholarship***

Under the will of Theresa Rose Hickman, this scholarship fund was established in memory of her late daughter Mary Hickman, MD '72. This fund provides scholarships in recognition of academic excellence at Dalhousie.

### ***The Percy Bertram Jollota Scholarships***

From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertram Jollota. The awardees must be engaged in studies in engineering.

### ***The E. John Jordan Scholarships***

Under the Will of the late E. John Jordan a bequest was left to the University for the purpose of funding entrance and in-class scholarships.

### ***Killam American Scholarship Fund***

This endowment, established in memory of Isaac Walton Killam, provides entrance scholarships to citizens of the United States who are enrolled in undergraduate programs at Dalhousie University.

### ***Frederick A. MacMillen Scholarships***

The late Frederick A. MacMillen bequeathed to Dalhousie University a sum of money, the net income therefrom to be used for scholarships. This fund has been designated for entrance scholarships.

### ***The Hector McInnes Memorial Scholarships***

In December 1937, an anonymous donor gave the University \$50,000 for undergraduate scholarships as a memorial to the late Mr. McInnes.

### ***Nicholas M. MacLeod Memorial Scholarship***

Under the will of Eva Eileen McLeod, this scholarship fund was established in memory of her late husband, Dalhousie alumnus Nicholas W. McLeod, for the purpose of funding entrance and in-class scholarships for students in the Faculty of Arts & Social Sciences.

### ***Silvanus A. Morton Memorial Scholarship***

The Silvanus A. Morton Scholarship Fund was established in 1972 to endow one or more awards. The awards are in memory of Silvanus A. Morton, Principal of the old Halifax Academy, predecessor of the Queen Elizabeth High School. The scholarship is to be awarded on the recommendation of the principal to one or more graduates of Citadel High School upon entrance to Dalhousie University in the College of Arts & Science.

### ***Malcom Mosher Memorial Scholarship***

Under the will of Marial Laura Morse Mosher, this scholarship fund was established in the memory of her father, to award scholarships to students studying in the areas of Social Sciences, Business and Economics.

### ***Harold Oxley Scholarship***

A bequest under the late Mr. Oxley's Will makes possible the funding of a scholarship, which has been allotted to the entrance scholarship plan.



**Arthur S. Payzant Scholarship**

Under the Will of the late Reverend Arthur Silver Payzant a bequest was established for scholarship purposes. The University has allotted this fund to the entrance scholarship plan.

**The Harold A. Renouf Scholarship**

An endowment has been established to provide an annual scholarship for students entering the Bachelor of Commerce program.

**The Lois J. Robertson Scholarships**

The University received a generous bequest from the Estate of the late Lois Robertson. This fund has been allocated to undergraduate scholarships.

**Dr. David M. Soloan Scholarship**

Under the Will of the late Dr. David M. Soloan the University received a sum of money. The Board of Governors decided that the gift be used to provide one or more entrance scholarships in the College of Arts & Science.

**Joseph Duncan Stewart Scholarships**

A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships.

**The J. Douglas Vair Scholarship**

This scholarship is available to students entering the University for the first time from Pictou County, Queen's County, and rural Halifax County. Failing a candidate from these areas, a student from other areas of Nova Scotia may be selected at the discretion of the Scholarship Committee. The award shall be based on scholarship and need, making it possible for a promising student to obtain a university education. The scholarship may be continued beyond the first year to students from the three preferred areas if standing is maintained, but only if there is no first year student eligible for the award.

**The Women's Division of the Dalhousie Alumni Association Scholarships**

This fund provides two entrance scholarships; one is named the Margaret Florence Newcombe Scholarship, which commemorates the 100th anniversary of the graduation of the first woman graduate of Dalhousie University in 1885. The second scholarship is named the Ruth Skaling Murray Scholarship, in memory of a dedicated alumna of the Dalhousie Women's Division.

**B. Faculty of Agriculture**

For more information on deadlines and application procedures, please visit [www.moneymatters.dal.ca](http://www.moneymatters.dal.ca)

**General Eligibility Requirements:**

1. Entering the first year of a Faculty of Agriculture program directly from high school.
2. A scholarship average of at least 80%
3. A completed application for admission (and scholarship application with supporting documents if required) received by the Registrar's Office by March 15 (unless otherwise listed).

**Atlantic Scholars Awards (tuition and residence fees):** \$40,000 (approximate value based on full tuition and shared residence accommodation). Atlantic Scholars Awards will provide tuition and residence costs (at shared-room rate, for as long as the recipient chooses to live in residence). The scholarship does not cover meals, books, and student fees. Students entering either technical or degree programs are eligible. Only those applicants who have achieved a minimum average of 85% on the courses required for admission shall be considered. Selection criteria include academic performance, geographic distribution, and extracurricular activity. The Atlantic Scholars Awards are tenable for a maximum of four years. Applications must be submitted via DalOnline by March 15.

**Dean's Scholarship (international and residence fees):** \$39,200 (approximate value based on international differential fees and shared residence accommodation). Awarded to the top international applicant.

**Harrison McCain Scholarships:** \$16,000 (\$4,000 per year renewable for three years for degree programs, \$4,000 per year renewable for one year for diploma programs). The scholarships will be awarded to students entering the first year of any program of study and are based on academic performance, financial need, leadership, and initiative to fund own education. These scholarships are open to Canadian high school graduates who are maintaining an 80% average in their senior year of high school. Application is due March 1. See [dal.ca/scholarships](http://dal.ca/scholarships) for an application form.

**Residence Scholarships:** Scholarships valued at the shared-room rate of residence, each renewable for one year, will be awarded to outstanding applicants.

**Guaranteed Entrance Scholarships:** students who have applied to the Faculty of Agriculture by March 15 will automatically be considered for the following entrance scholarships based on academic performance:

High School Average	Value
90% or higher	\$2,500
85% to 89.9%	\$1,500
80% to 84.9%	\$1,000

**IB Scholarships:** IB diploma students who have applied to the Faculty of Agriculture by March 15 will automatically be considered for the following entrance scholarships based on academic performance:

Predicted Points	Value
36 or higher	\$2,500 renewable for a maximum of \$10,000
33-35	\$2,500 renewable at \$1,500 for a maximum of \$7,000
30-32	\$2,500
28-29	\$1,500
24-27	\$1,000

For more information on deadlines and application procedures, please visit [www.moneymatters.dal.ca](http://www.moneymatters.dal.ca)

**Doug Bailey Memorial Bursary**

Farmers Dairy awards bursary to a student in any year of any program who is a family member of a Farmers Dairy shareholder or employee. The bursary is named in memory of Doug Bailey, a former President and CEO. Selection criteria include leadership, extracurricular and community activities, financial need, and a sound academic record.

**Bible Hill Garden Club Bursary**

The Bible Hill Garden Club Bursary is awarded to a student from the Truro area. Preference is given to students in at least the second year of study in Horticulture, preferably a landscape program. Selection criteria include academic performance and financial need.

**Vera Caldwell Memorial Bursary**

The bursary will be awarded annually, based on financial need, to a deserving international student. The bursary is in memory of Vera Caldwell who was a teacher and life-long learner who actively supported education for students from developing nations. Students who are paying international student fees in all programs of study are eligible. Preference will be given to students studying full time in undergraduate or diploma programs.

**Canard Conservation Undergraduate Scholarship**

The Canard Conservation Undergraduate Scholarship is awarded to a first- or second-year BSc (Agr.) student from Kings County, NS, who is planning course and/or project work related to the environment. Selection criteria include: academic performance, demonstrated interest in the environment, and career plans.

**Randy Carey Memorial Scholarship**

A scholarship is awarded annually to a student from the Annapolis Valley entering a degree/diploma program who is interested in pursuing a career in agriculture. As a memorial to Randy Carey, who worked for Stirling Fruit Farms for much of his career, preference will be given to students with interests in the Horticulture industry. Selection criteria include farm background, career plans, and academic performance.

**Chicken Producers of Nova Scotia Bursary**

The Chicken Producers of Nova Scotia Bursary is awarded to an NS student in the Faculty of Agriculture who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this bursary more than once.

**George & Lottie Cook Memorial Scholarship**

The George and Lottie Cook Memorial Scholarship is awarded annually to an NS student enrolled in the first or second year of any program of study. Selection criteria include academic performance and financial need.

### ***Co-op Atlantic Agricultural Scholarships***

Two scholarships are available to first-year students who are Atlantic Canadian residents: one scholarship to a technology program student and one scholarship to a degree program student. To be eligible, an applicant must be a member or full-time employee of a member co-operative of Co-op Atlantic; or have a parent/guardian who is a member or employee of a member co-operative of Co-op Atlantic. Selection criteria include academic performance, extracurricular and community involvement, work experience and the applicant's exposure to or understanding of agricultural co-operatives.

### ***Dairy Farmers of New Brunswick Scholarship***

Dairy Farmers of NB offer a scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact nbmilk@nbmilk.com or (506) 432-4330. Application deadline is June 15.

### ***Dairy Farmers of New Brunswick Memorial Scholarship***

Dairy Farmers of NB offer a scholarship to an NB resident who is enrolled in the first year of a recognized post-secondary agricultural program. For further information and application form, contact nbmilk@nbmilk.com or (506) 432-4330. Application deadline is June 15.

### ***Dykeview Farms Ltd. Scholarship***

Dykeview Farms Ltd. offers a scholarship to NS students entering any program of study. Preference will be given to students from Kings County (with additional preference to students from Northeast Kings Education Centre) planning to study in a program directly related to farming and production agriculture (e.g. Diploma in Business Management - Agriculture; or BSc (Agr.) in Agricultural Business, Plant Science, or Integrated Environmental Management). Selection is based on financial need, community involvement, and academic performance. For further information and application form contact Dykeview Farms Limited, 1225 Middle Dyke Road, Centerville, NS B0P 1J0, phone (902) 582-3822.

### ***Fall River Garden Club Bursary***

The Fall River Garden Club Bursary will be presented to a student entering a program of study relating to horticulture. Selection will be based on financial need and career plans. Preference will be given to students from the Fall River, Waverley, Wellington, Oakfield, Lakeview or Windsor Junction, NS, areas. Other NS students will also be considered.

### ***T. Beverly Milligan Gale Memorial Bursary***

The T. Beverly Milligan Gale Memorial Bursary was established in 2010 in recognition of her spirit and love of the gardens at the Dalhousie Faculty of Agriculture. This bursary will go annually to a student who is enrolled in any year of study and who has shown an interest in horticulture, particularly landscape design and care. Preference will be given to mature students. Selection criteria will include career plans, academic performance, and financial need.

### ***Hants County Exhibition Scholarship***

This scholarship is sponsored by the Windsor Agricultural Society. Applicants must be residents of Hants County, NS, entering any year of any program at a recognized agricultural or veterinary college who have aspirations of working in the agricultural industry. Selection criteria include academic performance, extracurricular activities, part-time employment, and career plans. Application forms with copies of transcripts must be received by August 26 at: Windsor Agricultural Society, PO Box 368, Windsor, NS B0N 2T0.

### ***Kings County Federation of Agriculture Bursary***

The Kings County Federation of Agriculture Bursary is awarded to a resident of Kings County, NS, entering the first year of full-time study at the Dalhousie Faculty of Agriculture. Selection criteria include financial need, academic performance, and contribution to and participation in the agricultural industry of Kings County. The selection will be made by the donor. Applications are available from and must be received by June 1 at: Kings County Federation of Agriculture, PO Box 14, Kentville, NS B4N 3V9.

### ***Kings Mutual Insurance Scholarship***

In memory of Past Directors, the Kings Mutual Insurance Company awards three scholarships to NS students, in any year of any program of study. At least one of the scholarships annually will be available to a student in a technology program of study. Selection criteria include financial need, academic performance, and demonstrated interest in a career in the Agri-food industry as reflected by summer employment and/or extracurricular involvement. This scholarship is not available to students receiving other scholarships totaling \$1,000 or more.

### ***C. C. MacDougall Memorial Scholarship***

This scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics, or Veterinary Medicine. To be eligible, a student must have been a 4-H member from Kings County, NB, or have parents who raise or breed Guernseys anywhere in New Brunswick.

### ***Bill Mathewson Memorial Bursary***

In memory of Professor Emeritus Bill Mathewson, who taught Animal Science course work for twenty years at Dalhousie Faculty of Agriculture, formerly NSAC, a bursary will be awarded annually to a student in any year of any program to assist in furthering their education through study/travel to another country. This bursary has been made available through generous contributions from students, Faculty of Agriculture colleagues, and friends and associates at church and within the agricultural industry, in particular the sheep breeders of Nova Scotia. In applying for consideration, students will submit a proposal to participate in such activities as a study semester abroad toward their degree/diploma, a specialized training course, an internship or a development project, or to attend a conference to make a presentation.

### ***Donald McInnes Award***

This scholarship is sponsored by Pictou Mutual Insurance Company to commemorate the 40 years of service Donald McInnes provided on their Board of Directors. This award is open to all students in the Faculty of Agriculture. Selection criteria include commitment to and involvement in the community and leadership provided in student activities, academic performance and financial need. A student may not be selected for this award more than once.

### ***Newfoundland and Labrador Federation of Agriculture Scholarships***

To encourage local students to pursue careers in the Agri-products industry, the Newfoundland and Labrador Federation of Agriculture awards two scholarships to Newfoundland and Labrador students (preferably one from the East Coast and one from the West Coast). Selection criteria include academic performance and financial need.

### ***Newfoundland and Labrador Provincial Scholarships***

The Newfoundland and Labrador government, through its Department of Education, awards three scholarships to Newfoundland and Labrador students entering a degree program. Selection will be based on academic performance.

### ***Faculty of Agriculture Alumni Family Bursaries***

Several bursaries will be awarded annually to family members of Faculty of Agriculture alumni studying at the Faculty of Agriculture. Selection criteria include academic performance and financial need. Students in any year of any program are eligible.

### ***Faculty of Agriculture Bursaries***

The Faculty of Agriculture provides bursaries to students in need of financial assistance. To be eligible students must be in good standing, must have spent at least one term of full-time study at Dalhousie Faculty of Agriculture, and must be registered on a full-time basis for both semesters of the academic year. Faculty of Agriculture students in need of financial assistance can apply for a Faculty of Agriculture bursary on an ongoing basis throughout the academic year.

### ***Faculty of Agriculture Renewable Entrance Scholarships to Cobequid Educational Centre Students***

The Faculty of Agriculture Entrance Scholarship for students from the Cobequid Educational Centre will cover the full first-year tuition for the technical or degree program which the student has chosen. The top three students graduating from CEC and entering the first year of study in any program will be awarded a Faculty of Agriculture Entrance Scholarship for CEC Students. Selection will be based on the average from the required courses (minimum average of 80%) combined with the school's final rankings.

Recipients of Dalhousie Faculty of Agriculture Renewable Entrance Scholarships for CEC students are not eligible to receive another guaranteed entrance scholarships.

### ***Faculty of Agriculture Scholarships for International Students***

Scholarships will be awarded to selected international students enrolled in or entering the full year in a program of study at the Faculty of Agriculture. All students paying the international tuition differential are eligible for consideration. The awards are merit-based.

**Nova Scotia Federation of Agriculture 100th Anniversary Scholarship**

In recognition of the 100th anniversary of the Nova Scotia Federation of Agriculture in 1995, a scholarship is awarded to a Nova Scotia student with a farm background who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible.

**Nova Scotia Power Inc. University Scholarship**

The Nova Scotia Power Inc. university entrance scholarship is awarded to a Nova Scotia student entering on a full-time basis the first year of an undergraduate degree program. The scholarship is tenable for up to four years. Selection criteria include academic performance and demonstrated involvement in extracurricular activities.

**Nova Scotia Technology Education Association Scholarship**

The Nova Scotia Technology Education Association is pleased to offer two entrance scholarships to the Bachelor of Technology in Applied Science program. For further information and application form visit [nstea.nstu.ca](http://nstea.nstu.ca)

**Nova Scotia Veterinary Medical Association Bursary**

The Nova Scotia Veterinary Medical Association Bursary will be awarded to a Nova Scotia student in the first year of the Veterinary Technology program. Selection criteria include financial need and academic performance.

**Ted Rose Memorial Bursary**

The Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm. Selection criteria include a documented commitment to animal welfare, financial need, and sound academic performance.

**George James Schaller Memorial Scholarship**

In memory of George J. Schaller, Class of 1948, a scholarship will be awarded to an outstanding student studying in any year of any program who has not qualified for other significant awards.

**Anna Helvig Schousboe Memorial Scholarship**

This scholarship is awarded to a resident from Kings County, NB, working towards a degree or diploma in Agriculture, Veterinary Medicine, or Home Economics at a post-secondary institution.

**B. S. Sodhi Memorial Bursary**

The B. S. Sodhi Memorial Bursary is awarded annually to a student paying international student fees. Students in all programs of study are eligible. Preference will be given to students in undergraduate and technical programs and selection will be based on financial need.

**Sport Leadership Award**

The Sport Leadership Award recognizes a high school varsity athlete enrolling full-time in a program of study and planning on participating in a sport at the varsity level in the Faculty of Agriculture. Recipients of other major entrance scholarships are not eligible. Selection criteria include financial need, sport skills, and leadership. The Sport Leadership Award may be renewable for one year, upon recommendation of the student's varsity coach.

**Stewiacke Valley Garden Club Bursary**

The Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia. Selection criteria include involvement in extracurricular and community affairs, financial need, and academic performance.

**F. W. Walsh Memorial Scholarship**

In memory of the outstanding agriculturalist F. Waldo Walsh, this scholarship is awarded to a student who is admitted to the first year of a degree program. Selection is based primarily on academic performance. Financial need and participation in school and community affairs will also be considered.

**C. The Canadian Merit Scholarship Foundation**

The program was started in 1989 to identify, recognize and reward well-rounded students who combine distinguished talents with character, leadership potential and a commitment to the community. In 1991 Dalhousie University became a participating member of those institutions where the CMSF National Awards (Loran Awards) are tenable.

The scholarship consists of \$8,000 (paid by the Foundation) and tuition (paid by the University), renewable to a limit of four years of undergraduate study. The scholarships are renewable on the achievement of a Grade Point Average of 3.30

(B+), plus continued evidence of the qualities of character, leadership and service upon which the award is based.

Participating high schools may each nominate one student and forward the requisite documents to the CMSF Area Committee to be received by the November deadline.

Details of the process and criteria are available from your high school. Nominees must meet the admission requirements for Dalhousie University and the program which the student wishes to undertake.

**III. In-Class Scholarships**

All undergraduate Dalhousie students not on a renewable scholarship, in eligible programs in the participating faculties, who have completed a full class load (a minimum of 30 credit hours) over two terms within the previous academic year and achieved a minimum SGPA of 3.70 will be considered eligible for in-class scholarships. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms to be eligible. Students completing two work terms within one academic year must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to be considered eligible. In those cases where students have taken more than 30 credit hours, assessment is based on all classes taken within the term(s) being assessed. Transfer credits do not count towards the credit hours reviewed for scholarship assessment.

Students registered in the Faculty of Agriculture should refer to (page 616) for in-class scholarship opportunities.

Students registered in Graduate Studies, Medicine, Dentistry (with the exception of Diploma in Dental Hygiene Students), or Law are ineligible to receive in-class scholarships or renew an existing scholarship.

Applicable to those scholarships administered by the Registrar's Office. Selection criteria may be different for those administered by individual faculties/schools/departments.

Please note that the automatic consideration is either for the renewal of an entrance renewable scholarship or for a one-year scholarship, but not both.

**A. General - All Faculties****Golden Key International Honour Society**

Dalhousie University has a participating chapter in the Golden Key International Society. The Golden Key Society is an academic honours society that recognizes the academic achievements of students. The society provides scholarships and leadership opportunities and career assistance to its student members. Students are invited to become members based upon criteria established by the society. For information please refer to the society's website: [www.GoldenKey.GSU.EDU](http://www.GoldenKey.GSU.EDU).

**Governors' Awards**

In 1992, to mark the 125th anniversary of the founding of the Dalhousie Student Union, and to recognize students' contribution to the quality and vitality of the University, the Board of Governors established a set of awards to be known as Governors' Awards.

Up to four awards can be made each year, for exceptional contributions or leadership in the extracurricular realm in such areas as university governance, development of a sense of community on campus, community service, internationalizing the campus, visual or performing arts, minority access or athletics.

To be eligible, students must have a minimum cumulative GPA of 3.0 or equivalent. Otherwise, all students - undergraduate, graduate, or professional faculty students, full or part-time, at any stage in their academic career, may be considered for an award.

Information is available on the Student Services website [studentservices.dal.ca](http://studentservices.dal.ca) each year starting in December. Nominations are due early to late January

**The following scholarships are administered by the Registrar's Office. Unless otherwise noted, no application required.**

**Aramark Leadership Award**

This award provides scholarships for returning undergraduate students at Dalhousie registered in the Faculty of Architecture & Planning, Arts & Social Sciences, Computer Science, Engineering, Health Professions, Management, Science, or the Diploma of Dental Hygiene who show leadership in the community. Eligible students must have been full-time Dalhousie students during the previous academic year, be in good academic standing, and demonstrate involvement and dedication to the Dalhousie community through leadership, citizenship and/or sportsmanship. Applications are available through DalOnline - Student Awards and Financial Aid section.

**Marjorie Ball Scholarship**

Marjorie Ball was born in Newfoundland in 1912 and attended Dalhousie University in 1934. This scholarship was established by a bequest from the Estate of Marjorie Ball to the Dalhousie University Alumni Association.

**Beta Sigma Phi Scholarship to Dalhousie University**

The Halifax-Dartmouth City Council of Beta Sigma Phi sorority has established an endowment of \$2,000 whereby the annual income will provide for a scholarship to a student studying towards a degree full-time or part-time at either the undergraduate or graduate level. The successful candidate will be selected from the following categories, listed preferentially: first, an active Member; secondly, a daughter, son or husband of an active Member; and thirdly, some other student chosen by the Registrar's Office. Applications are available from sorority members. Due date July 31.

**The Jotham Blanchard Scholarship**

The New Glasgow Literary and Historical Society in 1912 established this scholarship in memory of Jotham Blanchard. The scholarship will be awarded to a student of meritorious standing who is in the second year of an undergraduate program.

**The Isabel Brown Scholarship**

The scholarship was endowed in 1982 by the Brown family under the auspices of the Women's Division of the Dalhousie Alumni Association. The interest provides an annual scholarship ordinarily to a student who is entering the final undergraduate year.

**Minnie F. Burbidge Scholarships**

In her Will the late Minnie F. Burbidge bequeathed the residue of her Estate to Dalhousie University. In 1945 the sum of \$16,000 was endowed to provide undergraduate, usually in-class, scholarships.

**George H. Campbell Memorial Scholarship**

In 1917 Mr. and Mrs. G.S. Campbell established the George H. Campbell Scholarship Fund to provide annual scholarships in memory of their late son, George Henderson Campbell.

**Dharma Master Chuk Mor Memorial Scholarship**

T.Y. Lung established this endowed scholarship in memory of Buddhist monk Chuk Mor (1913-2002) who was an educator and artist well known in the fields of Chinese poetry, Chinese painting and Chinese calligraphy. This in-class scholarship is available to a full-time undergraduate student who has attained a high standard of academic achievement and who has completed a minimum of one year in any undergraduate degree program.

**Marjorie F. Ellis Scholarships**

The late Marjorie F. Ellis bequeathed one-half of the remainder of her estate to Dalhousie University for scholarships to worthy students.

**W.L. Harper Scholarship**

From the Estate of Arta Falconer Harper a bequest to the University makes possible the provision of a number of awards from the annual income.

**Dr. Mary G. Hickman Memorial Scholarship**

Under the will of Theresa Rose Hickman, this scholarship fund was established in memory of her late daughter Mary Hickman, MD '72. This fund provides scholarships in recognition of academic excellence at Dalhousie.

**Mr. & Mrs. H.D. Howitt Scholarship**

This scholarship was created to promote education and advancement of youth, to encourage achievement at the university level in both academic endeavors and in contributions to community life. The funds provide one or more annual scholarships to students enrolled full time in undergraduate degree programs. Awarded based upon academic excellence.

**Killam American Scholarship Fund**

This endowment, established in memory of Isaac Walton Killam, provides in-class scholarships to citizens of the United States who are enrolled in undergraduate programs at Dalhousie University.

**The W. Andrew MacKay Alumni Scholarship**

The Dalhousie Alumni Association established an annual scholarship in honour of Dr. W. A. MacKay, a former president of the University. The scholarships are available to students who have demonstrated high academic standing (GPA of at least 3.30) and who have shown an excellence in qualities of leadership, citizenship and sportsmanship. The award is tenable for one year in the faculties of Arts & Social Sciences, Architecture & Planning, Computer Science, Engineering, Health Professions, Management and Science. Candidates are considered by nomination by their Department or School in the fall of each year.

**Mackenzie Trust Scholarships**

According to the Estate of Thomas George Mackenzie a Trust Fund was established for Archibald F. Mackenzie, and later bequeathed to Dalhousie University to provide in-class scholarships.

**Nicholas M. MacLeod Memorial Scholarship**

Under the will of Eva Eileen McLeod, this scholarship fund was established in memory of her late husband, Dalhousie alumnus Nicholas W. McLeod, for the purpose of funding entrance and in-class scholarships for students in the Faculty of Arts & Social Sciences.

**The Hector McInnes Memorial Scholarships**

In December 1937, an anonymous donor gave the University \$50,000 for undergraduate scholarships as a memorial to the late Mr. Hector McInnes.

**Malcom Mosher Memorial Scholarship**

Under the will of Marial Laura Morse Mosher, this scholarship fund was established in the memory of her father, to award scholarships to students studying in the areas of Social Sciences, Business and Economics.

**The George B. Robertson Phi Delta Theta Fraternity Scholarship**

An endowment has been established to provide a scholarship to a student in full-time study in the third or subsequent years at Dalhousie University. The selection of the awardee is based on several factors including a minimum Grade Point Average of 3.00, demonstrated activity in the Halifax Chapter and financial need. Application required.

**The Lois J. Robertson Scholarships**

The University received a generous bequest from the Estate of the late Lois Robertson. This fund has been allocated to undergraduate scholarships.

**Joseph Duncan Stewart Scholarships**

A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships.

**The John L. and Glenna E. Towse Scholarships**

A bequest to the University provides for a number of in-class scholarships.

**The Women's Division of the Dalhousie Alumni Association Scholarships**

Open to a returning female student demonstrating academic excellence.

**Sir William Young Scholarship**

This fund was left by Sir William Young for the purpose of endowing scholarships.

**B. Faculty of Agriculture**

For more information on deadlines and application procedures, please visit [www.money matters.dal.ca](http://www.money matters.dal.ca)

**Acadian Seaplants Limited Scholarship**

A scholarship will be presented annually to a senior undergraduate or graduate Aquaculture student, preferably undertaking course or project work related to aspects of marine bioproducts or the plant sciences.

**Animal Nutrition Association of Canada (Atlantic Division) Scholarship**

The Atlantic Division of the Animal Nutrition Association of Canada awards a scholarship to a student who is entering the third year of the B.Sc. (Agr.) program. Selection criteria include academic performance and leadership in student and community affairs.

**Ralph H. Armstrong Memorial Bursary**

The family and friends of the late Ralph Hallett Armstrong award a memorial bursary to a student who has successfully completed at least one year of study at the Faculty of Agriculture. Former and current 4-H club members from Kings and Annapolis counties in Nova Scotia are eligible to apply. Selection is based on financial need and involvement in school, athletic, and/or community organizations.

**Atlantic Council of Crop Life Canada Bursaries**

Two bursaries will be awarded to technical students from agricultural backgrounds who plan to pursue employment in the agricultural sector following studies. Preference will be given to students whose backgrounds, course and project work, summer employment, and career plans reflect an interest in the crop protection industry.

**Atlantic Farm Mechanization Show Scholarship**

The Atlantic Farm Mechanization Show awards a scholarship to a student from the Atlantic Provinces who has completed at least one year of study at the Dalhousie Faculty of Agriculture in the Engineering Diploma program or the Integrated Environmental Management major of the BSc (Agr.) program. The awarding of the scholarship is based on academic performance and the demonstrated potential for a career in the area of mechanization of agriculture.

**Atlantic Land Improvement Contractors Association Bursary**

The Atlantic Land Improvement Contractors Association Bursary is available to Engineering degree students with a demonstrated ability and interest in soil, water, and land improvement.

**Paul Babineau Memorial Scholarship**

The Atlantic Farm Mechanization Show awards a scholarship in memory of Paul Babineau, a long-time director on their board, to a student from the Atlantic Provinces who has completed at least one year of study at the Faculty of Agriculture in the Engineering Diploma program or the Integrated Environmental Management major of the BSc (Agr.) program. The awarding of the scholarship is based on academic performance and the demonstrated potential for a career in the area of mechanization of agriculture.

**Atlantic Poultry Conference Scholarship**

A scholarship will be awarded to a student whose course and project work reflect an interest in poultry. Preference will be given to senior students in the BSc (Agr.) program who have either completed or have plans to complete a poultry-related research project in RESM 4002/4003.

**The Honourable Dr. Roger S. Bacon Scholarship in Agriculture**

In keeping with the Honourable Dr. Roger S. Bacon's lifetime interest in and service to agriculture, a scholarship will be awarded annually to a Nova Scotia student entering the final year of any program who has plans to pursue a long-term career in agriculture. Dr. Bacon was a dairy farmer and blueberry producer from Cumberland County, NS, who served as an MLA for his constituency; during his political career he was a well-respected and long-serving Minister of Agriculture and, for a time, Premier of NS. Selection criteria include career plans, academic performance, and financial need.

**Doug Bailey Memorial Bursary**

Farmers Dairy awards a bursary to a student in any year of any program who is a family member of a Farmers Dairy shareholder or employee. The bursary is named in memory of Doug Bailey, a former President and CEO. Selection criteria include leadership, extracurricular and community activities, financial need, and a sound academic record.

**A. B. Banks Memorial Scholarship**

The A. B. Banks Memorial Scholarship is awarded to the second-year BSc (Agr.) student enrolled in the Animal Science option with the highest average from the first year of study.

**Dr. Kim Beck Memorial Scholarship**

The Turkey Farmers of New Brunswick Marketing Board awards a scholarship in memory of Dr. Kim Beck. The scholarship will be awarded annually to a New Brunswick resident who is enrolled in a post-secondary agricultural program. Selection will be based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry.

**Bible Hill Garden Club Bursary**

The Bible Hill Garden Club Bursary is awarded to a student from the Truro area. Preference is given to students in at least the second year of study in Horticulture,

preferably a landscape program. Selection criteria include academic performance and financial need.

**David W. Brown Memorial Bursaries**

The ACA Co-operative Limited/Eden Valley Farms Limited awards two bursaries to students from either Nova Scotia or Prince Edward Island entering a second year of study. Selection criteria include academic performance, financial need, and interest in farming and the poultry industry in particular.

**Edward Brown Memorial Bursary**

A bursary will be awarded annually to an undergraduate student in financial need studying full-time at the Faculty of Agriculture.

**Dr. John Bubar Scholarships**

Two scholarships will be awarded annually to New Brunswick students in the BSc (Agr.) program in the second or third year of study who are not recipients of other significant scholarships.

**Merle Cail Memorial Scholarship**

The Merle Cail Memorial Scholarship is awarded annually to a senior undergraduate student or a graduate student from Atlantic Canada whose course or project work reflect an interest in organic agriculture. Selection criteria include academic performance, financial need, and commitment to organic agriculture.

**Vera Caldwell Memorial Bursary**

The bursary will be awarded annually, based on financial need, to a deserving international student. The bursary is in memory of Vera Caldwell who was a teacher and life-long learner who actively supported education for students from developing nations. Students who are paying international student fees in all programs of study are eligible. Preference will be given to students studying full time in undergraduate or diploma programs.

**Canard Conservation Undergraduate Scholarship**

The Canard Conservation Undergraduate Scholarship is awarded to a first- or second-year BSc (Agr.) student from Kings County, NS, who is planning course and/or project work related to the environment. Selection criteria include academic performance, interest in the environment, and career plans.

**James Card Memorial Bursaries**

Several bursaries, in memory of James Card, will be awarded annually to students in financial need. Preference will be given to international students.

**Gerard Chiasson Memorial Bursary**

The Inverness County Federation of Agriculture awards a bursary to a Cape Breton student who has completed at least one year of study. The bursary is awarded in memory of Gerard Chiasson, a past president of the NS Federation of Agriculture who was also active in other local farm and community organizations. Selection criteria include financial need, involvement in community activities, and leadership experience. In the event that two or more students possess otherwise equal qualifications, preference will be given to a student from Inverness County.

**Chartwells Scholarships**

Compass Group Canada awards scholarships annually to outstanding students with high academic performance who have not qualified for other significant awards. Preference will be given to students living in residence.

**Chicken Producers of Nova Scotia Bursary**

The Chicken Producers of Nova Scotia bursary is awarded to a Nova Scotia student who shows a demonstrated interest in pursuing the study of poultry. Preference will be given to applicants with a farming background. Students in all years of study are eligible. A student may not receive this bursary more than once.

**Class of 1950 Bursary Fund**

The Class of 1950, in commemoration of their fiftieth anniversary of graduation from the Dalhousie Faculty of Agriculture (formerly NSAC), provides an annual bursary to assist students in financial need.

**Donald E. Clark Memorial Scholarship**

In memory of Donald E. Clark, former Professor and Head of the Engineering Department, one or more scholarships are awarded to final-year students in the Engineering Department. Selection criteria include academic performance, aptitude and interest in the engineering field.

**Cobequid Dog Club Scholarship**

The Cobequid Dog Club awards a scholarship to a Nova Scotia student who is admitted to a veterinary college.

**Colonel Charles Coll Memorial Scholarship**

In memory of Colonel Charles H. Coll, a scholarship is awarded to a student in the final year of an Animal Science option. Selection criteria include academic performance, involvement and interest in poultry, and achievement in and contribution to 4-H.

**Charles M. Collins Memorial Scholarship**

A scholarship will be awarded annually to a student who is enrolled in a program of study relating to Horticulture. The scholarship is in memory of Charles McKittrick Collins, who taught Horticulture at the Dalhousie Faculty of Agriculture, formerly NSAC, for twenty-five years and supervised the landscaping and maintenance of the campus grounds, and for whom the Collins Horticultural Building was named in 1975. Preference will be given to students studying in the Bachelor of Technology program in Environmental Landscape Horticulture who have not qualified for other significant awards.

**George & Lottie Cook Memorial Scholarship**

The George and Lottie Cook Memorial Scholarship is awarded annually to a Nova Scotia student enrolled in the first or second year of any program of study. Selection criteria include academic performance and financial need.

**The Renée Covill Scholarships**

Five scholarships will be awarded to Atlantic Canadian students studying in a program leading to a Bachelor's degree with a major in Plant Science (Agronomy or Horticulture) or Environmental Landscape Horticulture. Preference will be given to students who have course and project work that reflect a commitment to environmental issues and career interests in growing plants (including farming). Selection criteria are academic performance, financial need, and career plans.

**Dorothy Creelman Cox Memorial Scholarship**

A scholarship is awarded to a female student entering the second year of the BSc (Agr.) program in the Plant Science option. Selection is based on academic performance in the first year.

**Dr. Kenneth Cox Memorial Scholarship**

In memory of Dr. Kenneth Cox, former Principal, this scholarship is awarded to a student entering the final year of the BSc (Agr.) program.

**Dairy Farmers of New Brunswick Scholarship**

Dairy Farmers of NB offer a \$750 scholarship to an NB resident who is enrolled in any year of an approved technician or technology diploma or certificate program relating to agriculture. For further information and application form, contact nbmilk@nbmilk.com or (506) 432-4330. Application deadline is June 15.

**Dairy Farmers of Nova Scotia Bursary**

The Dairy Farmers of Nova Scotia awards a \$1,000 bursary to an NS student doing project or course work related to the dairy industry. Students in the third or fourth year of the BSc (Agr.) program (any option) or graduate students undertaking course or project work related to the dairy industry are eligible. Selection criteria include proven interest and experience in the dairy industry, the potential beneficial impact of study on the Nova Scotia dairy industry, and academic performance. Applications must be submitted to the Dalhousie Faculty of Agriculture Awards Office no later than September 24.

**Dartmouth Horticultural Society Bursary**

The Dartmouth Horticultural Society sponsors a bursary for a student who has completed at least one year of study in a Plant-related program of study. Selection criteria include financial need and academic performance. Preference will be given to students in the following priority: HRM; Nova Scotia; and elsewhere in Canada.

**Eastern Veterinary Technicians Association Bursary**

The Eastern Veterinary Technicians Association awards a bursary and a stethoscope to a second-year student in the Veterinary Technology program. This bursary will be awarded to the student who best demonstrates proficiency in veterinary clinical skills during the first year and externship at the Atlantic Veterinary College.

**Ernest L. Eaton Memorial Scholarship**

One scholarship will be awarded to a student entering the third year of the BSc (Agr.) program who has not received scholarships of higher value. Selection is based on the student's average in the second year of the program.

**Egg Producers of Newfoundland & Labrador Scholarship**

The Egg Producers Association of Newfoundland and Labrador awards a scholarship to a Newfoundland student entering the third or fourth year of the BSc (Agr.) program.

**Farm Credit Canada Scholarship**

The Atlantic Region of Farm Credit Canada awards a scholarship to a Canadian student entering the fourth or final year of the BSc (Agr.) program in the Agricultural Economics or Agricultural Business option. Selection criteria include academic performance, interest and competence in farm management and in the subjects associated with the economics of the farm business, interest and involvement in university and home community as demonstrated by participation in organizations and affairs, farm experience, and financial need.

**Farm Focus Bursary**

The Farm Focus Bursary is awarded to a student entering the second year of study. Selection is based on financial need and academic performance.

**Ena Fenton Memorial Scholarship**

Sponsored by the Bedford Horticultural Society, the Ena Fenton Memorial Scholarship is awarded to a second-year student from the Bedford-Sackville-Waverley district of Nova Scotia, studying Horticulture or Environmental Studies. In years when there is no suitable candidate from Bedford, Sackville, or Waverley, qualifies for the scholarship, consideration will be given to other students from HRM (excluding Halifax and Dartmouth). Selection will be based on financial need, career plans, and academic performance.

**T. Beverly Milligan Gale Memorial Bursary**

The T. Beverly Milligan Gale Memorial Bursary was established in 2010 in recognition of her spirit and love of the gardens at the Dalhousie Faculty of Agriculture. This bursary will go annually to a student who is enrolled in any year of study and who has shown an interest in horticulture, particularly landscape design and care. Preference will be given to mature students. Selection criteria will include career plans, academic performance, and financial need.

**Kevin Grant Memorial Scholarships**

In memory of Kevin Grant, who graduated from the Dalhousie Faculty of Agriculture (formerly NSAC) in 1975 with an Animal Science Technician diploma, two scholarships will be awarded to final-year students in a two-year technology program of study need. Selection criteria include academic performance, leadership and contribution to campus life, career plans, and financial need. Preference will be given to students enrolled on a full-time basis.

**Green Diamond Equipment/John Deere Atlantic Agriculture Bursary**

Green Diamond Equipment/John Deere sponsors a bursary for a student from Atlantic Canada studying at the Faculty of Agriculture with a life goal of working in agriculture. Students who have completed at least one year of study in any program are eligible. The main selection criterion will be financial need.

**Chuck Harrison Memorial Bursary**

In memory of Chuck Harrison, Class of 1970, a bursary is awarded to a final-year Diploma in Business Management student. Selection criteria include leadership and involvement in athletic and other activities at the Faculty of Agriculture, and a sound academic record.

**Bonnie R. Haviland Memorial Bursary**

The Bonnie R. Haviland Memorial Bursary will be awarded annually to a student entering the second year of the Veterinary Technology program whose performance in the program has demonstrated a caring attitude and a commitment to others. This bursary cannot be awarded with others of greater value.

**John Higgins Memorial Bursary**

In memory of John Higgins, who taught at the Dalhousie Faculty of Agriculture (formerly NSAC), the Atlantic Association of Landscape Designers sponsor a prize and a free association membership to a student entering the third year of the Bachelor of Technology in Environmental Landscape Horticulture program who has excelled in the area of landscape design during the Diploma in Managed Landscapes Technology program. Selection criteria include academic performance and skill and interest in landscape design.

**Isgonish Chapter Silver Anniversary IODE Renewable Bursary**

The Isgonish Chapter Silver Anniversary IODE Bursary is awarded to a student entering the third year of the B.Sc.(Agr.) program in the Aquaculture major. Selection criteria include financial need, academic performance, and participation and leadership in extracurricular activities. One bursary will be presented, either

to a third-year student or to a fourth-year student as a renewal to the previous year's recipient.

#### ***Dr. Bill Jenkins Memorial Scholarship***

In memory of Dr. Bill Jenkins, Class of 1938, who served as Principal of the former NSAC from 1964 to 1972, a scholarship will be awarded to a second- or third-year undergraduate student in any of the Business degree programs. Selection criteria will include overall academic performance, leadership record and financial need.

#### ***Randy and Gladys Keddy Memorial Bursary***

The Randy and Gladys Keddy Memorial Bursary will be awarded to a second-year technical or third-year degree student whose background, program of study, course and project work, and summer employment show a genuine interest in working in the agricultural industry following graduation. Selection criteria include career goals, academic performance, and financial need. Students receiving other scholarships valued at \$1,000 or greater are not eligible. Given similar or equal qualifications of candidates, preference will be given to students from the Annapolis Valley of Nova Scotia with farm backgrounds.

#### ***Kings Mutual Insurance Scholarships***

In memory of Past Directors, the Kings Mutual Insurance Company awards three scholarships to Nova Scotia students, in any year of any program of study. At least one scholarship will be awarded to a technical student. Selection criteria include financial need, academic performance, and demonstrated interest in a career in the Agri-food industry as reflected by summer employment and/or extracurricular involvement. This scholarship is not available to students receiving other scholarships totaling \$1,000 or more.

#### ***P. Max Kuhn Scholarship***

The P. Max Kuhn Scholarship will be awarded annually to a Nova Scotia student with a farm background who is enrolled full-time in any year of any program and whose course and project work and summer employment demonstrate an interest in working in the agriculture industry after graduation. Selection criteria include financial need and academic performance. Preference will be given to students who have completed at least one year of study. Students may receive this scholarship only once.

#### ***Landscape Nova Scotia Bursary***

Landscape Nova Scotia awards a bursary to a Nova Scotia student studying in a landscape-related program. Selection criteria include academic performance and financial need.

#### ***Lunenburg/Queens Federation of Agriculture Scholarship***

The Lunenburg/Queens Federation of Agriculture Scholarship is awarded to a student from Lunenburg or Queens County in Nova Scotia who has completed at least one year of study at the Faculty of Agriculture. Selection criteria include academic performance, farm or agricultural background or experience, and plans to pursue a career in the agricultural industry.

#### ***C. C. MacDougall Memorial Scholarship***

This scholarship is awarded to a student pursuing a degree or diploma in Agriculture, Home Economics or Veterinary Medicine. To be eligible, a student must have been a 4-H member from Kings County, NB, or have parents who raise or breed Guernseys anywhere in New Brunswick.

#### ***Dr. Allan and Barbara MacKay Scholarship***

The Dr. Allan and Barbara MacKay scholarship is awarded annually to a student admitted to the Atlantic Veterinary College. In recognition of his long association with the practice of veterinary medicine in NS and with the Faculty of Agriculture, Dr. J. Allan MacKay, Class of 1943, has established this scholarship.

#### ***Nova Scotia Power Inc. Centennial Scholarships***

Nova Scotia Power sponsors five scholarships with a two-year tenure to Engineering students at the Associated Universities in Nova Scotia who will be entering the third year of the B.Eng. program at Dalhousie University in September. Selection criteria include academic performance, personal attributes and involvement in extra-curricular activities.

#### ***Angus and Tena MacLellan Memorial Scholarship***

This scholarship is awarded to a student entering the third or fourth year of a degree program.

#### ***Paul R. MacPhail PEI Potato Industry Scholarship***

In memory of Paul R. MacPhail, the PEI Potato Board offers a scholarship to Prince Edward Island students studying at the graduate or undergraduate level of

an agricultural degree program at any recognized Canadian agricultural institution, or to students in a postgraduate degree program at a recognized Canadian university, carrying out research projects related to potato production and utilization (including all disciplines, e.g. biotechnology, pathology, entomology, etc.). Undergraduate students must demonstrate through course work, summer employment and/or home farm background an interest in working in the potato industry. Selection criteria for potential undergraduate scholarships include academic performance, extracurricular activities, and employment history. Graduate students will be considered on the basis of academic performance and relevance of the project to the improvement of the PEI potato industry.

#### ***Dr. Herbert F. MacRae Memorial Dalhousie Faculty of Agriculture/Macdonald College Exchange Award***

This award is designed to support student and staff exchange between the Dalhousie Faculty of Agriculture and Macdonald College of McGill University. Students considering a semester or a year of study at Macdonald College as part of the requirements of a program of study at the Faculty of Agriculture, or students transferring to a program of study at Macdonald College are eligible.

#### ***Edith Main Memorial Bursary***

In memory of Edith Main, the auxiliary to the Nova Scotia Veterinary Medical Association awards a bursary to a Nova Scotia student who has been admitted to a Canadian veterinary college.

#### ***Joseph E. Mapplebeck Memorial Bursaries***

In honour of Joseph E. Mapplebeck, who farmed for 50 years in Kings County, NS, and in recognition of his appreciation for the importance of a good education, family members have established two bursaries to be made available to technology students. Eligible candidates will have successfully completed the first year of a technology program and demonstrate financial need. At least one of the two awards will be made available annually to a student in the Plant Science Technology program.

#### ***Donald McInnes Award***

This scholarship is sponsored by Pictou Mutual Insurance Company to commemorate the 40 years of service Donald McInnes provided on their Board of Directors. This award is open to all students. Selection criteria include commitment to and involvement in the community and leadership provided in student activities, academic performance and financial need. A student may not be selected for this award more than once.

#### ***H. A. L. McLaughlin Memorial Scholarship***

In memory of H. A. L. McLaughlin, who taught horticulture at the Dalhousie Faculty of Agriculture, formerly NSAC, from 1953 to 1971, this scholarship is awarded to a student in Horticulture.

#### ***Bill Mathewson Memorial Bursary***

In memory of Professor Emeritus Bill Mathewson, who taught Animal Science course work for twenty years at Dalhousie Faculty of Agriculture, formerly NSAC, a bursary will be awarded annually to a student in any year of any program to assist in furthering their education through study/travel to another country. This bursary has been made available through generous contributions from students, Faculty of Agriculture colleagues, and friends and associates at church and within the agricultural industry, in particular the sheep breeders of Nova Scotia. In applying for consideration, students will submit a proposal to participate in such activities as a study semester abroad toward their Faculty of Agriculture degree/diploma, a specialized training course, an internship or a development project, or to attend a conference to make a presentation.

#### ***Karen Meek Memorial Scholarship***

In memory of Karen Meek, who studied Agricultural Business at the Dalhousie Faculty of Agriculture (formerly NSAC), 1980-82, a scholarship will be awarded annually to a student who has completed at least one year in the BSc (Agr.) Environmental Science program. Selection criteria include academic performance, financial need, and contribution to campus life. This scholarship is not available to students receiving other scholarships totaling \$1,000 or more.

#### ***John Miller Memorial Bursary***

The bursary is in memory of John Miller, who served as Secretary/Manager of Pork Nova Scotia from 1983 to 1997. The John Miller Memorial Bursary is awarded to a Nova Scotia student, in any year of any program at any agricultural university/college in Canada, whose course and project work and career plans reflect an interest in the hog industry or whose application shows interest, understanding, and appreciation for Nova Scotia's hog industry.

**John Reginald (Reg) Moore Memorial Bursaries**

In memory of J. R. (Reg) Moore, who graduated from Dalhousie Faculty of Agriculture (formerly NSAC) in 1947 and retired from a career with Farm Credit Canada, two bursaries will be awarded to students from Colchester County, Nova Scotia, who have completed at least one year of study in any program. Selection will be based on financial need and sound academic performance. Preference will be given to students studying full-time.

**A.C. Neish Memorial Trust Scholarship**

The A.C. Neish Memorial Trust awards a scholarship to a student entering the final year of the BSc (Agr.) program. Selection criteria include outstanding academic performance and qualities of leadership as indicated by participation and achievement in both academic and non-academic activities.

**New Brunswick Institute of Agrologists Scholarship**

The New Brunswick Institute of Agrologists awards a \$1,000 scholarship to an NB student entering the third year of a degree program in Agriculture at a recognized Canadian institution. Students should indicate their enrollment in one of the following Agrology disciplines: Agricultural Economics and Farm Management; Plant, Animal, Soil and Environmental Sciences; Pest Management; or Agrometeorology. Selection criteria include academic performance, participation in extracurricular activities, and financial need. Applications must be submitted no later than October 1 to either the Dalhousie Faculty of Agriculture Awards Office or Registrar, New Brunswick Institute of Agrologists, PO Box 3479, Station B, Fredericton, NB E3A 5H2 [www.nbagrologists.nb.ca](http://www.nbagrologists.nb.ca)

**Faculty of Agriculture Bursaries**

The Faculty of Agriculture provides bursaries to students in need of financial assistance. To be eligible students must be in good standing, must have spent at least one term of full-time study at Dalhousie Faculty of Agriculture, and must be registered on a full-time basis for both semesters of the academic year. Faculty of Agriculture students in need of financial assistance can apply for a Faculty of Agriculture bursary on an ongoing basis throughout the academic year.

**Dalhousie Faculty of Agriculture Athletic Bursaries**

Five awards will be presented to returning student athletes in the Faculty of Agriculture. Selection criteria include financial need, involvement in/member of a university varsity team, recommendation from a coach, and satisfactory academic performance.

**Dalhousie Faculty of Agriculture Alumni Family Bursaries**

Several bursaries will be awarded annually to family members of Dalhousie Faculty of Agriculture Alumni studying at the Faculty of Agriculture. Selection criteria include academic performance and financial need. Students in any year of any program are eligible. Application deadline is September 20. Apply online at <http://Dalhousie Faculty of Agriculture.ca/alumni/alumnifamilybursary/apply/>.

**Nova Scotia Animal Breeders Co-operative Limited Scholarship**

The Nova Scotia Animal Breeders Co-op awards two scholarships (one to a degree student and one to a technology student) to returning Nova Scotia students studying in an animal-related program whose home farm backgrounds, course and project work, and career interests reflect an interest in the dairy or beef industry. Students must not have received other major scholarships.

**Nova Scotia Egg Producers Association Scholarships**

Two scholarships will be awarded annually by the Nova Scotia Egg Producers Association to students enrolled in the Animal Science major of the B.Sc.(Agr.) program whose course and project work show an interest in poultry. At least one scholarship will be awarded to a final-year student conducting a poultry-related research project in RESM4002 and RESM4003.

**Nova Scotia Federation of Agriculture Bursaries**

The Nova Scotia Federation of Agriculture awards two bursaries to second-year NS students with farm or 4-H backgrounds (one technology and one degree). Selection criteria include financial need and academic performance.

**Nova Scotia Federation of Agriculture 100th Anniversary Scholarship**

In recognition of the 100th anniversary of the Nova Scotia Federation of Agriculture in 1995, a scholarship is awarded to a Nova Scotia student with a farm background, who has a solid academic record and financial need. Students studying in any year of any program who have not qualified for other significant awards are eligible.

**Nova Scotia 4-H Council Award**

A scholarship will be awarded to a second-year Nova Scotia student in any program. Selection criteria include academic performance, financial need, and participation in 4-H club activities.

**Nova Scotia Institute of Agrologists Scholarships**

The NSIA awards two scholarships to Nova Scotia students. One will be awarded to a student entering the third year of the BSc (Agr.) program; the second, recognizing the current anniversary of NSIA, to a student entering the second, third or fourth year of the BSc (Agr.) program. In awarding these scholarships, the selection committee will take into consideration academic performance, participation in school and community activities, and degree of interest in studying agrology and pursuing a career in the Agri-food industry. Financial need may also be considered. A student may receive this award only once.

**NSERC Undergraduate Student Research Awards (USRA)**

The Natural Sciences and Engineering Research Council of Canada sponsors a program of summer research awards to encourage outstanding undergraduate students to undertake graduate studies and pursue research careers in the natural sciences and engineering disciplines. The purpose of the award is to supplement the salary of a summer student who is working on an individual research project designed in conjunction with a faculty member who holds an NSERC research grant. The award is for a minimum of sixteen weeks on a full-time basis in research and development in natural sciences and engineering. To be eligible, students must be Canadian citizens or permanent residents, registered full-time as undergraduate students in a natural science or engineering discipline, and have completed at least one year of study with a minimum 70% cumulative average. Applications must be submitted to the Office of Graduate Studies and Research by February 22.

**Nutreco Canada Inc. Scholarship**

Nutreco Canada Inc. awards a scholarship to a final-year BSc (Agr.) student in the Animal Science option. Selection criteria include academic performance, leadership qualities, and participation in student & community affairs.

**Don Palfrey Memorial Scholarship**

A scholarship will be awarded annually in recognition of the many years of service and contributions to weed science in Nova Scotia by Don Palfrey. The scholarship will be awarded to an undergraduate student who is carrying out a senior-year research project in the area of pest management, with preference given to students involved in weed science, either through academic work or summer employment.

**Robert Parent Memorial Scholarship**

In memory of Robert Parent, Class of 1921, this scholarship will be awarded to an outstanding student studying in any year of any program who has not qualified for other significant awards.

**Passionate Plants Person Award**

The Passionate Plants Person Award, established by the Atlantic Rhododendron & Horticulture Society, is awarded to a second-year Nova Scotia student in the Diploma in Managed Landscapes program. The recipient will also receive a one-year membership with ARHS. Preference is given to students whose passion for plants is infectious and who will most impact the way we regard and understand plants in both public and private environments. Other criteria include communication and leadership abilities and financial need.

**Pork Nova Scotia Prize**

Pork Nova Scotia sponsors a prize to a Nova Scotia student with an interest and/or background in swine production. Selection criteria include demonstrated interest in the swine industry (through course or project work), academic performance, and financial need.

**Prajna Athletic Bursaries**

Two awards (one to a male student and one to a female student) will be presented to returning students. These awards were established by Dr. Andre Lirette, a former Professor in the former Animal Science Department. To be eligible, students must maintain sound academic performance and have been involved in either a varsity team or an intramural/recreational team at the Faculty of Agriculture. Selection criteria include financial need, leadership, and contribution to student life.

**Prince Edward Island Dairy Youth Trust Scholarship**

This scholarship is available to the son or daughter of a PEI resident currently pursuing their studies at a post secondary level. Preference will be given to



undergraduate students with an interest in animal science, animal genetics and/or business. Applicants must have successfully completed at least the first year of a university/college program. A student may receive the award once. Application deadline is June 1. Applications are available online at [www.holsteinpei.com](http://www.holsteinpei.com)

#### **Prince Edward Island Institute of Agrologists Scholarship**

The PEI Institute of Agrologists scholarship is awarded annually to a student from Prince Edward Island in the third or fourth year of the BSc (Agr.) program who is intending a career as a professional agrologist. This scholarship is awarded based on academic performance, university and community involvement, and financial need.

#### **Stuart Rath Junior 'A' Bearcat Hockey Education Award Fund**

Awards are available to members of the Truro Junior 'A' Bearcats Hockey Club. Selection is based on academic performance, community service, and the recommendation of the team coaches. Students in second semester and second year must successfully complete the course work in the previous semester to be eligible for continued support.

#### **Cliff & Grace Retson Memorial Bursary**

In memory of Cliff & Grace Retson, Class of 1934, a bursary is awarded to an international student. Students in any year of any program are eligible. Selection criteria include financial need, academic performance, and interest in and involvement in multi-cultural activities on campus.

#### **Ira L. Rhodenizer Memorial Scholarship**

In memory of Ira L. Rhodenizer, the Nova Scotia Federation of Agriculture awards a scholarship to a second-year Nova Scotia student. Selection criteria include academic performance, involvement in student affairs, and participation in the 4-H program.

#### **Dr. Robert G. Rix Bursary**

This bursary is awarded to a deserving student in financial need.

#### **J. Arnold Roberts Memorial Scholarship**

In memory of J. Arnold Roberts, a scholarship is awarded to an outstanding student from Atlantic Canada studying in any year of any program who has not received scholarships of greater value.

#### **Roop Realities Ltd. Renewable Scholarship**

The renewable Roop Realities Ltd. Scholarship is awarded to a student studying in a landscape-related program who has completed at least one year of study in either the technology or the B.Tech program. The scholarship is open to all students, either full-time or part-time.

#### **Howard W. Roper Memorial Bursary**

In memory of Howard W. Roper, a bursary will be awarded annually by the Nova Scotia/Newfoundland Branch of Holstein Canada to a student who has completed at least one year in any program. Preference will be given to second-year students in the Diploma in Business Management-Dairy Farming. Residents of Nova Scotia or Newfoundland and Labrador who are members of Holstein Canada or members of families with Holstein Canada membership are eligible to apply. Selection criteria include involvement in the dairy industry, extracurricular involvement, involvement in farm organizations, financial need, and satisfactory academic performance in the first year of study.

#### **Ted Rose Memorial Bursary**

The Ted Rose Memorial Bursary will be awarded to a student who plans to operate a livestock farm. Selection criteria include financial need, sound academic performance, and a commitment to animal welfare.

#### **Rotary Club of Truro International Student Bursary**

This bursary will be awarded annually by the Rotary Club of Truro to an International student. All undergraduate and graduate students paying the International tuition differential are eligible for consideration. Preference will be given to students registered in a full-time program of study, with additional preference given to students studying for the full year. Special consideration will be given to students from a developing country who plan to return and apply their education from the Faculty of Agriculture. Selection criteria include financial need and potential impact of the bursary on the student's lifestyle while at school.

#### **Rick Russell Memorial Bursary**

In memory of Rick Russell, a long-time woodsmen coach and Animal Science Technician graduate, a bursary will be awarded to a woodsmen athlete in the second, third, or fourth year of study in any Faculty of Agriculture program. The

selection criteria include financial need, involvement and leadership in the woodsmen program, and satisfactory academic performance.

#### **Anna Helvig Schousboe Memorial Scholarship**

This scholarship is awarded to a resident from Kings County, New Brunswick, working towards a degree or diploma in Agriculture, Veterinary Medicine, or Home Economics at a post-secondary institution.

#### **George James Schaller Memorial Scholarship**

In memory of George J. Schaller, Class of 1948, a scholarship will be awarded to an outstanding student studying in any year of any program who has not qualified for other significant awards.

#### **Gail Semple Memorial Bursary**

In memory of Gail Semple (née Johnson, Truro, NS), who had a strong commitment to animal welfare, a bursary is awarded annually to a student planning to study veterinary medicine who has completed at least one year of study at the Dalhousie Faculty of Agriculture or who was admitted to the Atlantic Veterinary College in the current year. To be eligible, applicants must be either currently or previously registered in the Pre-Veterinary program at the Faculty of Agriculture or currently in the first year of the DVM program at AVC. Selection criteria include financial need, academic performance, and a background with experience in animal welfare.

#### **George W. Slipp Memorial Scholarship**

The Chicken Farmers of New Brunswick Marketing Board awards an annual scholarship in memory of Mr. George W. Slipp, to a New Brunswick resident who is enrolled in a post-secondary agricultural program. Selection is based on academic achievement, financial need, involvement in agriculture, and interest in the poultry or food industry. Applications are available at the Dalhousie Faculty of Agriculture Awards Office, or by email from [nbchicken@rogers.com](mailto:nbchicken@rogers.com). Applications must be submitted to the Dalhousie Faculty of Agriculture Awards Office no later than October 15.

#### **G. G. Smeltzer Memorial Bursary**

The G. G. Smeltzer Memorial Bursary is awarded to a third- or fourth-year student from Atlantic Canada in the BSc (Agr.) program majoring in Plant Science (Agronomy specialization). Selection criteria include a genuine interest in the area of field crops reflected through course and project work and summer employment, and financial need.

#### **B. S. Sodhi Memorial Bursary**

The B. S. Sodhi Memorial Bursary is awarded annually to a student paying international student fees. Students in all programs of study are eligible. Preference will be given to students in undergraduate and technology programs and will be based on financial need.

#### **St. Margaret's Bay Garden Club Bursary**

The St. Margaret's Bay Garden Club Bursary is awarded to a student entering or studying Horticulture at the Faculty of Agriculture from the St. Margaret's Bay area. To be eligible students must live in the region that extends from West Dover to Bayswater, NS, and inland from the Bay a distance of 15 km. The application process for the bursary consists of a letter from the applicant with following criteria: name and home address, confirmation of enrollment form indicating program of study, reference letters, reason for choosing Horticultural program, how you plan to use your training in Horticulture and why you deserve the bursary. Send application letter to: P. R. Warm an, Chair of the Bursary Committee, SMBGC, 268 Boutilliers Pt Road, Boutilliers Pt, NS B3Z 1V1. Application deadline is March 15.

#### **Jennifer Hayes Starratt Scholarship**

In honour of Jennifer Hayes Starratt, who graduated in 1996 with a BSc (Agr.) degree majoring in Environmental Biology, a scholarship will be awarded to a female student entering the final year of the BSc (Agr.) program. Selection will be based on academic performance, leadership, and involvement in campus activities. The scholarship will not be awarded to a student receiving other significant scholarships. Preference will be given to students who have completed the first three years at the Faculty of Agriculture.

#### **Stewiacke Valley Garden Club Bursary**

The Stewiacke Valley Garden Club Bursary is awarded to a student from the Stewiacke Valley area of Nova Scotia. Selection criteria include involvement in extracurricular and community affairs, financial need, and academic performance.

**William Swetnam Memorial Scholarship**

In memory of William Swetnam, Class of 1956, the William Swetnam Memorial Scholarship will be awarded to an Atlantic Canada student studying in the third or fourth year of the BSc (Agr.) program who has displayed leadership qualities during their program.

**Syngenta Pest Management Awards**

Syngenta awards two scholarships to students whose course and project work reflect an interest in the Maritime potato industry. Selection criteria include academic performance, interest in the Maritime potato industry, and potato farm experience or background.

**Bruce Trenholm/Atlantic 1986 Scholarship**

A prize is awarded to an Atlantic Canada student entering the final year of any program who has a Holstein farm or 4-H (Holstein calf project) background. Selection criteria include academic performance and career goals.

**Vice-President's Scholarship**

This scholarship is awarded to a final-year BSc (Agr.) student.

**Florence (Pineo) Ward Memorial Awards**

In memory of Florence (Pineo) Ward, three to five bursaries will be awarded annually to students in financial need. Recipients will have completed at least one year of study in a technology, B.Tech, or BSc (Agr.) program. Preference will be given to students with sound academic background who have enrolled for technical training to enhance their employability but whose financial constraints are limiting their ability to continue their studies. In the event that two or more candidates otherwise qualify equally, preference will be given to students from Boutilier's Point, Halifax County, or Advocate, Cumberland County, Nova Scotia.

**Raymond Webber Memorial Scholarship**

Landscape Nova Scotia and the New Brunswick Horticultural Association jointly award a scholarship to the most promising second-year Diploma in Managed Landscapes Technology student. Selection criteria include academic performance and practical work skills.

**George B. Whalen Memorial Scholarship**

The New Brunswick Milk Marketing Board awards a scholarship in memory of George B. Whalen, who dedicated a great part of his life to the promotion of a more viable dairy industry in New Brunswick. Applicants must be New Brunswick residents enrolled in the second, third, or fourth year of study in a university degree program relating to agriculture or the dairy industry. Areas of study may include, but are not necessarily limited to, plant and animal science, agricultural engineering, veterinary medicine, agricultural economics, etc. Selection will be based on financial need, academic performance, and involvement in community and future plans. Applications including an essay (300-500 words), two letters of recommendation, and a transcript of marks must be submitted no later than June 15 to: Scholarship Committee, NB Milk Marketing Board, Box 490, Sussex, NB E0E 1P0. [www.nb4h.com/ewelcome/escholarship/escholarship.htm](http://www.nb4h.com/ewelcome/escholarship/escholarship.htm)

**Michael Whidden Memorial Award**

The Michael Whidden Memorial Award will be awarded to a student who has provided leadership on the Woodsmen Team, and has maintained a sound academic performance.

**Eric Williams Memorial Scholarships**

Two scholarships sponsored by the Dairy Farmers of Newfoundland and Labrador are awarded to students from Newfoundland and Labrador who have completed at least one year of study in any program (generally, one to a technology student and one to a degree student). Selection will be based on academic performance.

**Wild Blueberry Producers Association of Nova Scotia Scholarship**

The Wild Blueberry Producers Association of Nova Scotia awards a scholarship to a Plant Science student entering the third or fourth year of the BSc (Agr.) program. Selection will be based on academic performance and financial need. Preference will be given to someone with interest and experience in small fruits.

**Young Farmer's Bursary**

A bursary sponsored by the PEI Young Farmers' Association will be presented to a student returning for their last year of studies in either the degree program or another multiple-year program. To be eligible, a student must be a Prince Edward Island resident and must be returning to the farm after completion of their program.

**C. Faculty of Architecture and Planning**

These scholarships are administered by the academic unit. Please consult the Faculty of Architecture and Planning.

**75th Anniversary Alumni Family Scholarship**

The Engineering Alumni Association established this award in 1995 in recognition of the 75th anniversary of the Association. This award of \$1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning or Engineering. The recipient must be a family member (son/daughter, spouse, grandchild, niece/nephew, brother/sister) of an engineering graduate and have achieved satisfactory academic standing. Application required. Deadline: September 30.

**Aliant Ambassador Scholarship**

A one-year scholarship open to students registered in Year 4 or 5 of an Architecture, Planning, Computer Science, or Engineering program. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

**The Harry Kitz Fund**

Interest from the fund, established in memory of the late Harry Kitz, is used to support one or more students in the Faculty of Architecture and Planning to undertake supervised planning, design, or construction activities on public property in the Halifax Regional Municipality. Proposals are evaluated on their imagination, practicality, and potential value to the community. Application Deadline: May 31.

**Mazankowski Foundation Entrance Scholarship**

This foundation has established a \$1,100 award for a student who fulfils or is expected to fulfil the minimum entrance requirements for admission to the BEDS program in Architecture or Year 3 of the Bachelor of Computer Science or Engineering. The Scholarship is awarded on the basis of the applicant's academic record at the Associated University or Dalhousie University. The Committee may also weigh financial and other considerations in reaching a decision. Application required. Deadline: April 30.

**The Medjuck Architectural Design Scholarship**

The Centennial Group of Companies Limited established this award of \$1,500 for a student with an outstanding record in Design in Year 3 of the BEDS program. The successful applicant is selected at the year-end review in April and receives the scholarship at the start of the next academic term, in May. Application not required.

**The Newfoundland and Labrador Association of Architects William J. Ryan Memorial Scholarship**

The Newfoundland Association of Architects established this \$2,000 award to an Architecture student entering Year 4 of the BEDS program who was born in Newfoundland or had lived in the province for a minimum of three years prior to entrance into a university in the province, and who demonstrates: (a) the best design ability through assigned projects; (b) practicality of design and ability to show that he or she can make the solution workable; (c) aptitude for a particular or several aspects, other than design of architecture and the built environment; (d) an indication of the development of professional ability; (e) highest overall marks in classes of study other than design; (f) financial need, if candidate is equal to others in at least three of the other criteria. Application not required.

**Newfoundland and Labrador Alumni Undergraduate Scholarship**

This award of \$1,000 was established by the St. John's Newfoundland Alumni Branch to a student registered in Year 4 in Architecture, Planning, Computer Science, or Engineering. The scholarship is awarded primarily on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. The selection committee may weigh other considerations in reaching a decision. Deadline: September 30.

**President's Associates Entrance Scholarship**

The President's Associates Entrance Scholarship has been made possible by members of the Associate's Program (1994-96). The members represent business, industry, friends, faculty and university administrators. This award of \$1,000 is made annually to a student in undergraduate Architecture, Planning, Computer Science or Engineering on the basis of their academic record. Candidates must have fulfilled or expect to fulfil the entrance requirements for the BEDS program in Architecture or for entrance into third year of Engineering or Computer Science. Deadline: April 30.

### ***The Shaw Group Environmental Design Scholarship***

In the 1960s, The Shaw Group Limited established an award for the student in the School of Architecture who has derived the greatest benefit from Design classes during Year 3 of the Bachelor of Environmental Design Studies program. To be eligible for this \$2,500 award, a student must have been born in, and have a permanent residence in, Atlantic Canada. The recipient is selected at the year-end review in April and receives the scholarship at the start of the next academic term in May. No application is required.

## **D. Faculty of Arts and Social Sciences**

The following scholarships are administered by the Registrar's Office. Applications are not required.

### ***Nathan T. Ashkins Scholarship***

Each year the Nathan T. Ashkins fund provides for a scholarship to a student in Arts & Science who is beyond first year.

### ***Robert Bruce Scholarship***

Robert Bruce of Banlieue, Quebec, made a bequest to the University to establish bursaries and scholarships.

### ***Dalhousie Club of New York Scholarships***

A fund for this purpose, established by the Dalhousie Club of New York and placed in the hands of the Board of Governors of the University, endows several scholarships open to students in the Faculties of Arts & Social Sciences or Science.

### ***Dr. Frederick J. Gaudet Scholarship***

Dr. Gaudet bequeathed to the University in 1978 a sum of money to provide for a scholarship in Arts.

### ***The Hyman I. Jacobson Scholarship***

Under the will of the late Hyman Isaac Jacobson a bequest of \$5,000 was given to the University to benefit the Humanities and Social Sciences.

### ***The Khaki University Scholarships***

From the Khaki University of Canada and the Young Men's Christian Association Memorial Scholarship Fund, the trustees of Khaki University made a gift to Dalhousie University in 1921 of \$6,500 to endow scholarships.

### ***NewPage-Port Hawkesbury Mill Undergraduate Scholarship in Arts or Science***

On the occasion of their 25th Anniversary Stora Enso have established an endowment to provide one undergraduate scholarship open to students in Arts & Science. To be eligible, candidates must reside in Nova Scotia, have demonstrated academic excellence and have exhibited a desire to learn. Students will be considered after one year at Dalhousie.

### ***The Commodore Bruce S. Oland Scholarship***

An annual scholarship that alternates between the Department of English and the Faculty of Management. Awarded automatically by the Registrar's Office.

### ***The Alan Pollok Scholarship***

This scholarship of \$1,000 was established by The Scots North British Society in Halifax in memory of the Rev. Dr. Alan Pollok. The awardee will be a second year student in the College of Arts and Science at Dalhousie University.

### ***The Charles and Cecelia Zwerling Scholarship***

This fund was created by members of the Zwerling family in memory of Mr. and Mrs. Charles Zwerling for a scholarship beyond first year.

**The following scholarships are administered by the academic unit. Please consult the departments directly for details.**

## **1. English**

### ***Allan and Lura Bevan Memorial Scholarship***

Colleagues and friends of the late Allan Bevan have established a memorial scholarship of about \$1,000 a year. The scholarship is to be awarded, in the first place, to a student in the Major program (that is a student entering the third or fourth year of the Majors program). In the absence of a suitable candidate from the Major program, the scholarship will be awarded to a student entering the third or fourth year of the Honours program. If there are no suitable candidates from English, the selection will be made by the Department of Music.

### ***The Archibald MacMechan Chapter/IODE Scholarship in English***

This scholarship was presented to Dalhousie University as an endowment by the Archibald MacMechan Chapter, Imperial Order Daughters of the Empire. It is awarded to a Dalhousie student of special ability in English, and preference is given to graduates who intended to study for a Master's degree in English. Students registered at King's are not eligible.

## **2. French**

### ***The French Department Scholarship***

This scholarship is awarded to students entering the third or fourth year of a major or an Honours program in French, and who have spent a year studying in France. The award is based on meritorious performance in French classes. At the discretion of the Department, the scholarship may also be awarded to outstanding students who have not studied abroad. This award is conferred at a Departmental ceremony in the spring.

### ***The Ruth Murray Scholarship for French Studies***

An endowment fund has been established to honour the memory of Mrs. Ruth Murray by providing scholarships to students in the Department of French. These scholarships are open to undergraduate students who are academically sound and who are participating in a departmental program abroad.

At the discretion of the Department, the fund may also be used to provide financial assistance for on-campus students majoring in French who have demonstrated above average academic ability. This award is conferred at a Departmental ceremony in the spring.

## **3. History**

### ***The Atlantic World History Scholarship***

Before air travel and telecommunications, oceans were of prime importance in connecting the communities that encircled them. This scholarship was created by Dalhousie History graduate Susan Buggey to encourage excellent senior students whose undergraduate studies have focused on the history of the social, cultural, economic and political worlds that have been connected across and around the Atlantic Ocean. Recipients will have taken one or both of the History Department's second year survey classes in Atlantic World history, as well as two or more other classes with substantial Atlantic World content. This scholarship is awarded annually.

### ***The Gilbert F. Jennex History Scholarship***

This annual in-class scholarship created by Dalhousie History graduate Gilbert F. Jennex will be awarded to an undergraduate student in their 3rd year of study with a concentration in History. Preference will be given to students whose area of interest is in exploring the field of the Atlantic World and its relationship to the study of Atlantic Canada.

### ***Laurel V. King Scholarship***

This scholarship, in the amount of \$1,000, has been established by Laurel V. King to reward students who have been particularly motivated by the discipline of History to achieve academic excellence. The scholarship is awarded annually to a student in the second or subsequent year of her degree program. The recipient will have History as a subject of concentration, will have shown good academic ability, and will have shown an excellent level of performance in History classes. Preference is given to a female student.

### ***The George E. Wilson Memorial Scholarship***

On the occasion of the 50th anniversary of the graduation of the Class of 1930, a representative announced the establishment of a scholarship fund. The scholarships, in honour of Professor Wilson, are open to students in history.

## **4. Music**

### ***The Bornoff/Garamie Memorial String Scholarship***

A scholarship will be given to a student who is entering the third or fourth year of a music degree program who in the opinion of the Department has demonstrated outstanding talent as a string player. The fund was established to honour the memory of two significant string music teachers, George Bornoff and Arthur Garamie.

### ***Evanov Radio Group Scholarship***

A \$1,000 scholarship will be awarded to a student in the third or fourth year of the Bachelor of Music concentration in Composition. To be eligible, students must be

Canadian citizens or landed immigrants and must demonstrate artistic excellence and a commitment to performing arts in the community.

#### ***Honourable L.D. Currie Memorial Scholarship in Music***

The Scots North British Society established this scholarship in memory of the Honourable Lauchlin D. Currie in 1971. An annual scholarship in the amount of \$1,000 is available to a Canadian in any year of Music. The successful student will have demonstrated competence in vocal or instrumental performance.

#### ***The Elvira Gonnella Scholarship in Voice***

Upon the recommendation of the voice faculty, this scholarship may be awarded to a voice student entering his/her third or fourth year of a music degree program, who has demonstrated an outstanding level of performance and exceptional potential for a professional singing career. This scholarship is given by former faculty member Elvira Gonnella, in gratitude for having had the privilege of teaching in the Dalhousie Music Department.

#### ***Halifax Ladies Musical Club Scholarship***

The Halifax Ladies Musical Club sponsors an annual scholarship of \$700 for a first year student in Music at Dalhousie.

#### ***Elisabeth Meyerhof Scholarship in Music***

An annual scholarship of at least \$1,500 awarded to the student entering the fourth year of his/her undergraduate degree program in Music who has achieved a high average in the music classes of the first three years and who in the opinion of the Department has demonstrated exceptional promise for a professional career as an instrumentalist in the performance of classical music (including early music). If no instrumentalist qualifies, a voice student would be considered.

#### ***Dr. David Peters Music Scholarship***

This scholarship in music has been established by Dr. David Peters. It will be awarded annually to a student in an undergraduate Music degree program who, in the opinion of the Department, demonstrates outstanding achievement in organ, piano, harpsichord or keyboard performance, choral music or other church performance. The minimum value of the scholarship is \$400.

#### ***Richardson Family Performing Arts Scholarship - Music***

A scholarship of \$2,000 will be awarded to a Music student, based on nominations from Music Department faculty members. Students must be in their third or fourth year of a Music degree program and have a GPA of 2.70 in first and second year music classes. Students must demonstrate artistic excellence and a commitment to performing arts in the community. Preference will be given to students in financial need, as determined by the Music Department's Scholarship Committee. This award was established by Bill Richardson, a graduate of Dalhousie's Law School, and by Colin and Debbie Richardson, both of whom worked in support of numerous music student productions in the Dalhousie Arts Centre.

#### ***The Effie May Ross Scholarships in Music***

An endowment fund, established under the will of the late Effie May Ross, supports scholarships to outstanding vocalists or instrumentalists with 'advanced standing' in degree programs in Music. Scholarships range in value and number and are awarded at the discretion of the Music Department's Scholarship Committee.

#### ***Dr. Don Wright Scholarship in Music***

The Dr. Don Wright Scholarship fund will provide annual scholarships to outstanding full-time students in the third or fourth year of an undergraduate music degree who demonstrate a consistently high level of achievement in all of their studies. Priority will be given to students concentrating in Music instruction or students who demonstrate a particular interest in/intend to continue their studies in the area of music education

#### ***Tietje Zonneveld Scholarship in Piano Studies***

Tietje Zonneveld taught, performed music, coached and collaborated at the Department of Music from 1976 until her retirement in 2004. An annual scholarship of \$1,000 will be awarded to an undergraduate student entering third year of the Bachelor of Music (Piano Performance) program or equivalent. If there are no eligible third year students in a given year, consideration may be given to a fourth year student. The scholarship may also be split into two awards. The recipient will have a cumulative GPA of 3.70 or higher.

## **5. Spanish and Latin American Studies**

#### ***Sonia Jones Scholarship***

The Sonia Jones Scholarship provides assistance to advanced students of Spanish and Latin American Studies (honours or major) who are studying abroad in programs approved by the University.

## **6. Theatre**

#### ***Costume Studies Scholarship***

Awarded annually to a full-time student in the final year of the Costume Studies Program.

#### ***Lyn Gratwick-Theatre Arts Guild Scholarship in Costume Studies***

To honour the memory of Lyn Gratwick, this scholarship is awarded annually to one (or more) students in the Department of Theatre's Costume Studies Program who has (have) demonstrated artistic excellence in costume-making for theatre and who intend(s) to pursue a career as a costumer for a professional theatre company or an historic site.

#### ***Richardson Family Performing Arts Scholarships - Theatre***

Four scholarships awarded annually to Theatre students entering their third or fourth year of Theatre study, one in each of the following areas: Acting, Costume Studies, Scenography and Technical Scenography, and Theatre Studies. Eligible students must demonstrate artistic excellence and have career aspirations focused on performing arts.

#### ***Christine Zinck Scholarships***

Four scholarships awarded annually in each of the four streams of Theatre: Acting, Costume Studies, Scenography and Technical Scenography and Theatre Studies.

## **E. Faculty of Computer Science**

Unless otherwise noted, selection for these awards is carried out by the Faculty of Engineering Scholarships & Awards Committee, augmented by representatives from Architecture and Computer Science. Application forms are available from the offices of the appropriate dean.

#### ***75<sup>th</sup> Anniversary Alumni Family Scholarship***

The Engineering Alumni Association established this award in 1995 in recognition of the 75<sup>th</sup> anniversary of the Association. This award of \$1,750 is open to students registered in the penultimate or final year of Computer Science, Architecture and Planning, or Engineering. The recipient must be a family member (son/daughter, spouse, grandchild, niece/nephew, brother/sister) of an engineering graduate and have achieved satisfactory academic standing. Application required. Deadline: September 30.

#### ***Aliant Ambassador Scholarship***

A one-year scholarship open to students registered in Year 4 or 5 of an Architecture and Planning, Computer Science, or Engineering program. Application required. Deadline: September 30.

#### ***Mazankowski Foundation Entrance Scholarship***

This foundation has established a \$1,100 award for a student who fulfils or is expected to fulfil the minimum entrance requirements for admission to the BEDS program in Architecture and Planning, or Year 3 of the Bachelor of Computer Science or Engineering. The Scholarship is awarded on the basis of the applicant's academic record at the Associated University or Dalhousie University. The Committee may also weigh financial and other consideration in reaching a decision. Application required. Deadline: April 30.

#### ***Bruce and Dorothy Rosetti Engineering Entrance Scholarships***

The Bruce and Dorothy Rosetti bequest provides five \$1,000 scholarships to candidates who have fulfilled or expect to fulfil the minimum entrance requirements for Year 3 in an undergraduate program in the Faculties of Engineering & Computer Science. Application required. Deadline: April 30.

#### ***Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships***

The Bruce and Dorothy Rosetti bequest provides five \$1,000 awards to undergraduate students in the penultimate year of a program in Engineering or Computer Science. Selection is made on the basis of the students' academic record at Dalhousie. Application required. Deadline: September 30.

### ***The Walter Gardner Stanfield Entrance Scholarships***

The Walter Gardner Stanfield bequest provides two awards valued at \$1,000 each to students who fulfil or are expected to fulfil the minimum (entrance) requirements into third year of Engineering or Computer Science. Application required. Deadline: April 30.

### ***Newfoundland and Labrador Alumni Undergraduate Scholarship***

This award of \$1,000 was established by the St. John's Newfoundland Alumni Branch for a student registered in the second year in Architecture and Planning, Computer Science, or Engineering. The scholarship is awarded primarily on the basis of the applicant's academic record (first class mandatory) with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. The selection committee may weigh other factors in reaching a decision. Application required. Deadline: September 30.

### ***President's Associates (Entrance) Scholarship***

The President's Associates Entrance Scholarship has been made possible by members of the Associate's Program (1994-96). The members represent business, industry, friends, faculty and university administrators. This award of \$1,000 is made annually to a student in undergraduate Architecture and Planning, Computer Science or Engineering on the basis of the academic record. Candidates must have fulfilled or expect to fulfil the entrance requirements for an undergraduate degree program in Architecture or for entrance into third year of Engineering or Computer Science. Application required. Deadline: April 30.

## **F. Faculty of Engineering**

Unless otherwise noted, applicants for these awards apply to the Scholarships and Awards Committee of the Faculty of Engineering. Students applying from Associated Universities for Third Year may obtain application forms from the Director/Head/Chair of Engineering at the Associated University or through the Office of the Associate Dean of Engineering at Dalhousie. Application deadlines for awards in this section are stated.

### ***75<sup>th</sup> Anniversary Alumni Family Scholarship***

The Engineering Alumni Association established this award in 1995 in recognition of the 75<sup>th</sup> anniversary of the Association. This award of \$1,750 is open to students registered in the penultimate or final undergraduate year of Computer Science, Architecture, Planning, or Engineering. The recipient must be a family member (son/daughter, spouse, grandchild, niece/nephew, brother/sister) of an engineering graduate and have achieved satisfactory academic standing. Application required. Deadline: September 30.

### ***Hira and Kamal Ahuja Engineering Scholarship***

This scholarship valued at \$1,000, has been established in memory of Mrs. Kamal Ahuja, by her family. Prof. Ahuja was Director of Continuing Education at the Technical University of Nova Scotia. Candidates must have fulfilled the requirements for entry to Year 3 of any Engineering program at the time of application. The award is based on a combination of grades and demonstrated financial need. Preference will be given to students who can demonstrate a significant cultural contribution to the East India community. Interested students must complete an application form and a covering letter, explaining their qualifications for this award. Application required. Deadline: April 30.

### ***Aliant Ambassador Scholarship***

A one-year scholarship open to students registered in Year 4 or 5 of an Architecture, Planning, Computer Science, or Engineering program. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

### ***Atlantic Farm Mechanization Show (Entrance) Scholarship***

The Atlantic Farm Mechanization Show established this award of \$1,000. Eligible applicants are Canadian citizens/landed immigrants, residents of Atlantic Canada who are entering the Biological Engineering Program at Dalhousie. The scholarship is awarded on the basis of applicant's academic record at the Associated University or the previous years at Dalhousie with particular emphasis on performance in the machinery related classes - statics, strength of materials, dynamics of particles and dynamics of rigid bodies. The award is made on the recommendation of the chair of the Biological Engineering Program in consultation with the director of the student's Associated University and with the faculty members of the Department of Biological Engineering. Application required. Deadline: April 30.

### ***Atlantic Farm Mechanization Show Environmental Engineering (Entrance) Scholarship***

The Atlantic Farm Mechanization Show established this award of \$1,000. The scholarship is awarded on the basis of applicant's academic record in the Environmental Engineering Program. Selection will be carried out by the Scholarships & Awards Committee of the Faculty of Engineering in consultation with the Chair of the Environmental Engineering program after students come to Dalhousie. Application required. Deadline: April 30.

### ***Dr. Max L. Baker Scholarship***

An anonymous donor established this award of \$1,000 for students registered in the senior year of the Faculty of Engineering. The recipient will be selected on the basis of personality, leadership and scholarship. The letter of nomination on application should convey to the Committee the reasons the nominee or applicant is deemed worthy of the award. The Committee will accept either nominations or applications, by letter addressed to the Associate Dean of Engineering. Application required. Deadline: September 30.

### ***The A. David Blair Scholarship***

An endowment has been established to provide an annual scholarship in memory of A. David Blair, who graduated from Dalhousie in 1987 with a BSc degree. Candidates for the scholarship will be those who have fulfilled the requirements for promotion from Year II to Year III in the Dalhousie Faculty of Engineering. The awardee will have achieved high academic standing and demonstrated financial need. Application deadline: April 30.

### ***John G. Bruce Scholarship***

Two scholarships, valued at \$10,000 per year, are awarded to students entering their third year of engineering at Dalhousie and are renewable for the fourth or final year. They were created through a bequest from the Estate of Ian Gordon Bruce in memory of his father. Ian Bruce, who was killed in a motorcycle accident while on a trip to the Yukon, graduated from the Technical University of Nova Scotia in 1970 with a BEng in Industrial Engineering. John Bruce, who believed strongly in education, retired from the Canadian Navy in 1966 and spent most of the war escorting convoys in the North Atlantic. He later worked at the Bedford Institute of Oceanography as an electronic technician. The scholarships are awarded on the principal criterion of academic excellence. The committee may also weigh other considerations in reaching a decision. Application deadline: April 30.

### ***The Dr. Alan E. Cameron Scholarship***

An anonymous donor established this award of \$1,000 for students registered in the senior year of the Faculty of Engineering. The award is based primarily on the academic record of the applicant during the junior year, but will also take into account the personality, leadership ability and financial need of the applicant. Application required. Deadline: September 30.

### ***Dorothy Macdonald Crummey Memorial Scholarship***

This award was established by the family of the late Dorothy Macdonald Crummey to provide an annual scholarship to one or more worthy students entering their second year of study in the Bachelor of Applied Science (Food Science) Program. Ms. Macdonald attended the Halifax Ladies College (an affiliate of Dalhousie University), graduated with a diploma in Household Science in 1932 and worked as a dietitian at the Victoria General Hospital in Halifax. The recipient(s) will have achieved satisfactory academic standing. The Scholarships & Awards Committee of the Faculty of Engineering may use their discretion in making this award and not necessarily award it to the student with the highest grades. Application required. Deadline: September 30.

### ***CBCL Limited, Consulting Engineers' Scholarship***

CBCL Limited, Consulting Engineers established this award valued at \$2,000. Eligible students are registered in year four or five of Civil, Industrial, Mechanical or Electrical Engineering programs in the Faculty of Engineering. The Scholarship is awarded primarily on the basis of the applicant's academic record. Other factors such as personality, initiative, community involvement, other awards held by the applicant, etc. may also weigh in the decision. Application required. Deadline: September 30.

### ***The Dr. H.W.L. Doane, F.E.I.C. Scholarship***

Nova Scotia Power Inc. established this scholarship valued at \$400 in 1981 in recognition of dedicated service rendered by Dr. Doane as a member of the Nova Scotia Power's Board of Directors from 1953 to 1981. A distinguished engineer, Mr. Doane graduated from Dalhousie in 1913, was invested as an Honorary Doctor in 1957; was presented with the Sexton Memorial Award in 1964; and was

honorary president of the University's Alumni Association. Eligible students are Nova Scotia students registered in the senior year of Civil Engineering. Basis is academic achievement, leadership ability and qualities of personality and character. Application required. Deadline: September 30.

#### ***The Electrical and Computer Engineering Faculty Scholarship***

Faculty Members of the Department of Computer and Electrical Engineering established this award of \$1,000. Candidates must have fulfilled or expect to fulfil the minimum entrance requirements into third year of an undergraduate program in the Faculty of Engineering in Electrical and Computer Engineering. Selection is carried out by Scholarships & Awards Committee of the Faculty of Engineering on the recommendation of the Electrical and Computer Engineering Department. Application required. Deadline: April 30.

#### ***Mobil Oil Canada Scholarship***

Exxon Mobil Canada Ltd. established four scholarships of \$2,000 each. Eligible students are to be registered in the senior year of the Faculty of Engineering. Preference will be given to Canadian citizens or landed immigrants. The award is based on the academic record of the applicant at Dalhousie University. Application required. Deadline: September 30.

#### ***Faculty of Engineering Scholarship***

Five awards valued at \$500 each are open to students entering third year of an Engineering program. The awards are made on the basis of the applicant's academic record at the Associated University or the initial years of Engineering studies at Dalhousie. Application required. Deadline: April 30.

#### ***Fairey Canada Scholarship***

Fairey Canada Ltd. established this award of \$150. Eligible students are registered in Year 4 of Mechanical Engineering. The award is based on the academic record of the applicant and the financial need. Preference will be given to a native of the Atlantic Provinces; applicants are expected to have an interest in some aspect of aviation. Application required. Deadline: September 30.

#### ***Consulting Engineers of Nova Scotia Scholarships***

The Consulting Engineers of Nova Scotia (CENS) have established four annual awards, valued at \$500 each, for Engineering students entering their fourth year of study. Students who have completed or are currently serving a work term with a member of CENS will be given preference, as well as those interested in pursuing a career in the Nova Scotia Consulting Industry. Recipients of the award will have demonstrated professionalism and integrity in their engineering studies. Other factors such as personality, initiative, community involvement and another awards held by the applicant may also weight in the decision. Application required. Deadline: September 30

#### ***David F. Fanning Scholarship***

This award of \$1,000 was established in memory of David F. Fanning by his family and fellow members of the Civil Engineering class of 1980. Eligible students are Canadian students registered in the penultimate year of the Civil Engineering program. The scholarship is awarded on the basis of the applicant's academic record at Dalhousie. Preference will be given to a student who has displayed an interest in mathematical modelling and finite element analysis of structures. Application required. Deadline: September 30.

#### ***M. Roy Foran Scholarship***

Dr. M. Roy Foran, Dean Emeritus of the Nova Scotia Technical College and Professor Emeritus of Chemical Engineering, began his career at Dalhousie as Assistant Professor of Chemistry in 1944. Three years later, he joined the Nova Scotia Technical College as one of the founding members of the Chemical Engineering Department. He served as Department Head for 20 years and then as Dean of Graduate Studies, a post he held until 1974. Dr. Foran then became Registrar of the Nova Scotia Technical College, a position he held until his retirement in 1977.

Under the Will of the late M. Roy Foran, the University received an endowment which provides an annual scholarship for a student enrolled in their final year of the Chemical Engineering program with exceptional academic standing. Application required. Deadline: September 30.

#### ***Marc Garneau, P.Eng. Scholarships***

Engineers of Nova Scotia established two awards of \$2,000 each to commemorate the journey of the first Canadian astronaut, Marc Garneau, into space on October 5, 1984. Dr. Garneau is an honorary life member of Engineers Nova Scotia and he honored the Association by carrying its insignia on this historic flight. Eligible students are Nova Scotia students registered in the fourth and fifth years of an

undergraduate engineering program in the Faculty of Engineering. The scholarship is awarded on the basis of the applicant's academic record at Dalhousie University. While academic excellence will be the primary criterion for the award, the Selection Committee may also weigh other considerations in reaching a decision. Application required. Deadline: September 30.

#### ***The James L. Hall Scholarship in Earth Sciences***

This scholarship is awarded on the joint recommendation of the Faculty of Engineering and the Department of Earth Sciences, to a student who has completed his/her first year, who is planning on a career in the field of Mining Geology. The scholarship alternates between Engineering and Earth Sciences. Application not required.

#### ***Industrial Engineering Entrance Scholarships***

Up to five scholarships, established by the Department of Industrial Engineering, in the amount of up to \$2,000, will be awarded to top-ranked students applying to Industrial Engineering. All students who are accepted for entry to the Industrial Engineering program, at the end of Year 1 or Year 2, are eligible. Payment is applied to the student's first academic term in the upper division (Year 3, term five). Awards are based on the academic records submitted for entry into the Industrial Engineering program and no application is required.

An additional scholarship of \$1,000 is awarded to a student entering Dalhousie who has selected the program of Industrial Engineering and who has achieved a high academic standing within his/her prior university studies. Participation in extracurricular activities will also be given consideration. Candidates must have fulfilled or expect to fulfil the minimum entrance requirements into third year for the undergraduate program in the Faculty of Engineering. Application required. Deadline: April 30.

#### ***The John J. Jodrey Scholarship***

John J. Jodrey established this award valued at \$2,000. Eligible students are Atlantic Canadian students registered in the penultimate year of an Engineering program. The scholarship is awarded on the basis of the applicant's academic record at Dalhousie University. Application required. Deadline: September 30.

#### ***The Percy Bertram Jollota Scholarship***

From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertram Jollota. The awardees must be engaged in studies in engineering or physics. Application not required.

#### ***John R. Kaye Memorial Scholarship***

In 1981 a scholarship was established in memory of Mr. John R. Kaye, a notable engineer who served as Chairman of the Board at the Technical University of Nova Scotia, and received an honorary doctorate degree in 1961. This scholarship is to provide financial assistance to an engineering student who is a native-born Nova Scotian, and well-rounded individual. The successful candidate will be among those who have fulfilled the requirements for promotion from Year 1 to Year 2 in the Dalhousie Faculty of Engineering. S/he will be academically sound and will have demonstrated motivation, diligence, and promise in succeeding and being a credit to the engineering profession. Application not required.

#### ***J. Douglas Kline Memorial Scholarship***

The Halifax Water Commission established this award of \$2,500. Eligible students are Nova Scotia students registered in the final year of the undergraduate Civil Engineering program in the Faculty of Engineering. The applicant must be involved in water-related studies in Civil Engineering. The scholarship is awarded on the basis of the applicant's record at Dalhousie University. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Application required. Deadline: September 30.

#### ***John Frederick Knodell Engineering Scholarship***

An annual award of \$5,000 has been established to honour the memory of J.F. Knodell, a graduate in electrical engineering from Dalhousie and Nova Scotia Technical College. The scholarship is awarded to a male Dalhousie engineering student who was born in Nova Scotia and attended schools in Nova Scotia. The successful candidate will be among those who have fulfilled the requirements for promotion from Year 2 to Year 3 in the Dalhousie Faculty of Engineering. The recipient must have achieved excellent academic standing and demonstrated greatest improvement from the first to second year of the engineering degree program. Application not required.

### ***Dorothy Macdonald Crummey Memorial Scholarship***

This award was established by the family of the late Dorothy Macdonald Crummey to provide an annual scholarship to one or more worthy students entering their second year of study in the Bachelor of Applied Science (Food Science) Program. Ms. Macdonald attended the Halifax Ladies College (an affiliate of Dalhousie University), graduated with a diploma in Household Science in 1932 and worked as a dietitian at the Victoria General Hospital in Halifax. The recipient(s) will have achieved satisfactory academic standing. The Scholarships & Awards Committee of the Faculty of Engineering may use their discretion in making this award and not necessarily award it to the student with the highest grades. Application required. Deadline: September 30.

### ***The Donald MacFadgen Memorial Scholarship***

The Mining Society of Nova Scotia has established this award of \$500. Eligible students are registered in the junior year of the Faculty of Engineering. The award is made on the basis of merit and need, with preference given to students enrolled in the programs of Mining and Materials Engineering. Application required. Deadline: September 30.

### ***Dr. G. David MacKay Scholarship***

Dr. G. David MacKay received both his Bachelor of Engineering and his Master's degree in Engineering from the Nova Scotia Technical College in 1955 and 1959, respectively. He then went on to complete his PhD in Chemical Engineering from McGill University in 1962. He returned to the Nova Scotia Technical College in 1965 where he taught for 30 years. During this time he served as Department Head for 11 years (1968-79), founded the Centre for Energy Studies, was its Director from 1978-87 and served on numerous committees. He was named Professor Emeritus of the Technical University of Nova Scotia in 1994. This endowment provides one or more scholarships to third year students who are entering Upper Division (BEng) Chemical Engineering. Application required. Deadline: April 30.

### ***The Dr. S.K. Malhotra Scholarship***

The \$1,500 scholarship was established by his family and friends in memory of Dr. S.K. Malhotra, former Dean of Graduate Studies and Professor for Civil Engineering at Dalhousie from 1965 to 1990. Eligible students are registered in the penultimate academic study term of the Civil Engineering Program of the Faculty of Engineering. The scholarship is awarded on the basis of the applicant's academic record at Dalhousie University. Preference will be given to a student who had displayed an interest in structural engineering. Application required. Deadline: September 30.

### ***NACE International "The Corrosion Society" Atlantic Canada Section Scholarship***

This award, valued at \$500, has been established by NACE International and is awarded to the student with the highest academic achievement in the class "Corrosion and Degradation of Materials" or to an undergraduate student who receives top marks in a corrosion-related research project or lab experiment/project. The winner is expected to meet the local NACE International Section members and encouraged to become a student member with the initial membership dues covered by the membership. Deadline: September 30.

### ***The Maritime and Northeast Pipeline Legacy Scholarship***

Two scholarships, in the amount of \$2,500 each, are awarded annually to students entering the third year (Upper Division) of the BEng program at Dalhousie. Preference will be given to students from the Atlantic Provinces, the first studying with a concentration in Environmental in either Biological or Civil Engineering, and the second studying either Mechanical or Chemical Engineering. Selection is also based on a minimum GPA of 3.0. Application required. Deadline: April 30.

### ***The Mazankowski Foundation Entrance Scholarship***

This foundation has established a \$1,100 award for a student who fulfils or is expected to fulfil the minimum entrance requirements for admission to the BEDS program in Architecture, or Year Three of the Bachelor of Computer Science or Engineering. The Scholarship is awarded on the basis of the applicant's academic record at the Associated University or Dalhousie University. The Committee may also weigh financial and other consideration in reaching a decision. Application required. Deadline: April 30.

### ***Gordon C. McCausland Scholarship***

Mrs. Elizabeth C. McCausland established this award of \$1,000. Eligible candidates must have fulfilled or expect to fulfil the minimum entrance requirements into third year of the undergraduate Civil Engineering program in the Faculty of Engineering. The award is made on the basis of the applicant's

academic record at the Associated University or at Dalhousie. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering on the recommendation of the Chair of the Civil Engineering program. Application required. Deadline: April 30.

### ***The Materials Engineering Faculty Scholarship***

The Materials Faculty Members of the former Department of Mining and Metallurgical Engineering established this award of \$1,000. Eligible candidates must have fulfilled or expect to fulfil the minimum entrance requirements into third year of an undergraduate program in the Faculty of Engineering in the field of Materials Engineering. Application required. Deadline: April 30.

### ***Minas Basin Pulp and Power Company Limited Scholarships***

The Minas Basin Pulp and Power Company Limited established three awards of \$1,000 each. Eligible candidates must have fulfilled or expect to fulfil the minimum entrance requirements into Year 3 of an engineering undergraduate program in the Faculty of Engineering. The award is made on the basis of the applicant's academic record. The Committee may also weigh financial and other consideration in reaching a decision. Application required. Deadline: April 30.

### ***The George Geoffrey Meyerhof Scholarship***

Dr. George Geoffrey Meyerhof established this award of \$1,000. Eligible students are registered in the senior year of Civil Engineering in the Faculty of Engineering. The award is based primarily on the academic record of the applicant during the junior year, but will also take into account personality and leadership ability. A letter of nomination or application should convey the reasons the nominee or applicant is deemed worthy of the award. Selection will be carried out by the Scholarships & Awards Committee of the Faculty of Engineering in consultation with the Chair of the Civil Engineering program. Application required. Deadline: September 30.

### ***Mineral Resource Engineering Entrance Scholarship***

This scholarship was established by the Mining Engineering graduates. Every year several scholarships of up to \$1,500 each are available to Mineral Resource Engineering students entering their third year of study at Dalhousie University. The recipients will primarily be selected on the basis of academic standing. Students in good academic standing with proven financial need will also be considered. Deadline: April 30.

### ***Guru Nanak Scholarship***

Dr. and Mrs. D. S. Chehil established this scholarship to encourage black Nova Scotia students to qualify for admission and complete the engineering degree at Dalhousie. This award of \$1,000, is tenable for up to three years or more, subject to maintenance of an acceptable academic average. Eligible candidates must be black Canadians born in Nova Scotia. The Scholarship is awarded primarily on the basis of the applicant's academic record prior to admission into third year or on the basis of the academic record at an Associated University or at the University entrance level. Other factors such as personality, initiative, community involvement and other awards held by the applicant may also be considered. Application required. Deadline: April 30.

### ***Newfoundland and Labrador Alumni Undergraduate Scholarship***

This scholarship of \$1,000 was established by the St. John's Newfoundland Alumni Branch. The Scholarship is awarded on the basis of the applicant's academic record (first class mandatory), with preference given to students who were residents of Newfoundland and Labrador immediately prior to attending Dalhousie. The selection committee may weigh other considerations in reaching a decision. The student must be registered in Year 4 at Dalhousie in a program in Architecture, Planning, Engineering, or Computer Science. Application required. Deadline: September 30.

### ***NewPage Port Hawkesbury Ltd. Scholarship***

Stora Forest Industries has established three awards of \$1,000 each to commemorate the 25th anniversary of the company in Nova Scotia. Eligible students are Nova Scotia students registered in the penultimate year of an undergraduate engineering program in the Faculty of Engineering. The Scholarships are awarded on the basis of the applicant's academic record while in attendance at this University. The Selection Committee may also weigh other factors in reaching a decision. Application required. Deadline: September 30.

### ***Allan D. Nickerson Memorial Scholarship***

This scholarship, valued at \$2,000, was made possible by a bequest from the estate of the late Allan D. Nickerson. It was established in memory of Allan D. Nickerson to promote academic excellence in Engineering studies. It is awarded primarily on the basis of the applicant's academic record (first class standing). Mr.

Nickerson graduated from the Nova Scotia Technical College (Electrical Engineering, 1929). He received an Honorary degree (D.Eng.) from the College in May, 1969. Application required. Deadline: September 30.

#### ***Nova Scotia Power Centennial Scholarships***

Nova Scotia Power Inc. established five awards valued at \$2,000 per year, tenable for two years. Eligible candidates are registered in the Faculty of Engineering at this University in one of the following fields of Study: Electrical, Mechanical, or Civil Engineering. Application is by letter submitted to the student's associated university by early January. Successful candidates may be offered term employment with Nova Scotia Power. The Selection Board considers academic excellence, personality, and involvement in extracurricular activities. Application required. Deadline: January 31.

#### ***The Nova Scotia Women in Engineering Scholarship***

The Province of Nova Scotia established this award valued at \$6,000 and renewable for another year. Applicants must demonstrate academic excellence, leadership ability, and contribution to school/community activities. Eligible candidates must be women graduates of Nova Scotia high schools, residents of Nova Scotia and entering their third year of an undergraduate engineering program at Dalhousie. Application required. Deadline: April 30.

#### ***O'Halloran Scholarship***

This scholarship is available to students entering their final year of a Bachelor of Engineering in Civil Engineering. The selected recipient will have scored well academically, shown initiative, enthusiasm and leadership in student and extracurricular activities and displayed an interest in pursuing a career in consulting engineering. Application required; applicants must also submit a current CV. Deadline: September 30.

#### ***The Everett Patterson Memorial Scholarship***

Ocean Contractors Limited established this award of \$1,000. Professor Patterson graduated from the Nova Scotia Technical College (TUNS) Civil Engineering in 1960. He taught at Dalhousie University in the Engineering Department for 27 years. During that time, he served as chairman of the department from 1976-1979 and again in 1983. Professor Patterson was a very dedicated teacher and faculty member who was highly respected by his students and colleagues both at Dalhousie and TUNS. This award is made on the basis of the applicant's record at Dalhousie University. Candidates must have fulfilled or expect to fulfil the minimum entrance requirements into third year of an undergraduate program in the Faculty of Engineering. Application required. Deadline: April 30.

#### ***Dr. Douglas G. Pincock Scholarship***

Amirix Systems Inc. has established a \$2,500 third year entrance scholarship in honour of Dr. Douglas G. Pincock. The award will be given to a student entering the third year Electrical & Computer Engineering specializing in Electrical Engineering. In addition to academic achievement, the student must have demonstrated extra curricular involvement in athletics, fine arts, student activities or volunteer work. Application required. Deadline: April 30.

#### ***President's Associates Scholarship***

The President's Associates Entrance Scholarship has been made possible by members of the Associate's Program (1994-96). The members represent business, industry, friends, faculty and university administrators. This award of \$1,000 is made annually to a student in undergraduate Architecture, Planning, Computer Science or Engineering on the basis of the academic record. Candidates must have fulfilled or expect to fulfil the entrance requirements for an undergraduate degree program in Architecture or for entrance into third year of Engineering or Computer Science. Application required. Deadline: April 30.

#### ***Dr. Edward (Ted) Rhodes Scholarship in Engineering***

Dr. Edward Rhodes, former President of the Technical University of Nova Scotia and former Principal of DalTech has established an annual scholarship open to a third or fourth year Engineering student who has maintained an interest in music or the arts. Application required. Deadline: September 30.

#### ***Roberto Rocca Scholarships***

Tenaris Global Services has established three annual awards, each valued at \$4,000, for Engineering students entering their fourth year of studies. This scholarship honours Roberto Rocca, a Metallurgical Engineer, committed to his conviction that engineers are a force for positive change in society. Selection will be based on academic excellence, with preference given to students from Northern Ontario and Alberta, and female students, as well as students involved in extracurricular activities. The recipients will have achieved a minimum GPA of

3.0, an demonstrated professionalism and integrity in their engineering studies. Application required. Deadline: September 30.

#### ***Bruce and Dorothy Rosetti Engineering Scholarships***

Five awards of \$1,000 each were established from the Bruce and Dorothy Rosetti bequest. Candidate must have fulfilled or expect to fulfil the minimum entrance requirements for entrance into third year an undergraduate program in the Faculty of Engineering. The scholarship is awarded on the basis of the applicant's academic record at the Associated University or in the initial program years at Dalhousie. Application required. Deadline: April 30.

#### ***Bruce and Dorothy Rosetti Engineering Undergraduate Scholarships***

The Bruce and Dorothy Rosetti Bequest has established five \$1,000 awards for students who are registered in the penultimate year of a program in the Faculty of Engineering. The scholarship is awarded one the basis of the applicant's academic record at Dalhousie University. Application required. Deadline: September 30.

#### ***Schlumberger Undergraduate Scholarships in Engineering***

Ten one-year scholarships valued at \$1,000. Candidates must have fulfilled the minimum entrance requirements in the upper division of an accredited undergraduate engineering degree program in the Faculty of Engineering. Scholarships will be awarded based on academic performance. Students selected must achieve a passing grade in all required classes as well as a minimum cumulative GPA of 3.0. Application required. Deadline: April 30.

#### ***The Scotsburn Dairy Group Scholarship***

This scholarship was established by the Scotsburn Dairy Group for students enrolled in third or fourth year studies in the program leading to the Bachelor of Applied Science (Food Science) program within the Faculty of Engineering. The scholarships will be awarded in the amount of \$2,000 per annum to candidates entering the third year of the program and may be renewed in the fourth year provided the recipients maintain a GPA of 3.3 or higher. Applications should be made through the office of the Associate Dean of Engineering, Sexton Campus. Application required. Deadline: April 30.

#### ***The Shaw Group Scholarship in Civil Engineering***

Since 1999, The Shaw Group Limited has awarded annually a one-year scholarship for the student who achieves the highest GPA within Civil Engineering studies and who has completed the penultimate year in Civil Engineering. To be eligible for the \$2,500 award, a student must have been born in, and have a permanent residence in Atlantic Canada. The Scholarships and Awards Committee of the Faculty of Engineering selects the winner. Application required. Deadline: September 30.

#### ***The Mr. and Mrs. S.H. Solomon Scholarship in Engineering***

This scholarship was made possible by Mr. and Mrs. S.H. Solomon and is to be awarded annually to a student entering the second year of Engineering. Application not required.

#### ***The C.W. Stairs Memorial Scholarships***

In 1960, William Stairs, Son & Morrow Limited of Halifax, on the occasion of the 150th anniversary of the firm donated \$10,000 to the University to set up this fund. It provides scholarships to students in Engineering, or in related subjects, who are entering the third year of the class and who, in the opinion of the Committee, are likely after graduation to contribute to the industrial development of Canada. Application not required.

#### ***The Walter Gardner Stanfield Scholarships***

The Walter Gardner Stanfield bequest provides two awards, valued at \$1,000 each, to students who fulfil or are expected to fulfil the minimum (entrance) requirements into third year of Engineering or Computer Science. Application required. Deadline: April 30.

#### ***Dr. A.E. Steeves Scholarship***

This \$1,000 scholarship was established in 1981 in honour of Dr. A.E. Steeves, Director of Administration of the Nova Scotia Technical College and Acting President from 1971-1977. The award is made on the basis of scholarship, personality and leadership ability. Eligible students are registered in the senior year of the BEng in the Faculty of Engineering. Application required. Deadline: September 30.

#### ***The Weldon Scholarship***

The Estate of Dr. R.S. Weldon established this award of \$450 per year. It is renewable for two years, subject to maintenance of a high academic standing. Eligible students are to be registered in the Mechanical Engineering program in



the Faculty of Engineering of this University. The award is based on the academic record of the applicant during Year 3 of the program. Application required. Deadline: September 30.

#### ***The G.P. Wilson Engineering in Business Scholarship***

This scholarship was established to honour Peter Wilson, born in Truro, and who attended King's College and completed his Engineering Diploma at Dalhousie. He graduated as a Mechanical Engineer from the Nova Scotia Technical College (NSTC) and went on to complete a Masters in Engineering Production in the area of Operations Research at the University of Birmingham in England. Professor Wilson was Executive Director of the Atlantic Industrial Research Institute, served as a Professor in Industrial Engineering, and was Head of the Department of Industrial Engineering at the Technical University of Nova Scotia and Dalhousie for more than 20 years. The G.P. Wilson Engineering in Business Scholarship is awarded to students who have completed the first year of engineering at any Canadian university, and who show outstanding promise to use engineering skills to improve Canadian business. The scholarship, in the amount of \$1,000 per term, is tenable at Dalhousie University in years three, four and five of the Industrial Engineering program. This scholarship is renewable for recipients maintaining a GPA of 3.5 in each subsequent academic study term. Interested students must complete an application and provide an essay discussing their views on engineering in business. Deadline: January 15

### **G. Faculty of Health Professions**

Unless otherwise noted, applicants for these awards should consult the department directly for details regarding application processes and deadlines.

#### **1. School of Health and Human Performance**

##### ***The Freda N. Wales Memorial Scholarship***

This is an in-class award given to a student entering the third or fourth year of study. The student must have a commitment to pursuing a program specializing in outdoor leadership at Dalhousie University. Selection will be based on academic achievement and professional ability. Apply through the School.

##### ***VIIth Pan American Wheelchair Games Scholarship***

This is an in-class award given to a student entering the third or fourth year of study in the School. The student must be committed to pursuing study in the area of recreation and leisure for the disabled. Selection is based on academic and professional capability.

#### **2. College of Pharmacy**

##### ***Sanofi Aventis Scholarship***

This scholarship of \$1,500 is to be presented annually to an outstanding pharmacy student who has successfully completed one or more years at the College of Pharmacy.

##### ***The Ralph H. Jenkins Memorial Pharmacy Scholarship***

This scholarship is awarded by the Prince Edward Island Pharmaceutical Association to a student from Prince Edward Island who has achieved a high academic standing.

##### ***The Col. J.D.B.F. MacKenzie Scholarship***

This scholarship of \$1,000 is awarded by the New Brunswick Pharmaceutical Society to a student from New Brunswick who excels in the first year classes of the Pharmacy curriculum.

##### ***The Dr. Jessie I. MacKnight Scholarship***

This scholarship of \$1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the second year classes of the Pharmacy class.

##### ***The New Brunswick Pharmaceutical Society Scholarship***

This scholarship of \$1,000 is awarded by the New Brunswick Pharmaceutical Society to the student from New Brunswick who excels in the third year classes of the Pharmacy curriculum.

#### **3. School of Social Work**

##### ***M. Caroline Prince Scholarship***

An endowment of funds by the late M. Caroline Prince for the benefit of the School of Social Work provides for the award of one or more scholarships to students engaged either in full time or part time study leading to the baccalaureate degree in Social Work. The award is made at the end of the winter term upon

recommendation of class instructors to the School's Bachelor of Social Work committee.

##### ***Calvin Ruck Scholarship***

For BSW and MSW African Nova Scotian students who have demonstrated a desire to improve the social conditions and further the interests of African Nova Scotian/Canadian people and their communities through the study and practice of Social Work. Careful consideration will be given to the purposes and vision of NSACP and to the qualities of courage, generosity, persistence, and leadership that characterizes Dr. Ruck's life and work. Application required.

### **H. Faculty of Management**

Unless otherwise stated, these scholarships are administered by the academic unit. Please consult the departments directly for details.

##### ***Acadian Lines Limited Scholarship***

Acadian Lines Limited has established a fund to provide a scholarship to a student, beyond first year, who has demonstrated superior academic performance in the preceding year(s) of the commerce program and, who has demonstrated outstanding leadership in the University's program of intercollegiate athletics.

##### ***The Wilfred Berman Scholarship***

A scholarship is offered to the student in Commerce who, at the end of third year, has attained the highest average mark in COMM 1101, 2102, 3105. The endowment for this scholarship was provided by friends and co-religionists of the late Professor Berman. Application is not required.

##### ***The Vincent Chew Memorial Endowment***

This award is given annually to the top academic student in the final year of the Bachelor of Management/Bachelor of Science- Recreation who demonstrates strong leadership, organizational and communication skills through volunteer work, extra curricular or school activities. In the event of students equally meeting the criteria above, preference will be given to a deserving student from New Brunswick or Nova Scotia.

##### ***The Eaton Foundation Scholarship in Business Studies***

A scholarship will be awarded annually to a student entering fourth year in the Commerce program who has the highest average mark in Introduction to Marketing, Consumer Behaviour, and Marketing Research, and who has demonstrated high academic standing throughout his or her previous years of study. The award was established by the Eaton Foundation, a philanthropic organization dedicated to supporting the arts, education, health, and social welfare across Canada with the generous support of the T. Eaton Co. Limited and Mr. John David Eaton. Application not required.

##### ***Stewart Lockie Gibson Scholarship in Commerce***

Several scholarships of varying amounts will be awarded annually to third and fourth year students of scholarship standing and good character who are proceeding to a degree in Commerce. Application not required. Awarded automatically by the Registrar's Office.

##### ***Samuel S. Jacobson Scholarship***

Beginning in 1975 the Samuel S. Jacobson Fund has provided one or more scholarships or bursaries. Preference is to be given to Nova Scotian students who are proceeding towards the Bachelor of Commerce degree. Awarded automatically by the Registrar's Office. Application not required.

##### ***The Harry Margolian Scholarships in Commerce***

A bequest of the late Harry Margolian, of Yarmouth, Nova Scotia, enables one or two scholarships per year to be awarded to students working towards degrees in Commerce. These will normally be awarded to students in their third or fourth years. Application not required. Awarded automatically by the Registrar's Office.

##### ***McCurdy Printing and Typesetting Limited Scholarship***

The Halifax firm of McCurdy Printing and Typesetting Limited established an endowment in 1985 to provide annually for a scholarship in the Rowe School of Business. The scholarship is open to a student, beyond first year, who has distinguished himself or herself scholastically during the preceding year(s) of study in the Bachelor of Commerce program. Application not required. Awarded automatically by the Registrar's Office.

##### ***Norman Newman Family Business Award***

This scholarship is offered as a tribute to Mr. Newman's record of leadership in business and the community. For students beyond first year in the Commerce program, Management program, or in the MBA program, a competition involving

a case study of a family business is the basis of awarding of the scholarship, with a first and second place winner. Application required.

#### ***The Commodore Bruce S. Oland Scholarship***

An annual scholarship that alternates between the Department of English and the Faculty of Management. Awarded automatically by the Registrar's Office. Application not required.

#### ***The Sagewood Group Award for Entrepreneurship***

This is an annual award designed to encourage entrepreneurship among Bachelor of Commerce students who have completed at least two full years. Its intent is to fund a business start-up, and selection will be based on assessed viability of the proposed business and demonstrated commitment and ability of the student. Application required by academic department.

#### ***Richard and Constance Glube Entrepreneurship Fellowship Fund***

Established in 2005 to recognize Richard Glube's contributions to the School of Business. The annual fellowship is for a third or fourth year Bachelor of Commerce or Bachelor of Management student wishing to pursue entrepreneurship related activities. The criteria for selection will include academic standing (GPA of 3.0 or greater), enrolment in the entrepreneurship curriculum (e.g. ESP program) and a written proposal on why the student intends to pursue an entrepreneurial path. The award will be administered through the Norman Newman Centre for Entrepreneurship.

#### ***Ronald G. Smith Scholarship***

This scholarship was established in recognition of the distinguished service rendered by Ronald G. Smith. An amount of \$400 will be awarded to a Nova Scotia student entering the fourth year of the Bachelor of Commerce program based upon academic achievement, leadership ability and qualities of personality and character. Application not required.

## **I. Faculty of Science**

These scholarships are administered automatically by the Registrar's Office. Applications are not required.

#### ***The L.A. DeWolfe Memorial Scholarship***

A fund has been established under the Will of the late Dr. L.A. DeWolfe to provide undergraduate scholarships in mathematics or science.

#### ***The Percy Bertram Jollota Scholarships***

From the Estate of Jean Minerva Jollota came a bequest, the annual income of which is to be used to provide scholarships in memory of her late husband, Percy Bertram Jollota. The awardees must be engaged in studies in engineering or physics.

#### ***The Constance MacFarlane Scholarship***

An endowment fund has been established to provide a scholarship to a deserving student in the second or subsequent year of the Honours program in either biology or marine biology. Candidates must have completed at least one class in each of ecology and botany.

#### ***The Carl Mushkat Memorial Scholarships***

The Carl Mushkat Memorial Fund was established at Dalhousie University in 1979 as a bequest under the Will of the late Carl Mushkat. The fund provides scholarships to students in mathematics or science.

#### ***NewPage-Port Hawkesbury Mill Undergraduate Scholarship in Arts or Science***

On the occasion of their 25th Anniversary Stora Enso have established an endowment to provide one undergraduate scholarship open to students in Arts & Science. To be eligible, candidates must reside in Nova Scotia, have demonstrated academic excellence and have exhibited a desire to learn. Students will be considered after one year at Dalhousie.

#### ***The Alan Pollok Scholarship***

This scholarship of \$1,000 was established by The Scots North British Society in Halifax in memory of the Rev. Dr. Alan Pollok. The awardee will be a second year student in the College of Arts and Science at Dalhousie University.

#### ***Betty Spencer Scholarship***

Betty Spencer was born in Saint John, New Brunswick in 1916. She graduated from Saint John Vocational School and worked for a time at Wasson's Pharmacy where she met her husband. They retired in Bangor, Maine and later in St. Andrews, New Brunswick. Although Betty had no specific connection to

Dalhousie, she generously bequeathed this endowment through her Will. Preference is given to students from the Atlantic provinces and recipients cannot hold other Dalhousie scholarships or bursaries.

#### ***The Ross Stewart Smith Scholarships***

A significant bequest established these memorial scholarships for students who excel in the sciences or mathematics.

**The following scholarships are administered by the academic unit. Please consult the departments directly for details.**

#### ***Laing Summer Undergraduate Research Awards***

Undergraduate students wishing to obtain research experience under the supervision of a grant holding faculty member over the summer should submit the NSERC Undergraduate Summer Research Award application to their department. Eligible students for the Laing Award must be in a 20 credit BSc program at Dalhousie University or at King's College, and be eligible to return for at least one semester prior to completion of this degree. The \$5,000 award is tenable during the period of May 1st to August 31st and is supplemented by additional funds. The award is distributed to the best applicant(s) on behalf of the Darrell and Emily Laing Foundation and is the top Faculty of Science undergraduate research award. See your department for deadlines and procedures.

#### ***Warr Summer Undergraduate Research Awards***

Undergraduate students wishing to obtain research experience under the supervision of a grant holding faculty member over the summer should submit the NSERC Undergraduate Summer Research Award application to their department. Eligible students for the Warr Award must be in a 20 credit BSc program at Dalhousie University or at King's College, be eligible to return for at least one semester prior to completion of this degree, and be both born in Nova Scotia and bona fide residents of Nova Scotia. The \$5,000 award is tenable during the period of May 1st to August 31st and is supplemented by additional funds. The award is distributed to the best applicant(s) on behalf of the John Richard Freeman Warr Memorial. See your department for deadlines and procedures.

## **1. Biology**

#### ***Hugh P. Bell Scholarship in Biology***

In 1968 the Class of 1928 established the H.P. Bell Fund to provide one or more annual scholarships. Each year the Biology Department will select the most promising honours biology student third year. That student shall hold the Hugh P. Bell Scholarship in the fourth year of the honours program.

#### ***The Sarah M. Lawson Scholarships in Botany***

At the discretion of the Honours/Undergraduate Awards Committee of the Department of Biology, the University may offer scholarships to students who have shown special ability in botany. This award is open to students at Dalhousie University or the University of King's College, and is given to support summer or fall (for Co-op students) research projects in botany at either the undergraduate or graduate level.

## **2. Chemistry**

#### ***Belle Crowe Scholarship***

This scholarship was established in 1944 in accordance with a gift from the estate of Miss Belle Crowe, a student at Dalhousie University in 1885/86. This scholarship is awarded to a Major or Honours degree Chemistry student on the basis of academic standing and demonstrated proficiency in chemistry and has been accepted into a graduate program to study inorganic chemistry. Application not required.

#### ***The E. Walter Todd Scholarship***

A bequest from the Estate of Mabel E. Todd in 1958 established a fund to provide a scholarship (and inscribed volume) in memory of her brother, E. Walter Todd, who was for many years a member of the Department. Application not required.

#### ***Norbert Wolter Memorial Scholarship***

This scholarship was established by Jennie Wolter (BSc '78), in loving memory of her husband, Norbert, who died at a young age. The scholarship is awarded to an undergraduate student enrolled in chemistry within the Faculty of Science at Dalhousie University and will be awarded to a Canadian citizen with first preference given to someone from Nova Scotia. The recipient must have achieved and maintain a GPA of 3.90.

### 3. Earth Sciences

#### *J. Ewart Blanchard Memorial Scholarship*

This scholarship was established in memory of Dr. J. Ewart Blanchard 1921 - 2003. Dr. Blanchard was an early physics pioneer in Nova Scotia. He was the first geophysicist appointed to Dalhousie's Physics Department and received an Honorary Degree from Dalhousie in 2000.

One or more scholarships will be awarded each fall to students enrolled in the degree programs of either the Department of Physics and Atmospheric Science or the Department of Earth Sciences who have achieved academic excellence and best exemplifies the qualities of initiative, experimental skill, leadership and enthusiasm for geophysics.

#### *Canadian Institute of Mining and Metallurgy Earth Science Scholarship for New Brunswick Students*

Awarded to a student entering second or subsequent year in an earth science discipline. Applicants must have been in New Brunswick or resided in New Brunswick for seven years, or have his/her immediate family reside in that province.

#### *Canadian Society of Exploration Geophysicists Scholarship*

This scholarship is available to a student applicant who is pursuing a class of studies directed toward a career in exploration geophysics in industry, teaching or research.

#### *Chamber of Mineral Resources of Nova Scotia Scholarship*

Senior students from Acadia University, Dalhousie University, St. Francis Xavier University or Saint Mary's University in a geology or mining-related bachelor degree program are considered for this scholarship. Selection is based upon the student's contribution to the development of the province's mineral resources sector as well as scholastic achievement.

#### *The James L. Hall Scholarship in Earth Sciences*

This scholarship is awarded on the joint recommendation of the Faculty of Engineering and the Department of Earth Sciences, to a student who has completed his/her first year, who is planning on a career in the field of mining geology. The scholarship alternates between Earth Sciences and Engineering. Application not required.

### 4. Economics

#### *Professor W. Russell Maxwell Memorial Scholarship*

Friends and colleagues of Professor Maxwell have established a fund to provide scholarships to outstanding students entering the second, third or fourth year of the General Degree or Honours Degree program in Economics. Preference will be given to candidates entering the fourth year of the Honours program.

### 5. Environmental Science

#### *Art and Dorothy Cooke Memorial Research Scholarship*

This scholarship was established in memory of Art and Dorothy Cooke by their daughters, Janet Jerico and Susan McKich. Art and Dorothy both attended Dalhousie University in the 1930s, taking degrees in English. They then lived near Dalhousie most of their lives, their children attended Dalhousie and Dorothy became University Librarian.

This Scholarship will be awarded to a full-time student entering their fourth year in an Honours or Combined Honours in Environmental Science whose Honours thesis research proposal is judged to be of strong merit.

### 6. Marine Biology

#### *Vemco Scholarship in Marine Biology*

The company Amirix Systems Inc., created a fund in July 2007 to award a Vemco Scholarship worth \$2,500 in the fall of each year to a student entering the final year of Marine Biology. Students can be in Marine Co-op as well but must be in the Honours program.

### 7. Mathematics and Statistics

#### *The Ralph and Frances Lewis Jeffery Scholarship*

From the Estate of Frances E. Jeffery came a bequest in 1979 to endow a scholarship which is to be awarded to a student who has completed the final year of an honours degree in mathematics, and who has maintained at least a second-class standing during the first three years of the class.

#### *Lorne O.L. Titus Scholarship*

Four scholarships are available to full-time students majoring in Biology, Math and Physics with the highest cumulative GPAs. Students must be in their second, third or fourth year of studies.

### 8. Physics and Atmospheric Science

#### *J. Ewart Blanchard Memorial Scholarship*

This scholarship was established in memory of Dr. J. Ewart Blanchard 1921 - 2003. Dr. Blanchard was an early physics pioneer in Nova Scotia. He was the first geophysicist appointed to Dalhousie's Physics Department and received an Honorary Degree from Dalhousie in 2000.

One or more scholarships will be awarded each fall to students enrolled in the degree programs of either the Department of Physics and Atmospheric Science or the Department of Earth Sciences who have achieved academic excellence and best exemplifies the qualities of initiative, experimental skill, leadership and enthusiasm for geophysics.

#### *Lorne O.L. Titus Scholarship*

Four scholarships are available to full-time students majoring in biology, mathematics and physics with the highest cumulative GPAs. Students must be in their second, third or fourth year of studies.

### 9. Psychology and Neuroscience

#### *Brimer Memorial Scholarship in Psychology*

The Charles J. Brimer Memorial Fund was established during 1971 in memory of the late Dr. Brimer, Acting Chairman of the Department of Psychology and Neuroscience. The income is awarded to a third year Honours student. Students enrolling for the Honours certificate in Psychology in the year equivalent to the fourth year of the Honours Psychology program are eligible for the prize. The Brimer Memorial Scholarship is restricted to Dalhousie Honours Psychology students and is not open to Joint Honours students from other departments or other universities. The scholarship will be given to the student who shows the greatest potential as a researcher in experimental psychology.

### J. College of Sustainability

#### *Vince Ginley Scholarships*

A fund has been established to provide one or more annual scholarships for third and fourth year students enrolled in the Environment, Sustainability and Society Major/Honours degree, based on academic achievement in the previous year.

## IV. Prizes, Medals, and Awards

Unless otherwise noted, the following awards are administered by the academic unit or the Department of Athletics.

### A. General - All Faculties

#### *The Alumni Association Medal*

The Sexton Campus Alumni Association provides a medal which is awarded at convocation each year to the graduating student in the University who has exhibited the most outstanding qualities of personality, scholarship and leadership during a class of studies at the campus. Selection is carried out by a Committee appointed by the Awards Committee of the DalTech Alumni Association.

#### *Athletic Awards*

A number of awards are provided by the athletic endowment for exceptional student athletes who qualify. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher.

#### a) The Graham Family Athletic Awards

John and Lina Graham have established the Graham Family Athletic Awards, which recognize the contributions that varsity student athletes make in enriching the quality of life at Dalhousie University. Awards are available to entering and continuing varsity athletes who have achieved high academic standing (minimum 80% entering and 3.0 GPA continuing students). Award recipients should demonstrate positive attributes in the areas of citizenship, sportsmanship and community service.

#### b) MacKean Scholarships

The Margaret Louise MacKean Scholarships were established through the estate of Charlotte Louise MacKean. Through a bequest in her will, the Margaret Louise MacKean Scholarships will eternally benefit Dalhousie student athletes who have demonstrated athletic, academic and citizenship excellence.

#### **The Annie L. Beer Prize**

Under the will of the late Mrs. Thomas (Annie L.) Beer of Charlottetown a bequest was established at Dalhousie University. The net income from the fund provides for a prize which is to be awarded to the youngest student from Prince Edward Island who enters this University in each year. The Registrar's Office selects and notifies the winner.

#### **Black and Gold Awards**

Each year the Dalhousie Black and Gold Club funds a number of awards that recognize outstanding student athletes and the contribution they make to university life. Returning students must have been a full time student for at least two semesters in an academic year at Dalhousie with a minimum GPA of 2.0 in three full year classes or the equivalent. Entering candidates must have an average of 80% or higher. Participation on a varsity team is a requirement. Applicants should apply through the head coach of their respective varsity teams. Eligibility is verified by the Registrar's Office.

#### **Jeff Bredin Memorial Scholarship in Men's Volleyball**

This scholarship was established in memory of Jeff Bredin who graduated from Dalhousie in May, 1985 with a Bachelor of Physical Education. While at Dalhousie, Jeff was a member of the varsity volleyball team for two years and was the recipient of numerous awards for his contribution to the University's volleyball team.

One or more scholarships will be awarded to entering or continuing student athletes on the Dalhousie men's volleyball team who demonstrate excellence in volleyball, sportsmanship and community service.

#### **Dalhousie Student Union Student Accessibility Award**

This award is open to Dalhousie students with a permanent disability (physical, mental or learning impairment). Applicants must apply by writing, taping or filming a personal statement on why they could benefit from this award. Interested students should contact the Vice-President, Internal, Dalhousie Student Union for additional details and application deadline.

#### **The Honourable W.H. Dennis Memorial Prizes for Literary Compositions in English**

Two prizes known as the Joseph Howe Prizes are offered each year. First prize \$200, second prize \$100, for a poem or collection of poems of any length greater than one hundred lines. Two prizes known as the James DeMille Prizes are offered each year, one of \$150 for an essay, the other of \$150 for a prose short story. Contact the Department of English for details.

1. Candidates for these prizes must be registered full-time undergraduate or graduate students at Dalhousie University.
2. Three copies of each composition must be sent in by the competitor.
  - a) These compositions must be typewritten, double spaced and on one side of the paper only.
  - b) A pseudonym is to be typed at the end of each typescript and after the pseudonym a statement as to whether or not a first or second or no prize has been previously awarded to the writer.
  - c) Compositions are to be accompanied by a sealed envelope bearing the same pseudonym in typewriting to the Jury of Award for either the Joseph Howe Prize or for the James DeMille Prize, as the case may be.
  - d) The envelope shall contain in typewriting the pseudonym, the titles of the entries and the candidate's full name and address.
  - e) Candidates submitting more than one prose entry must use the same pseudonym for each; different pseudonyms may be used for prose and poetry.
3. Candidates for the DeMille Prize may submit one entry in each of the essay and short story sections.
4. The winner of a prize in the poetry contest is not debarred from competing in the prose contest, and vice versa.
5. In the poetry contest no winner of a first prize is eligible to compete again, and no winner of a second prize is eligible for a second prize in a subsequent year.

6. In the prose contest no winner of a first prize is eligible to compete again, and no winner of a second prize is eligible for a second prize in a subsequent year.
7. Entries must reach the Department of English on the deadline.
8. Entries are adjudicated by a panels of judges which includes a professional writer. The decision of the judges is final.
9. No prize will be awarded for any composition that does not attain to a sufficiently high standard of merit.
10. *The Dalhousie Review* will be offered the first option to publish winning compositions. A copy of each winning composition is deposited in the University archives. Contestants retain ownership of copyright.
11. Contestants are urged to retain a copy of their typescript(s) since the copies cannot be returned.

#### **Shawn Dupuis Memorial Prize**

This prize was established in memory of Shawn Dupuis, of Dartmouth, NS, who was a member of the varsity swim team. This prize of \$300 will be awarded at the first AUS meet of the season held at Dalhousie, to a Dartmouth Crusader Swimmer entering his/her first year of study at Dalhousie University. Preference will be given to students who are enrolled in a class from the Bachelor of Commerce program or the Spanish and Latin American Studies Department, Faculty of Arts and Social Sciences.

#### **The Clare Murray Fooshee Poetry Prize**

One or more prizes will be awarded for the best poems, of any length, submitted by Dalhousie undergraduates. Prize money approximates \$400, which is the net income from a fund established by friends in memory of the poetess Mrs. Clare Murray Fooshee, BA (1924). Up to five poems may be submitted by each writer. Previous winners are ineligible. No award will be made unless a poem submitted is deemed to be of sufficient merit. Entries should reach the Chair of the Department of English by March 1.

#### **The SLT Bruce Galloway Memorial Prize**

Friends, family and shipmates of Sub-Lieutenant Bruce David Galloway, a member of the Ship's Company of H.M.C.S. Fraser and a 1983 Arts graduate of Dalhousie, have established a memorial fund. The prize is to be awarded to the student, male or female, attending Dalhousie University on the Regular Officer Training Plan who attained the highest academic standing (not less than a passing standing) in the program in which he or she is enrolled. A prize is to be awarded in each year in which there is a student attending Dalhousie on the Regular Officer Training Plan who achieves a passing standing. The Registrar's Office selects the winner.

#### **The Irving and Jeanne Glovin Award**

The Oskar Schindler Humanities Foundation established this award in 2003 to support research into the meaning and principles underlying "good human conduct". The research submitted will seek to define the meaning of "good human conduct" with which all persons could agree, to explore its sources, and develop pragmatic educational strategies and ways of teaching children, to show by action, respect and acceptance of others of any circumstances and/or background. The Irving and Jeanne Glovin Award will enable collaborative research by students, in the final year of undergraduate study or graduate study, in any major discipline or interdisciplinary program, together with a professor or mentor. The recipient will be preferably one who has a broad education and interdisciplinary interests appropriate to the research topic chosen. A copy of the research essay, accompanied by a letter of recommendation from the faculty member, must be submitted by April 15th each year to the Dean of Faculty of Arts and Social Sciences, or the Dean of Graduate Studies. The recipient will be asked to present the research essay.

#### **The Kim Rilda LeBlanc Memorial Award in Healing and the Arts**

This award was established to recognize outstanding interdisciplinary initiatives between the arts and the health sciences, and it honours the memory of this former graduate student in English. The competition is open to undergraduate and graduate students in the Faculties of Arts and Social Sciences, Medicine, and Health Professions. Faculty may nominate students who have completed an outstanding project, thesis, or research essay that combines work in the humanities or the arts with work in medicine or health care. Nomination letters, accompanied by three copies of the candidate's project, thesis, or research essay are to be submitted by 15<sup>th</sup> April each year to The Chair, The Kim Rilda LeBlanc Memorial Award Committee, Department of English.

### ***The Robert and Katherine MacDonald Award***

An endowment has been established to provide an annual prize for Chinese students at Dalhousie. The recipient will be engaged in undergraduate studies and be a member of the Dal-TUNS Chinese Students' Association or its successor. The recipient will have demonstrated good academic achievement combined with leadership qualities and contribution to University life. The Association will recommend a candidate or candidates to the Head of Student Services.

### ***Natatorial Award***

In honour of a former swim coach, Nigel Kemp, one or more annual awards are given to members of the Dalhousie University varsity swim team. Entering students must have achieved a minimum average of 80% from high school. Returning students must have achieved a minimum GPA of 3.0. Gender equity is considered by the selection body.

### ***Gordon S. Rankin Memorial Scholarship***

Gordon Rankin, born in Halifax in 1933, graduated from Dalhousie in 1957 with a Bachelor of Commerce degree. He played both varsity football and basketball, holding the position of Captain for a period of time on both teams. As a continuing tribute to Gord, this scholarship was formed to assist athletes in financing their studies while attending Dalhousie University.

### ***Dr. Ron Steward Award for Student Leadership in Global Health***

Awarded annually to a student who has demonstrated leadership in global health and a commitment to improving the health of marginalized communities during their time at Dalhousie. This award is coordinated through the International Health Office.

## **B. Convocation Awards**

The following three awards are administered by the Registrar's Office and are awarded at Convocation.

### ***Governor General's Silver Medal***

Offered by His Excellency the Governor-General of Canada, this medal is awarded to the undergraduate student who has achieved the highest academic standing among graduates of baccalaureate programs.

### ***University Silver Medal***

This medal is awarded to the student who is judged to be the leading First Class Honours student among graduates of baccalaureate programs. The recipient cannot have received the Governor General's Silver Medal.

### ***Avery Prize***

This prize, bequeathed by J.F. Avery, MD, will be awarded on graduation to the student standing highest among graduates of the general degree program. The recipient cannot have received the Governor General's Silver Medal or University Silver Medal.

For the aforementioned medals and prize, a student who is completing a second Dalhousie degree will have only those classes required for a second degree used when calculating their cumulative average. In addition, any disciplinary action by the Senate Discipline Committee shall be deemed sufficient cause for any student to be ineligible.

## **C. Faculty of Agriculture**

For more information on deadlines and application procedures, please visit [www.moneymatters.dal.ca](http://www.moneymatters.dal.ca)

### ***Canadian Agricultural Economics Association Prize***

The Canadian Agricultural Economics Association presents a book prize to a graduating student from the Agricultural Economics or Agricultural Business option of the BSc (Agr.) program. This prize is selected on the basis of overall performance.

### ***Canadian Society of Animal Science Prize***

The Canadian Society of Animal Science presents a book prize to a student in the fourth year of the Animal Science or Aquaculture options of the BSc (Agr.) program. This prize is selected on the basis of outstanding scholarship.

### ***K. de Geus Memorial Prize for Plant Science***

In memory of the late K. de Geus, a prize is awarded to a technical graduate. Selection is based on high standing in course work, and preference is given to students in the horticultural field.

### ***Noel Enman Memorial Award***

Established in 1984, the Noel Enman Memorial Award is presented annually in memory of alumnus Noel Enman (1961-1983) to a technical graduate whose personality and fellowship have contributed to student life and activities, thereby gaining the respect of the students and faculty. Nominations should be submitted through the office of the Dean of Student Services by February 18. The award is presented at the graduation class banquet prior to Convocation.

### ***Etta PHYS0050 Prize***

A \$100 Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the PHYS0050 course. The prize may not be awarded every semester.

### ***Farm Credit Canada Business Planning Awards***

Sponsored by Farm Credit Canada, the purpose of this award program is to encourage agricultural students to apply their knowledge and create "real-life" farm and related business plans for their operations (home, existing, or start-up). The awards are open to students in the final year of the Diploma in Enterprise Management program who complete business plans during the business project course (MGMT0201). A student who has received an FCC Farm Business Planning Award is not eligible for a second one. Cash prizes are distributed based on the number of submissions from participating students (as individuals or teams).

### ***H. J. Fraser Memorial Prize for English***

In memory of the late Professor H. J. Fraser, a prize is awarded to a second-year student who has achieved excellence and provided significant contribution to the discussion in a first-year English course.

### ***Dr. Gerry W. Friars Undergraduate Research Prize***

The Dr. Gerry W. Friars Undergraduate Research Prize is awarded to the student who is judged to have completed the best written research report as part of the fourth-year project requirements. Dr. Friars, Class of 1948, was introduced to scientific research by an undergraduate research project, thus beginning a career in research and teaching.

### ***Governor General's Bronze Medal***

Offered by Her Excellency the Governor-General of Canada, this medal is awarded to the student who has achieved the highest academic standing among graduates of technology diploma programs.

### ***Hanna CHEM0050 Prize***

A Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the CHEM0050 class. The prize may not be awarded every semester.

### ***JebJeb Prize for Preparatory Studies***

A Bookstore voucher will be presented to a mature student who achieves outstanding performance in all three preparatory courses completed in one academic year.

### ***Ketchum Manufacturing Company Limited Prize***

The Ketchum Manufacturing Company Limited Prize is awarded to a graduate of the Animal Science option.

### ***Leelee MATH0050 Prize***

A Bookstore voucher will be presented to an outstanding returning student who achieves the highest mark in the MATH0050 class. The prize may not be awarded every semester.

### ***Novartis Award***

The Novartis Award is presented to the top all-round student graduating from the Veterinary Technology program who has particularly excelled in the area of parasitology.

### ***Patterson Law Prize***

Patterson Law offers a prize to any full-time student who has lived or worked on a farm. Applicants are required to submit an essay (500-1000 words) regarding any major issue facing the farming community.

## **D. Faculty of Architecture and Planning**

### ***Lezlie Oler Prize in Community and Environmental Design***

This \$1,000 prize is presented to one or more students in the Bachelor of Community Design program or the Bachelor of Environmental Design Studies

program, based on a design proposal for urban beautification in the Halifax Regional Municipality. Apply to the Dean's office by December 10.

## 1. Architecture

### ***Bachelor of Environmental Design Studies Year 3 Portfolio Prize***

A prize is awarded to the student who has produced the best design portfolio at the end of Year 3 in the BEDS program.

### ***Bachelor of Environmental Design Studies Year 4 Portfolio Prize***

A prize is awarded to the student who has produced the best design portfolio at the end of Year 4 in the BEDS program.

## 2. Planning

### ***Community Design Achievement Award (second year)***

This prize is awarded to the student with the highest cumulative average in the second year of the Community Design program.

### ***Community Design Achievement Award (third year)***

This prize is awarded to the student with the highest cumulative average in the third year of the Community Design program.

### ***Community Design Service Prize***

The prize is awarded to a graduating Community Design student who has made a significant contribution to community design beyond the School.

### ***Community Design Thesis Prize***

This prize is given in recognition of excellent work in completing the thesis project for the Bachelor of Community Design.

### ***University Medal in Community Design***

This medal is awarded annually to the graduate who has attained the highest academic standing in Community Design.

## E. Faculty of Arts & Social Sciences

### ***The Clan Ramsay of Nova Scotia Prize***

To provide an annual prize to the student in the Faculty of Arts and Social Sciences who has written the best paper dealing with (any aspect of) the influence of Scottish culture within Canada. This award was established by the Clan Ramsay in Nova Scotia in recognition of the contribution of George Ramsay, 19th earl of Dalhousie, founder of Dalhousie University.

## 1. Canadian Studies

### ***University Medal in Canadian Studies***

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

## 2. Classics

### ***University Medal in Classics***

The Department of Classics offers to the top First Class Honours graduate in the classics program a medal in recognition of superior achievement in Classics.

## 3. Contemporary Studies

### ***University Medal in Contemporary Studies***

The Department of Contemporary Studies offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## 4. Creative Writing

### ***University Medal in Creative Writing***

Awarded to the top First Class Honours graduate for recognition of superior achievement in Creative Writing.

## 5. Early Modern Studies

### ***University Medal in Early Modern Studies***

The Department of Early Modern Studies offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## 6. English

### ***The Avie Bennett Prize***

This prize (\$500 plus a complete set of the New Canadian Library) is one of six established by Mr. Avie Bennett, Chairman and President of McClelland and Stewart to mark the company's 90<sup>th</sup> anniversary and the 40<sup>th</sup> anniversary of the New Canadian Library, of which the founding general editor was Dalhousie Professor Emeritus Dr. Malcolm M. Ross. It is awarded each year for the best essay on Canadian literature submitted from an undergraduate class at Dalhousie during the current academic year. Essays may have been written for classes in any department, but they should focus explicitly on a Canadian literary topic and not on history or culture more generally, and they must be written in English. Essays should be nominated by instructors; clean copies should be submitted by the specified date.

### ***Barbara Bennett Chittick Prize***

This prize is awarded annually to an outstanding first year student enrolled in introductory English at Dalhousie University. Section instructors will normally make nominations, which shall consist of a letter from the instructor on why the student should receive the award, the student's final grade, and a sample essay. The prize winner will be determined by a selection committee consisting of one member of the Undergraduate Committee and the co-ordinator of tutor-markers in the English Department.

### ***Graham Creighton Prize in English***

Established by his son, Wilfrid Creighton, this prize is to honour the memory of Graham Creighton, 1904 graduate of Dalhousie. Graham Creighton and his wife raised six children in their home on LeMarchant Street. All six children attended Dalhousie and graduated between 1915 and 1927. This prize is awarded annually to students majoring in English or in Honours English and entering their fourth year of study.

### ***Samantha Li Award***

The Samanth Li Memorial Award was established by family, friends, faculty, and students to honour the memory of Samantha Li by supporting the annual prize of approximately \$350 for a student in the Honours program in English. The recipient chosen will most closely reflect the academic and personal qualities of Samantha Li: intellectual reach and creativity; a passion for the exploration of literature and ideas; generosity toward and engagement with fellow students and professors.

### ***Paul McIsaac Memorial Prize***

A memorial gift provides for an annual prize for an undergraduate student, who shows an enquiring and original mind, in the second or third year of study in the Honours or Majors program in English.

### ***Margaret Nicoll Pond Memorial Prize in English***

A prize in English of about \$500 per year has been endowed by Mr. F.H. Pond of Halifax in memory of his wife, the late Margaret Nicoll Pond, a gifted teacher of English and a devoted alumna and governor of Dalhousie University. The prize will be awarded, on recommendation of the Department, to a woman graduate of Dalhousie University who leads her class in English.

### ***The James W. Tupper Graduate Fellowship in English***

Two fellowships are awarded by the English Department to outstanding students who propose to do graduate work in English at a university approved by the faculty.

### ***The University Medal in English***

Each year the Department of English offers a medal to the top First Class Honours graduate in recognition of superior achievement in the program.

### ***Varma Prizes in Gothic Literature***

These prizes were established to honour the memory and spirit of the late Devendra Varma who taught at Dalhousie University in the Department of English. Applicants should be undergraduate English majors or honours English students. Prizes shall be awarded to the winners of a gothic short story contest.

## 7. European Studies

### ***University Medal in European Studies***

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

## 8. French

### *Prix de l'Alliance française*

An annual book prize awarded to a third or fourth year student who has achieved outstanding results in the study of French language and literature. Suitable candidates are proposed by the Department before March 15. The award is bestowed at an official ceremony at the Alliance française in the Spring. The Alliance française is an internationally renowned non-profit organization with a mission to promote French language and culture.

### *Prix de l'Ambassadeur de France*

A book prize, offered by the French Embassy in Ottawa, is awarded annually to the graduating student with the highest standing in advanced French classes. This award is conferred at a Departmental ceremony in the spring.

### *Prix de l'Ambassadeur de Suisse au Canada*

A book prize, the gift of the Ambassador of Switzerland in Canada, is awarded to a graduating student who has won distinction by their work in the French language. This award is conferred at a Departmental ceremony in the spring.

### *Prix du Consul du Liban*

A book prize, the gift of the Consul of Lebanon, is awarded to a graduating student who has demonstrated excellence in their work in the French language. This award is conferred at a Departmental ceremony in the spring.

### *Prof. & Mrs. Robert Lloyd McIntosh Prize in French*

This fund provides an annual prize for a Major or Honours student in the Department of French who has demonstrated a superior level of achievement in the core classes required for second year Major and Honours students. Currently these classes are 2045, 2201 and 2202.

### *Marcelle Cendres Sandhu Memorial Prize*

Colleagues, friends and students of the late Marcelle Cendres Sandhu have established an annual prize to be awarded to a Major or Honours student in the Department of French who achieves excellence in third or fourth year French grammar classes.

### *University Medal in French*

The Department of French offers a medal to the top First Class Honours graduate in recognition of superior achievement.

## 9. Gender and Women's Studies

### *University Medal in Gender & Women's Studies*

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

## 10. German

### *Prize of the Ambassador of Austria in Canada, Prize of the Ambassador of Switzerland in Canada, and the Prize of the Ambassador of Germany in Canada*

The Austrian, German and Swiss embassies in Canada regularly offer German language books to the Department to be awarded to Dalhousie students whose achievement in German is outstanding. Awards are made at various levels of proficiency.

### *University Medal in German*

The Department of German offers a medal to the top First Class Honours graduate in recognition of superior achievement.

## 11. History

### *The Edith and Rose Goodman Prize in History*

Under the Will of the late Mrs. Jeanette Goodman a bequest was made to Dalhousie University to fund a prize(s) for the highest standing in Canadian History. The prize is awarded on the recommendation of the Department of History.

### *The Commonwealth History Prize*

To facilitate and encourage the study of Commonwealth or British history, this prize is awarded annually for the best undergraduate essay on a topic relating to the history of Britain and/or the Commonwealth countries. The prize is funded by a gift from Dr. David Jessop and Dr. Karen Ostergaard.

### *University Medal in History*

To the top First Class Honours graduate the Department of History offers a medal in recognition of superior achievement.

### *The Dr. George E. Wilson Prize in History*

In 1967 an endowment was established to provide an annual prize to be awarded for the best essay by a first year student in a first year class.

## 12. History of Science and Technology

### *University Medal in History of Science and Technology*

The History of Science and Technology program offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## 13. International Development Studies

### *University Medal in International Development Studies*

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

## 14. Italian Studies

### *University Medal in Italian Studies*

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

## 15. Linguistics

### *University Medal in Linguistics*

Halifax Interuniversity Linguistics Program offers to the top First Class Honours graduate a medal in recognition of superior achievement.

## 16. Music

### *The Atlantic Barber Shop Harmony Award*

The Nova Scotia Chapter of the Society for the Presentation and Encouragement of Barber Shop Quartet Singing in America has established a fund to award an annual prize to a student enrolled in an undergraduate degree program in Music, who, in the estimation of the Department, demonstrates outstanding aptitude and achievement leading to a professional career in an aspect of choral music (conducting, composing, arranging, singing, etc.) Normally awarded to a fourth year student, with the discretion of the Department it may be used as a Graduation Prize.

### *Professor Ray. D. Byham Memorial Prize in Piano Studies*

A prize established with donations made by family, colleagues and friends of Professor Ray D. Byham, who taught at Dalhousie from 1969-1993, to provide one (or more) annual prize(s) to a student(s) entering fourth year piano studies in the Department of Music. The prize will be used to provide financial assistance toward continued piano performance studies at Dalhousie, a recognized piano-intensive workshop, a chamber music festival or similar event. The recipient will have a cumulative GPA of not less than 3.3, with at least two years prior, consecutive residency in the Dalhousie Bachelor of Music (Piano Performance) program or equivalent.

### *James and Abbie Campbell Prize, Campbell Incentive Award*

The Department of Music may from time to time award prizes to outstanding students from the James and Abbie Campbell Memorial Fund. The Campbell Incentive Award may on occasion be awarded under special circumstances.

### *James A. Faraday Memorial Music Award*

This annual scholarship is for a percussion student in the third or fourth year of a music degree program. To be considered, students must demonstrate a high standard of performance, a love music, a positive attitude and a collaborative spirit. The Music Department's Scholarship Committee will work in consultation with faculty members from the percussion program to choose an eligible student. The award will be made in the spring of each year. This award was established by family and friends to honour the memory of James A. Faraday, percussion teacher, mentor and friend, who inspired students at Dalhousie for over 30 years.

### *Dalhousie Alumni Association (Women's Division) Medal in Music*

The Women's Division provides an annual medal to the graduating student who achieves the highest cumulative GPA in music subjects over the four year Bachelor of Music degree.

***Dalhousie Women's Alumnae Prize***

This prize is presented to the graduating student who has achieved a high cumulative average in music subjects during the four-year Bachelor of Music degree program.

***The Beatrice Daviss Music Prize***

A fund has been established by members of the Dalhousie community to mark Women's Centennial Year (1985) at the University. The purpose of the fund is to provide an annual in-class prize to a female student in the Bachelor of Music program on the combined basis of high academic standing and performance ability as determined by the Department of Music. The prize is named after the first graduate in music in 1909.

***The Ernest and Dorothy Heighton Memorial Prize***

A prize established through bequests received from the estates of the late Dr. Ernest Heighton and his wife Dorothy, in the spirit of their keen interest and support for the Department of Music's Applied Skills training program and for the public performances of its students. Preference will be given to an outstanding student in the third or fourth year of the Bachelor of Music in Performance: Concentration in Jazz and Improvisation. The value of the prize shall not be less than \$400.

***The Lorne C. Huber Memorial Prize in Music***

This prize is awarded annually from a fund in memory of the late major Lorne C. Huber established by his widow and family, to an undergraduate student of outstanding potential in brass performance. The minimum value of this prize is \$100.

***The Erik Perth Memorial Award***

An award established to honour the memory of Erik Perth, a former Director of Cultural Activities at Dalhousie University. An annual prize will be awarded to a female vocal student who has completed the third year of a Bachelor of Music, or Bachelor of Arts Combined Honours, Music & Theatre, and who, in the opinion of the Department, has demonstrated both outstanding achievement in vocal performance, and an aptitude for a career in opera and/or musical theatre. The prize will be awarded in conjunction with the opening night performance of the annual Opera Workshop.

***Richardson Family Experiential Learning Award***

This award provides financial aid for music students who are attending experiential learning workshops, festivals and conferences, based on nomination from department faculty members. Preference will be made to grant one \$1,000 award for a student accepted in the Halifax Summer Opera Workshop, or successor program, and the other \$1,000 award to a student accepted into the Scotia Festival of Music, or successor program. This annually funded award was established by Bill Richardson, a graduate of Dalhousie's Law School, and by Colin and Debbie Richardson, both of whom worked in support of numerous music student productions in the Dalhousie Arts Centre.

***The Royal Saint George's Society of Halifax Prize in Music***

The Royal Saint George's Society of Halifax has established a prize in recognition of the University's successful role in the musical training and cultural enrichment of the community. This prize will be awarded annually to a student entering the third or fourth year of an undergraduate degree program in music who, in the estimation of the Department, shows particular potential in an orchestral instrument.

***The Georg Tintner Prize***

This fund was established by family, colleagues and friends, to honour the musical legacy and spirit of Dr. Georg Tintner, conductor and Music Director of Symphony Nova Scotia (1987-1994) and devoted supporter of the Dalhousie Music Department's performance activities. An annual prize will be awarded to an instrumental or voice student enrolled in a music degree program who, in the estimation of an audition panel, demonstrates exceptional musical talent with the potential for a professional performance career. The prize will be awarded at the annual Concerto Night concert.

***The William Tritt Recital Prize***

The Department of Music may, upon the recommendation of the Piano Faculty, award this prize to a piano student who has demonstrated a high level of performance on his/her third year or graduation recital. This prize will be awarded only when it is deemed warranted. This award is named after the late Canadian pianist and Dalhousie faculty member, William Tritt.

***The William Tritt/Scotia Festival Memorial Prize***

The Department of Music awards this prize upon the recommendation of the Piano Faculty to a senior level Piano student who has achieved a high standard of performance. This prize is to be applied to tuition costs for participation in the Young Artists Program of the Scotia Festival of Music. This award is named after the late Canadian pianist and Dalhousie faculty member, William Tritt.

***University Medal in Music***

The Department of Music offers a medal to the highest ranking student of the year who graduates with the equivalent of a First Class Honours degree in the Bachelor of Music program.

**17. Philosophy*****The F. Hilton Page Memorial Prize in Philosophy***

This annual prize is normally awarded to the honours graduate whose Honours essay is judged to be outstanding.

***Dr. H.L. Stewart Memorial Scholarship***

This prize is awarded to the student with the best record entering the final year of an Honours Philosophy degree program.

***University Medal in Philosophy***

The Department of Philosophy offers a medal to the top First Class Honours graduate in recognition of superior achievement in the program.

**18. Political Science*****The James H. Aitchison Award***

In 1979 colleagues of Dr. J.H. Aitchison established a fund from which an annual prize would be awarded in recognition of the best undergraduate honours essay. The fund was established to honour Professor Aitchison who was instrumental in founding the Department.

***Commonwealth Political Philosophy Prize***

Established by John W. Beveridge (BA, Honours 1971) for students who demonstrate interest and achievement in the field of political philosophy. The prize name derives from Commonwealth, understood as society and government that endeavours to serve and represent community, without tending towards a totalitarian system. This prize is awarded annually to the student who has achieved the highest grade in a class on political philosophy / the Foundations of Political Thought.

***The Eric Dennis Gold Medal***

Founded by Senator William Dennis and Mrs. Dennis, this medal will be awarded on graduation to the student who stands first among those taking First Class Honours in Government and Political Science. (This is the University Medal in Political Science.)

***The H.B. McCulloch Memorial Prize in Political Science***

This prize will be awarded annually to the student who, among all the first and second year students registered in introductory classes in political science, is judged to have written the best essay in the second term.

**19. Religious Studies*****University Medal in Religious Studies***

A University Medal has been established for the student with the highest standing among those who graduate with First Class Honours.

**20. Russian Studies*****University Medal in Russian Studies***

The Department of Russian Studies offers to the top First Class Honours graduate a medal in recognition of superior achievement in the program.

**21. Sociology and Social Anthropology*****The Rev. S.H. Prince Prize in Sociology***

A bequest under the will of the late Dr. S.H. Prince established a fund to provide an annual prize to be available to students at either Dalhousie or King's.

***University Medal in Social Anthropology***

The Department of Sociology and Social Anthropology offers a medal to the top First Class Honours graduate in the Social Anthropology program in recognition of superior achievement.



### ***University Medal in Sociology***

The Department of Sociology and Social Anthropology offers a medal to the top First Class Honours graduate in the Sociology program in recognition of superior achievement.

## **22. Spanish and Latin American Studies**

### ***Department of Spanish and Latin American Studies Citizenship Award***

The Citizenship Award recognizes the contributions of an individual to build a community atmosphere within the Department of Spanish and Latin American Studies.

### ***Dr. James E. Holloway, Jr. Memorial Prize***

The Holloway Memorial Prize is awarded to a graduating student with an honours degree (completed in the Department of Spanish and Latin American Studies) who has written a thesis with a focus upon Latin America.

### ***Sylvia Coffey Memorial Award***

The Sylvia Coffey Memorial Award is given to a female Spanish and Latin American Studies student studying in one of our programs abroad in Latin America.

### ***The de Carteret Memorial Prize***

Established as a gift in memory of the late Norman S. and Helier S. de Carteret and their sister, Phyllis de Carteret Nielsen, the de Carteret Memorial Prize is to be awarded on the recommendation of the Executive Committee of the Department to an outstanding student in the Department of Spanish and Latin American Studies.

### ***The Reverend J.B. Hibbitts Memorial Prize***

To honour the memory of a scholar, donor, and friend of the department, this prize is awarded annually to the graduating student with the highest overall honours GPA.

### ***University Medal in Spanish and Latin American Studies***

The Department of Spanish and Latin American Studies offers a medal to the top First Class Honours graduate in recognition of superior achievement in the Spanish and Latin American Studies program.

## **23. Theatre**

### ***Andrew and David Stitt Memorial Prize***

To honour the memory of Theatre students Andrew and David Stitt, two prizes will be awarded annually to two students entering the third year of the Acting Program who have shown promise in, and passion for, acting.

### ***Blackmore Award***

This award was created by Neptune Theatre of Halifax to honour scenic carpenters John and William Blackmore. The award is given to a student in his or her third year of a Theatre BA program who has shown promise in and passion for work in Technical Scenography.

### ***Department of Theatre Awards Fund***

This fund supports four awards to recognize the achievements of outstanding students in the Department of Theatre: the Basil Cook Award for students in Costume Studies, the Blanche Potter Award for students in Technical Scenography, the Martin Surette Award for students in Acting, and the Robert Merritt Award for students in Theatre Studies. The award will normally be made during the student's third year of study in the Theatre Department.

### ***Jopling Award for Out of Country Theatre Studies***

Earnings from this fund are used to support an annual award to assist students enrolled in the Department of Theatre to further their knowledge of theatre by study in another country during the summer. Eligible students must be enrolled full-time in a program of study in the Department of Theatre and have completed at least one year (both fall and winter semesters) of their program of study. In addition, eligible students will have been accepted to study theatre at an institution in a country other than Canada.

### ***University Medal in Theatre***

The Department of Theatre offers to the top First Class Honours graduate a medal in recognition of superior achievement.

### ***Women's Division - Dalhousie Alumni Association Medal in Costume Studies***

This medal is presented annually to the graduating student with the highest cumulative GPA in the Costume Studies Program.

### ***Christine Zinck Book Award***

This award recognizes an outstanding graduating honours student in Theatre Studies.

## **24. Transition Year Program**

### ***Morris Saffron Prize***

A bequest under the will of the late Morris Saffron established an endowment to provide an annual prize to a student in the Transition Year Program who is judged to have made the greatest academic achievement during the year.

### ***Jonathan Skeete Memorial Prize***

Friends, faculty and former students of the Transition Year Program have established an endowment from which to fund an annual prize. The award honours the memory of Jonathan Skeete who, following completion of the TYP, was graduated with a BComm degree and then served several years with the RCMP. An annual prize is available to a Black student who is enrolled in the Transition Year Program. Contact the Director of the Program for details.

## **F. Faculty of Computer Science**

### ***Ada Byron Award***

The Ada Byron Award recognizes the leadership and contributions of an individual to increase and promote the involvement of women in computer science.

### ***Citizenship Award***

The Citizenship Award recognizes the contributions of an individual to build a community atmosphere within the Faculty of Computer Science.

### ***Dean's List Award***

Students enrolled in an undergraduate major 20-credit program offered by the Faculty of Computer Science with at least 1.5 credits of classes offered at Dalhousie in the academic term being assessed, are automatically considered for the Dean's List designation and monetary award of \$250.

Students are eligible to receive the award for each term in which they achieve a minimum 3.70 GPA for the term being assessed. Part-time students are also eligible for the Dean's List if they have completed at least 1.5 credits during the academic year but less than 1.5 credits in any one term. Students cannot receive both a Dean's List Award and a Sexton Scholar Award in any one term.

### ***Gold, Silver and Bronze Awards***

The Gold (\$2,500), Silver (\$2,000) and Bronze (\$1,500) awards recognize the academic achievements of the top three students who are entering second, third, and fourth years of study.

To be eligible, students must be enrolled in an undergraduate major 20-credit program offered by the Faculty of Computer Science with at least 2.0 credits per term in the student's two academic terms prior to the award assessment; have completed at least five credits per year of study towards their computer science degree (incl. transfer credits), have completed all applicable CSCI core classes required that year and must have at least one academic term of 2.0 credits or more to complete for their computer science degree. All eligible students are automatically considered for these awards which are based solely on cumulative GPA. Students are assessed following the winter term.

### ***Leadership Award***

The Leadership Award recognizes the leadership and contributions of an individual in building a community atmosphere within the Faculty of Computer Science.

### ***Mobil Oil Award***

This award is given to the student with the highest GPA across CSCI 3120 and one of CSCI 3110 or CSCI 3111. Students are automatically assessed for the award at the end of the winter term or at their first eligibility.

### ***Sexton Scholar Award***

Students enrolled in an undergraduate 20-credit major program offered by the Faculty of Computer Science with at least 2.0 credits of classes offered at Dalhousie in the academic term being assessed, are automatically considered for

the Sexton Scholar designation and monetary award of \$400. Students are eligible to receive the award for each term in which they achieve a minimum 3.85 GPA for the term being assessed. Students cannot receive both a Dean's List Award and a Sexton Scholar Award in any one term.

#### **University Medal in Computer Science**

A medal is awarded to the top First Class Honours graduate in both BCS and BSE in recognition of superior achievement in computer science.

### **G. Faculty of Engineering**

#### **Adjeleian Award in the Aesthetics of Structures**

Dr. John Adjeleian established this award of \$1,000 to be made to a graduating student in either the School of Architecture's Master of Architecture program, or Civil Engineering. The award will be granted to the graduating student who demonstrates in a project both aesthetic principles in buildings and bridges, and unified roots of architecture and structural engineering. The award will alternate between Architecture and Civil Engineering. Selection is by Scholarships & Awards Committee of the Faculty of Engineering on the recommendation of one professor of Structural Engineering, one professor of Architecture, one Consulting Structural Engineer, and one Consulting Architect. Deadline: Architecture - no application required; Engineering - March 31.

#### **The Engineers (Nova Scotia) Award**

Engineers Nova Scotia provides an award made at convocation each year to that student graduating in engineering who best demonstrates promise of using outstanding abilities to serve society in an ethical manner as a Professional Engineer. The award candidates will be nominated by students of the graduating classes in consultation with their Engineering Department members. The award is an engraved certificate and \$1,000. Selection will be made by the Student Affairs Committee of Engineers Canada and based on a written and oral presentation.

#### **Atlantic Farm Mechanization Show Graduation Award**

Presented annually to the student graduating in Biological Engineering who has exhibited the greatest aptitude in the machinery related classes and who has demonstrated the greatest potential for a career in Biological Engineering. Value: \$1,000.

#### **Atlantic Land Improvement Contractors Association/ Environmental Engineering Association Award**

Presented annually to the student graduating in the Environmental Engineering program who had exhibited the greatest aptitude in the environmental engineering classes and who thus has demonstrated the greatest potential for a career in environmental engineering. Value: \$750.

#### **The Louie I. Baker Awards in Technical Communication**

Established by Dr. Max L. Baker in memory of his wife Louie are two prizes for the Technical Writing category valued at \$300 and \$200 each, and two prizes for the Oral Presentation category valued at \$300 and \$200 each. Dr. Baker was Professor Emeritus at Dalhousie and a former Head of Mechanical Engineering. Competition is open to all Dalhousie students registered in Engineering. Oral Presentation - student registered in the final year. Technical Writing - students registered in the penultimate year. The recipients shall be selected in February each year. The theme and rules governing the competition are available from the Office of the Associate Dean of Engineering. The details are published in the Guidelines for the Baker Awards.

Deadline: December - Technical Writing; January - Oral Presentation

#### **Camp 7 Iron Ring Award**

Established by Camp 7 Halifax, The Corporation of the Seven Wardens, this award is given to a graduating Engineering student who displays a uniquely high professional attitude towards their academic program that has produced quality academic results. Students are nominated for this award by their department, from those who have applied for in-class scholarships.

#### **The Canadian Society for Chemical Engineering Medal**

The Canadian Society for Chemical Engineering Medal is presented annually to the third year student in Chemical Engineering with the highest overall average during the third year of studies at Dalhousie.

#### **The Canadian Society for Civil Engineering Certificate**

In 1985, the Canadian Society for Civil Engineering established a Certificate of Achievement that is awarded annually to the student graduating in Civil Engineering with the highest aggregate in the last two years of study.

#### **The Canadian Society of Mechanical Engineering Medal**

The Canadian Society of Mechanical Engineering Medal is presented at Convocation each year to the student graduating in Mechanical Engineering with the highest overall average.

#### **Class of '85 Award**

The Class of '85 Award is presented annually at convocation to the student graduating in Biological and Environmental Engineering programs who has exhibited the most outstanding qualities of scholarship, leadership, and personality during his/her course of studies at Dalhousie.

#### **The Walter P. Copp Memorial Prize**

In 1979 an anonymous donor gave the University \$2,500 to establish an endowment for the purpose of funding this prize. It is awarded annually to the student for promotion from second year to third year in the Dalhousie Faculty of Engineering with the highest average in Engineering classes.

#### **The Dean Flynn Memorial Prize**

This prize consists of a medal which is awarded annually to the student graduating in Mining Engineering with the highest overall average in the program of studies at Dalhousie.

#### **IEEE Medal**

The Institution of Electrical and Electronics Engineers, Canadian Atlantic Section, provides a silver medal which is awarded at convocation each year to the student graduating in Electrical Engineering with the highest overall average in the program of studies at Dalhousie.

#### **Michael Lister Memorial Award**

To honour the memory of Michael Lister BEng'97, and his love of engineering, this award is available to a student graduating in Mineral Resource Engineering who has achieved good academic standing, combined with leadership qualities and a strong work ethic.

#### **The Charles F.H. Macdonald Memorial Prize**

The family of the late Charles F.H. Macdonald provided for a prize in his memory to be awarded each year to a student completing the Bachelor of Engineering program in Civil Engineering with a good academic average. The prize is awarded by the Scholarships & Awards Committee on the recommendation of the Chair of the Civil Engineering program. The award is \$300.

#### **The Ira P. MacNab Prize**

The late Dr. Ira P. MacNab, an alumnus of the University, provided funds for an annual award to be presented to the student graduating in Mechanical Engineering with the highest overall average in a program of studies at Dalhousie. The award is \$75.

#### **The Kenneth F. Marginson Award**

This prize is awarded annually to the student who achieves the highest standing in the first year of the Bachelor of Engineering program. Only students who are enrolled in University for the first time are eligible to receive this award. Presentation of the award is when the student enrolls in the second year of the Bachelor of Engineering program. This prize is funded from an endowment of \$2,500, established by an anonymous donor, in honour of Professor Kenneth F. Marginson, a former Head of the Department.

#### **The Mining Society of Nova Scotia Centennial Scholarship Medal**

The Mining Society of Nova Scotia Centennial Scholarship Medal will be awarded annually to a Mining or Materials Engineering student graduating at Dalhousie who demonstrates the best all-around merit in the course of studies at Dalhousie. Selection of the recipient is to be made at the discretion of the Department Head.

#### **The Society of Chemical Industry Merit Award**

The Society of Chemical Industry Merit Award is presented annually to the student graduating in Chemical Engineering with the highest overall average during the senior year of a program of studies at Dalhousie. The award is a gold key bearing the crest of the society, and a year's subscription to Chemical Engineering.

#### **The William Stairs Memorial Prize**

This prize consists of a medal which is presented annually to the student who shows outstanding ability in metallurgy, physical properties of metals or the use of metals in the arts of industry.

### ***The Dr. H.R. Theakston Memorial Award***

This non-monetary award is presented each year to the student who achieves the highest standing in Engineering Graphics. It was established in 1964 in remembrance of Dr. H.R. Theakston who for several decades was University Engineer and Head of the Engineering Department, taught Graphics throughout that period and enjoyed a long and prestigious career as a professional engineer. The award consists of a certificate suitable for framing.

### ***University Medal in Biological Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Biological Engineering.

### ***University Medal in Chemical Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Chemical Engineering.

### ***University Medal in Civil Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Civil Engineering.

### ***University Medal in Electrical and Computer Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Electrical and Computer Engineering.

### ***University Medal in Environmental Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Environmental Engineering.

### ***University Medal in Food Science***

This medal is awarded annually to the graduate who has attained the highest academic standing in Food Science.

### ***University Medal in Industrial Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Industrial Engineering.

### ***University Medal in Mechanical Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Mechanical Engineering.

### ***University Medal in Materials Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing Materials Engineering.

### ***University Medal in Mineral Resource Engineering***

This medal is awarded annually to the graduate who has attained the highest academic standing in Mineral Resource Engineering.

### ***The Bob Walter Award***

Given to the student who best combines fellowship, sportsmanship and scholarship, the Bob Walter Award is the highest honour which the Engineering Society can bestow upon its graduates. The award consists of an engraved gift and a certificate suitable for framing. Instituted in the 1940/41 academic year, the award honours the memory of an outstanding engineering student who was president of the Dalhousie Engineering Society.

## **H. Faculty of Health Professions**

### **1. University Medals**

In the College of Pharmacy, the School of Health and Human Performance, School of Health Sciences and School of Nursing, a University medal is awarded annually at the spring convocation to a graduating student who demonstrates outstanding academic performance. The medal is only awarded if the following criteria have been met:

- The candidate has successfully completed the equivalent of three full-time years in his/her respective baccalaureate program (90 credit hours) at Dalhousie.
- Has met the FHP cumulative GPA requirement or better on classes taken at Dalhousie towards the degree.
- Of those eligible, has the highest GPA.

All credits taken towards the degree at Dalhousie will be used in the calculations. Transfer credits taken prior to entry into the program are not counted towards either the 90 credit hours criterion, or towards the cumulative GPA requirement. Classes taken on Letters of Permission while registered in the program are

included in the 90 credit hours eligibility criterion and calculated as part of the cumulative GPA requirement.

Students graduating in the fall convocation are eligible for University Medal consideration in the following spring convocation. As the School of Social Work does not offer a three-year (90 credit hour) BSW degree, it is not eligible for the University Medal.

## **2. School of Health and Human Performance**

### ***Canadian Society for Exercise Physiology***

The Society provides an annual medal to the School to be awarded to an outstanding student in the Bachelor of Science in Kinesiology program. The recipient will be the graduating student who has achieved the highest academic standing in their undergraduate class in the scientific portion of the curriculum.

### ***The Dr. M.J. Ellis Award***

This award was established to give recognition to a graduating student who demonstrates exceptional interest and ability in research in one of the four undergraduate degree programs.

### ***Matthew Knox Award***

This award was inaugurated in 2005 to recognize and honour the accomplishments of the individual whose name this award bears. Matthew Knox, a fourth year Bachelor of Science (Kinesiology) student was one of three Dalhousie students in 2005 to win one of the three Rhodes Scholarships, awarded annually to Canada's Atlantic region for study at Oxford University. The Rhodes Scholarship, first established in 1902, is the oldest of the international study awards available to Canadian students. Of the 85 Dalhousie students to have won this award, since its inception, Matthew Knox was the first ever recipient from the Faculty of Health Professions.

The criteria for the Rhodes Scholarship, set down in the Will of the British philanthropist and colonial pioneer, are high academic achievement, integrity of character, a spirit of unselfishness, respect for others, potential for leadership and physical vigor. These basic characteristics are directed at fulfilling Cecil Rhodes' hopes that Rhodes Scholars would make an effective and positive contribution throughout the world. These criteria will be used as guidelines in the determination of appropriate prospective student recipients in the School of Health and Human Performance for the Matthew Knox Award on a perpetual basis.

### ***Leisure Research Congress Award***

The Fifth Canadian Congress on Leisure Research set up an endowment to provide an annual award to a student who has graduated from the Bachelor of Science (Recreation) program. The recipient will have attained a cumulative GPA of 3.00 or higher and will have demonstrated an aptitude for research related to recreation and leisure.

### ***PHE (Physical and Health Education) Canada Student Award***

This award recognizes undergraduate student leadership in the field of health, physical education, recreation or dance.

### ***The Dr. Hugh A. Noble Award***

This award is given to a graduating student from one of the four undergraduate degree programs in the School of Health and Human Performance. The awarding is based on academic accomplishments, qualities of citizenship as shown by involvement outside the University, leadership qualities as demonstrated in activities inside the University, and an estimate of the candidate's potential for contributing to the profession.

### ***Dr. John C. Pooley Sportsperson Award***

This award is presented to the student who has contributed significantly to the development of a sport.

### ***Dr. J. Singleton Leadership Award***

This award is given annually in recognition of a Dalhousie University student's involvement and commitment to Therapeutic Recreation professional organizations.

### ***Vincent Chew Memorial Award***

Vincent Chew graduated from Dalhousie University with a Bachelor of Commerce degree in 1997 and a Law degree in 2001. He was working as Communication & Marketing Manager with the International Council for Sport Science & Physical Education when he passed away in 2008 as a result of a road accident in Berlin, Germany. Prior to that, he was with the 15th Asian Games in

Qatar, and the Commonwealth Games in Melbourne, Australia. An avid sports and music fan, he enjoyed his varied interests while traveling extensively. Considering his passion for sport, sport management, and business, the Vincent Chew Memorial Award has been established by his parents at Dalhousie that will recognize academic excellence in the joint Recreational Management degree program (Bachelor of Management/Bachelor of Science - Recreation).

#### **University Medal in Health and Human Performance**

Please refer to H. Faculty of Health Professions, 1. University Medals on page 640 for details.

#### **The Women's Division of the Dalhousie Alumni Association H&HP Medals**

Three awards are available to students in the School of Health and Human Performance. For the students who achieve the highest standing in each of the Bachelor of Science in Recreation, the Bachelor of Science in Health Promotion and the Bachelor of Science in Kinesiology degree, the Women's Division sponsors a medal.

### **3. School of Health Sciences**

#### **3.a For Graduating Students**

##### **BHSc Faculty Award**

This award is given to the graduating student with the highest cumulative GPA following four consecutive years in the BHSc program.

##### **DRAXIMAGE Award**

This award is given to a full-time student graduating in Nuclear Medicine Technology who has achieved the highest cumulative GPA for their discipline-specific classes.

##### **Tim Mackenzie Memorial Award**

This award, in memory of Tim Mackenzie, a 1977 graduate of the School of Radiological Technology, is awarded to a graduating Radiological Technology student and is based on high standards of clinical practice and the respect of patients' rights and needs as individuals.

##### **Dr. Robert H. Martin Prize**

In memory of Dr. Robert H. Martin, this prize is awarded to a member of the graduating class in Nuclear Medicine Technology with the highest combined evaluation in clinical and academic performance over the four years of the degree.

##### **Radiologist's Awards**

These awards are sponsored by the QEII Health Sciences Radiologist Group and are awarded to a graduating student in each of the Nuclear Medicine Technology, Diagnostic Medical Ultrasound and Radiological Technology programs with highest cumulative GPA.

##### **Medigas Award for Clinical Achievement**

This award is sponsored by Medigas and is presented to a full-time graduating student of Respiratory Therapy who demonstrated high standards of clinical practice.

##### **University Medal in Health Sciences**

Please refer to H. Faculty of Health Professions, 1. University Medals on page 640 for details.

#### **3.b For Other Students**

##### **Dorothy Archibald Award**

This award is sponsored by Dorothy Archibald, a lifetime member with CAMRT, who is dedicated in her retirement to advancement of the Medical Radiation Technology professions. Awarded to two full-time students (one in each of Nuclear Medicine Technology and Radiological Technology) who have successfully completed Clinical Practicum II.

##### **Margaret Barrett-Banks Memorial Award**

This cash award is sponsored by the Margaret Barrett-Banks memorial fund in memory of Margaret Barrett-Banks, a dedicated health professional and educator. This is awarded to a student entering the fourth year of the BHSc degree program and is based on GPA, demonstration of financial need, demonstration of contribution to the community, university and/or health system through leadership and voluntary activities.

##### **Ian Collins Memorial Pediatric Award**

This award is sponsored by the Canadian Cystic Fibrosis Foundation and the IWK Health Centre Respiratory staff. The award is presented to a student completing Year 3 in Respiratory Therapy and is chosen based on demonstration of outstanding neonatal and pediatric care, outstanding academic, laboratory and clinical achievement and contribution to the care of cystic fibrosis patients and their families.

##### **Elsevier Canada Book Awards**

These awards are given to two students, one completing the first year and the other completing the second year of Respiratory Therapy. These awards are based on cumulative GPA and commitment to clinical excellence during the relevant year of study.

##### **Cynthia Johnson Evans Award**

This award is sponsored by the Nova Scotia Society of Diagnostic Medical Sonographers, in memory of Cynthia Johnson Evans, former educator and sonographer. It is awarded to the student who has consistently demonstrated high standards of clinical practice upon completion of year three in Diagnostic Medical Ultrasound.

##### **Heather Mattice Memorial Award**

The friends and family of Heather Mattice, a former student of Nuclear Medicine Technology, established this award in her memory. It is given to a student entering year four in Nuclear Medicine Technology and is based on financial need, academic standing, community and campus involvement and recommendation of the Nuclear Medicine Technology faculty.

##### **Nova Scotia College of Medical Laboratory Technologists (NSCMLT) Awards**

These three awards, sponsored by NSCMLT, are given to students, one from each of the classes entering second, third, and fourth years of the BHSc in Diagnostic Cytology, and who have consistently demonstrated clinical and academic excellence and maintained a minimum GPA of 3.30. Students who have completed third year must also demonstrate diagnostic excellence and clinical proficiency as well as excellence in professional practice and respect for the patient.

##### **Trudell Medical Marketing Limited Award**

This award is given to a student completing the third year in Respiratory Therapy and is based on GPA, commitment to clinical excellence during the three years of study and evidence of extracurricular involvement.

### **4. School of Nursing (Convocation Awards)**

##### **Undergraduate Alumni Leadership Award**

The recipient of this monetary award is a student graduating from the Basic Degree Program or the Post RN Degree Program who has demonstrated significant leadership during his/her years of study.

##### **Matthew Ayer Award for Community Nursing**

The Matthew Ayer award was established in 2008 by the family and friends of Matthew Ayer in his memory. Matthew was a student in the BScN program at the time of his death in October 2007. The recipient of this monetary award is a student in the Bachelor of Science (Nursing) Program at the School of Nursing, Dalhousie University, who has excelled in working with populations living on the margins of society due to social injustices.

##### **Capital Health Award for Professional Practice in Nursing (Basic Stream & Advanced Standing Stream - Basic Degree Program)**

Selected by his/her peers, this award recognizes a student graduating from the Basic Degree Program (May Convocation) and the Advanced Standing Stream (October Convocation) who has demonstrated the qualities of professional practice. The recipient of this monetary award epitomizes the Standards of Nursing Practice of accountability and responsibility, continuing competence and application of knowledge and advocacy, and the CNA Code of Ethics for Registered Nurses.

##### **Melda Dashevsky Memorial Award**

Melda Dashevsky (nee Crocker) graduated from Victoria General Hospital School of Nursing in 1962 and worked in many areas of nursing across Canada. She and several of her family members experienced struggles with cancer and benefited from the nursing care they received. This award is provided by Mrs. Dashevsky's husband, in her memory, and was originally presented to a student graduating from the Victoria General Hospital School of Nursing. The recipient of this

monetary award is a student graduating from the Basic Degree Program who has demonstrated interest and proficiency in Oncology Nursing.

#### ***Mary-Lou Ellerton Prize in Clinical Nursing***

Professor Mary Lou Ellerton was the Associate Director, Undergraduate Program Planning and Development at the School of Nursing, Dalhousie University. She was a graduate of the Universities of Ottawa and McGill and joined the faculty of the Dalhousie School of Nursing in 1979. She devoted her professional life to fostering excellence in clinical practice and made many significant contributions to both graduate and undergraduate programs in the School of Nursing as well as to the University and the broader nursing profession. Professor Ellerton was a woman of courage, integrity, wisdom and wit. She was posthumously awarded the IWK Health Centre's highest honour, the Award of Distinction. The recipient of this award is a graduating student who has consistently received excellent evaluations in the clinical nursing components of the program.

#### ***Elsevier Canada Award***

The recipient of this monetary award is a student graduating from the Basic Degree Program or the Post RN Degree Program who has shown progressive academic achievement.

#### ***Heather Fraser-Davey Book Award***

Heather Fraser-Davey was a professor with the Dalhousie School of Nursing for more than 24 years. She received her PhD in Adult Education from Dalhousie. She taught Pediatric and Surgical nursing as well as Maternal-Child nursing. Heather was involved in establishing a link with the Queen Margaret College, Department of Nursing, Edinburgh, Scotland. She also worked with the Tanzania project which linked the School of Nursing, Dalhousie and the School of Nursing, University of Dar es Salaam. She is Past President and a Life Member of the Atlantic Region of Canadian Association of University Schools of Nursing. Heather also held an Honorary Research Associate position in the School of Education, Dalhousie University. The recipient of this monetary award is a graduating student who has demonstrated interest in international nursing and nurse midwifery.

#### ***Highest Academic Achievement Certificate (Basic Degree Program & Post RN Degree Program)***

The recipient of this award is a student graduating from the Basic Degree Program & Post RN Degree Program with the highest cumulative GPA.

#### ***Highest Academic Achievement Prize (Undergraduate Degree Program)***

The recipient of this monetary award is a student graduating from the Basic Degree Program or the Post RN Degree Program with the highest cumulative GPA.

#### ***IWK Medical, Dental and Scientific Staff Award for Excellence in Children's Nursing***

The recipient of this monetary award is a student graduating from the Basic Degree Program who has demonstrated excellence in the area of Children's Nursing.

#### ***IWK Medical, Dental and Scientific Staff Award for Excellence in Women's and Newborn Nursing***

The recipient of this monetary award is a student graduating from the Basic Degree Program who has demonstrated excellence in the area of Women's and Newborn Nursing.

#### ***IWK Health Centre Prize for Excellence in the Care of Children and Families***

The recipient of this monetary award is a student who has demonstrated critical thinking, advocacy and autonomy in nursing children and their families in hospitals, homes and communities.

#### ***Elizabeth MacKinnon Lambie Award for Nutrition***

Elizabeth Lambie was a professor at Dalhousie School of Nursing for more than 23 years. She taught classes on human nutrition, the role of nutrition in health promotion and community development, and the economic, social and physical determinants of eating practices. She is a Life Member of the Atlantic Region of the Canadian Association of University Schools of Nursing; a Charter member, Past President, Nova Scotia Dietetics Association; Past President, Fellow, Canadian Dietetics Association; Past President, Public Health Association of Nova Scotia, and Board Member, International Council on Women's Health Issues. The recipient of this monetary award is a graduating student who has demonstrated the ability to apply community nutrition knowledge to the nursing profession.

#### ***Palliative Care Nursing Award***

For over one hundred years the Victoria General Hospital School of Nursing in Halifax educated quality, caring and compassionate nurses. In 1995 the last class graduated. The VGH School of Nursing Alumni continues to keep alive memories of this diploma school of nursing that was one of the oldest in Canada. The recipient of this monetary award is a student graduating from the Basic Degree program who has demonstrated exceptional nursing practice, professionalism and compassion while caring for patients in the area of Palliative Care Nursing.

#### ***Registered Nurses Professional Development Centre Award (RN-PDC)***

The recipient of this monetary award is a student graduating from the BScN Degree Program who has participated in the acute care nursing elective. The recipient has demonstrated exceptional nursing practice in the care of the individual and family in an intermediate acute care setting and is identified as having potential in adult acute care nursing practice.

#### ***Sigma Theta Tau (Rho Rho Chapter) Award for Medical-Surgical Nursing***

The Medical-Surgical Nursing Practice Award is granted to a student graduating from the Basic Degree Program who has demonstrated excellence in academic and clinical practice when caring for adults. This award is supported by Rho Rho Chapter of Sigma Theta Tau International. The recipient of this monetary award is chosen by professors and clinical instructors teaching in the medical-surgical classes in the BScN Degree Program.

#### ***Rosie Steele Prize In Nursing***

Rosie Steele was a nurse at the Grace Maternity Hospital for over 30 years. In 1973, she established a Post-Graduate Maternity Nursing Class for the continuing education of over 200 Maritime nurses. Through her work in nursing Mrs. Steele contributed greatly to positive changes in nursing education and Perinatal Care for families in Nova Scotia. The recipient of this monetary award is a student graduating from the Post RN Degree Program who has demonstrated academic achievement and leadership potential in Perinatal Nursing.

#### ***Phyllis Noerager Stern Award***

Phyllis Noerager Stern was a Director and Professor of the Dalhousie School of Nursing for over eight years. She taught classes in trans-cultural nursing, maternity nursing and research methods. Dr. Stern received a PhD in Family Health from the University of California and an honorary PhD from Dalhousie University. She went on to be Chair of the Department of Parent-Child Nursing at Indiana University, editor of Women's Health International and president of the International Council on Women's Health Issues. The recipient of this award is a graduating student who has (in the opinion of his/her peers) made outstanding contributions to the student body throughout the year.

#### ***University Medal***

This medal is presented to a graduating student with a cumulative GPA of at least 3.80 who meets the criteria set by the Faculty of Health Professions.

#### ***Women's Division of the Dalhousie Alumni Association Medal***

The recipient of this medal is a graduating student with the highest cumulative GPA in the BScN Basic Degree Program.

### **5. College of Pharmacy**

#### ***Becton Dickinson Award of Excellence in Endocrine Studies***

This \$500 award will be presented to the student who has the highest mark in Pharmacy 3060 (Endocrine PBL block) at the College of Pharmacy.

#### ***GR Buckley Community Pharmacy Award***

This award is presented annually to a student who has completed outstanding work in the fourth year of the community practical experience program. The award is selected from nominations received from preceptors.

#### ***The Dean George A. Burbidge Memorial Award***

This award of \$1,000 is given by the Nova Scotia College of Pharmacists to a student completing third year, from Nova Scotia, for outstanding qualities of character and pharmaceutical ability at the College of Pharmacy.

#### ***The R. Frank Chandler Award***

An endowment fund was established by Ortho Pharmaceutical (Canada) Ltd. in 1989 to support this Award. It will be presented to a student entering the final year of study at the College of Pharmacy. The candidate must have high qualities of character and spirit, must have well developed interpersonal skills, must show an

aptitude and proficiency for the profession, must show promise of making future contributions to the profession of pharmacy.

#### ***The F.R. Clayden Prize***

This prize of a book is presented in memory of Mr. F.R. Clayden (Class of 1912) to a deserving student completing the first year classes of the pharmacy program.

#### ***The Dean J. Esmonde Cooke Award***

This award of \$500 is awarded annually to a student who has successfully completed one or more years of the class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the coming year. Candidates must have attained a good academic standing and show promise of making future contributions to the profession of pharmacy. The student must be a graduate of a high school in Nova Scotia and should not be the recipient of other concurrent awards. The Selection Committee may also consider the financial need. This award is sponsored by the Pharmacy Association of Nova Scotia.

#### ***College of Pharmacists Dr. J. G. Duff Award***

One award of \$1,000 will be awarded annually to a Nova Scotia student who demonstrates a commitment to professionalism integrity and compassion.

#### ***Dale Daley Pharmacy Award for Excellence***

In 1990, Shoppers Drug Mart established an endowment to recognize the many contributions of Dale Daley to the profession of pharmacy. The award is presented annually to a third year pharmacy student who has demonstrated a good academic standing and whose contributions to undergraduate life at the university level.

#### ***Robert C. Dickison Memorial Award***

This award is presented to a student from New Brunswick on the basis of academic achievement, financial need and participation in student activities at the College of Pharmacy. The award is made available through a bequest of the late Mr. Charles D. Dickison.

#### ***The Sister Frances dePaul Award***

This award, a reference book or a subscription to a professional journal, is offered annually by the Nova Scotia Branch of the Canadian Society of Hospital Pharmacists and is presented to a graduating student entering a hospital pharmacy residency program, who is a member of CSHP, and excels in the PBL curriculum.

#### ***J.G. Duff Pharmacy Award***

An award of \$500 and a medal, was established by Dr. Duff's former students and associates in recognition of his contribution and devotion to pharmaceutical education in the Maritimes. The award and medal will be presented to a student entering the senior year for outstanding leadership and satisfactory scholastic attainment. A Senior Stick, bearing the names of the recipients, will be kept in trust by the Dalhousie Student Pharmacy Society. The recipient of the award will be selected by the student body.

#### ***The Charles E. Frosst Award***

This award of \$1,000 and a medal are presented by Merck Frosst Canada Inc. to the student who excels in the third year class.

#### ***Geri Kearnes Spirit of Pharmacy Award***

This award of \$500 is presented by the Nova Scotia College of Pharmacy to a fourth year student who has had a positive influence on the activities of the College of Pharmacy; who is regarded by others as hardworking and unpretentious; and who has a genuine and unfailing commitment to the practice of pharmacy.

#### ***The William Killorn Award***

Shoppers Drug Mart Associates and the pharmaceutical industry have established an endowment to pay tribute to Bill Killorn in honour of his 46 years of service to pharmacy in Atlantic Canada. The award is presented annually to a pharmacy student who, in the view of the College's Awards Committee, demonstrates strong leadership skills and excels in academic and extracurricular activities.

#### ***The Honourable John J. Kinley Pharmacy Award***

In 1972, Mrs. L. Kinley established an endowment in memory of her husband, the Honourable John J. Kinley, a pharmacist, and former Canadian Senator. In order to be considered for the award, candidates must have satisfactory academic standing and show promise of contributing to the profession. The financial need of the applicant may also be considered by the Selection Committee. The income from an established fund will be used to provide a monetary award as well as a book.

#### ***Scott Knowles Memorial Pharmacy Award***

This award was established by family, friends, and colleagues in memory of Scott Knowles, a graduate of the Class of 2007. The award is presented to a student from New Brunswick who exhibits a high degree of professionalism and possesses leadership qualities. Preference will be given to a student returning to New Brunswick to practice in an independent, rural, community-based pharmacy.

#### ***Dr. Jessie I. MacKnight Miss Mona W. Fleming Award in Hospital Pharmacy***

This award is presented annually to a student from New Brunswick and to a student from Nova Scotia who have completed outstanding work in the hospital portion of the practical experience program and in the fourth year multi-skill laboratory class. It is desirable that the recipients demonstrate an interest in hospital pharmacy practice.

#### ***The Helen Corston Marshall Award in Pharmacy***

This endowment was established in memory of Helen Corston Marshall, a student of the Maritime College of Pharmacy, by her family. This award is to be given annually to a student (or students) who has successfully completed one or more years of the class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the ensuing year. Candidates must have attained a satisfactory academic standing and must show promise of making future contributions to the profession of pharmacy. Financial need may be considered.

#### ***McKesson Medal***

This medal is awarded annually to the student on graduation who has obtained the second highest aggregate mark during his/her four years at the College of Pharmacy.

#### ***McNeill, Rhodes, Karayacoubian Award***

This award of \$500 will be given to a pharmacy student at the completion of his/her third or fourth year of the program. The recipient must have attained satisfactory academic standing and must be an active member of the class participating in college activities such as For the Health Of It, the class skit and be a member of an intramural team.

#### ***Merck Frosst Evidence-Based Clinical Practice Award***

This \$1,000 award is presented to a graduating student who has demonstrated outstanding interest, aptitude and leadership in the development and application of evidence-based and critical appraisal skills.

#### ***Merck Sharp and Dohme Pharmacy Award***

This award, of \$1,000 and the books, The Merck Index and The Merck Manual, is presented to the student entering third year who excels in pharmaceutical sciences (medicinal chemistry, pharmacokinetics).

#### ***Roger Montigny Memorial Award***

This award was established by family, friends, and colleagues in memory of L. Roger Montigny, a graduate of the Class of 1974. This award of \$1,000 is presented to a third year student from Prince Edward Island who demonstrates a passion for pharmacy and an interest in practicing community pharmacy. The recipient must demonstrate satisfactory academic standing and financial need.

#### ***Donald Moore Memorial Award in Pharmacy***

The Donald Moore Memorial Award was established with donations made by family, friends and a generous on-going grant from Shopper's Drug Mart Associates in memory of the late Donald Moore, a well known leader in hospital and community pharmacy in New Brunswick. This \$1,500 award is presented to students entering third year, who have demonstrated well-rounded skills by making a significant and continuing contribution to the student body at the College of Pharmacy and/or Dalhousie University.

#### ***Natural-Medicines Comprehensive Database Recognition Award***

The recipient of this award will be a graduating student who demonstrates an interest in natural products. The recipient will receive the new edition of the Natural Medicines Comprehensive Database book, a one-year subscription to Natural medicines Comprehensive Database website, a series of booklets entitled Natural Medicines in the Clinical Management of Disease, and an Award Certificate.

#### ***New Brunswick Pharmaceutical Society Centennial Medal***

In conjunction with its 100th anniversary of incorporation, the Society has established this commemorative medal to be presented annually to the New Brunswick student who has attained the highest aggregate mark during his/her four years at the College of Pharmacy.

***The Nova Scotia Association of Certified Dispensers Prize***

This prize, of a book, will be awarded annually to the top student in the first year multi-skills laboratory. The prize was established in 1984 with the gift of funds to provide the initial award and to set up an endowment to provide subsequent awards.

***The Nova Scotia College of Pharmacists Centennial Award***

In conjunction with its 100th anniversary of incorporation, the Society has established an award. Candidates will have a satisfactory academic standing and show aptitude for the profession. The financial need of the student may be considered in selecting recipients for the award.

***Nova Scotia College of Pharmacists Memorial Award***

The Society has established an award in memory of past members and friends of the Society. The award is available to a qualifying student who possesses good academic standing and aptitude for the profession. The financial need of the student may be considered in selecting the recipient for the award of \$1,000.

***Teva Canada Pharmacy Award***

This \$500 award is given to the student who excels in the second year Pharmacokinetics class.

***CPhA Centennial Award (External)***

This award, presented jointly by the Canadian Pharmacists Association (CPhA), and enables a third year student to join pharmacists and fellow students at the Annual General Meeting of the Canadian Pharmacists Association. The award program exposes student winners to several facets of the profession including the pharmaceutical industry, innovative pharmacy practice sites, hospitals and government agencies wherever possible. Selection is based on academic achievement and outstanding contributions to undergraduate activities.

***Eric & Ryan Post-Pharmacy Leadership Award***

This award is presented to a student who is completing their third year and who has demonstrated financial need and has also made significant contributions to pharmacy life at the College.

***The B. Trevoys Pugsley Memorial Pharmacy Award***

This award was established by a bequest from the Estate of B. Trevoys Pugsley for an undergraduate student who has completed one or more years of the pharmacy class. The criteria for the selection of the recipient are based on academic standing, aptitude for pharmacy and qualities of character. Financial need may also be considered.

***The Mrs. Vera B. Pugsley Award***

This award was established by a bequest from the Vera B. Pugsley estate. This award will be presented annually to a student who successfully completed one or more years of the class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the ensuing year. Candidates must have attained a satisfactory academic standing and must show promise of making future contributions to the profession of pharmacy.

***John J. Ryan Pharmacy Administration Awards***

These two awards of \$500 each are presented annually to the students who excel in PHAR 4060 (Advanced Patient Health Management) and PHAR 1060 (Pharmacy Law and Health Care Ethics). Financial need will also be considered. This award was made possible through income of the John J. Ryan Fund.

***John J. Ryan Award of Excellence in Pharmacy Administration***

This award of \$1,000 is presented to a graduating student who has demonstrated outstanding aptitude in the development and application of medication management and has achieved the top overall mark in all the social/administrative pharmaceutical sciences content of the curriculum.

***Sandoz Pharmacy Administration Award***

This award is presented to the student who excels in medication use management, PHAR 2060.

***The Leigh Semple Memorial Award***

An endowment has been established to provide an annual award to a third year pharmacy student from Prince Edward Island who has demonstrated strong academic ability and involvement in student activities.

***Dr. Samar B. Singh Prize in Anatomy***

An endowment fund has been established for the purpose of providing a prize to the highest standing student in first year anatomy among Nursing and Pharmacy enrollees. The prize, consisting of a book or books to the approximate value of

\$100, is a memorial to Dr. Singh, a long-time member of the Department of Anatomy. The awardee will be selected by the Head of the Department.

***The Whelan Family Award in Pharmacy***

This award of \$750 is presented to a student from New Brunswick who shows an aptitude for patient-centred care as demonstrated by excelling in Pharmacy Skills Lab.

***University Medal in Pharmacy***

Please refer to G. Faculty of Health Professions, 1. University Medals on page 630 for details.

**6. School of Social Work*****Dalhousie University Women Alumnae Medal***

This medal is presented annually to the BSW graduating student with the highest cumulative GPA in the baccalaureate program in the School of Social Work.

***Raoul Leger Memorial Humanitarian Award***

This award was established to honour the memory of Raoul Leger, who received a Master's degree in Social Work from Dalhousie University in 1977. His work at home and abroad exemplified his commitment to community development, peace and social justice. The award is presented to a graduating BSW or MSW student, who is nominated on the basis of achievement with a continued involvement in critical social issues.

***The School of Social Work BSW Alumni Award***

This alumni award has been established to support financial awards to be given to students in the Bachelor of Social work degree program who demonstrate the highest values of humanity, community, and service in the study of Social Work as reflected in contributions to the learning environment of the School. A student must be nominated for this award.

***J. Bernard MacNeil Memorial Award***

For a BSW student in their second year of studies who achieves high academic standing and who best meets the criteria of financial need and shows promise of making future contributions to the profession of social work in the areas of criminology or corrections.

**I. Faculty of Management*****Andrew Peacock Memorial Award***

An annual award named in honour of Dr. Andrew Peacock, Professor in the Rowe School of Business. Students who are in good standing and are enrolled in the Bachelor of Management or Bachelor of Commerce degrees in the second or third year of study are eligible. Students must have demonstrated interest and understanding of the issues related to person with disabilities, have demonstrated volunteerism and experience or interest in working in the not-for-profit sector. Application required in the fall term. Apply to the department.

**1. Commerce*****The Wilfred Berman Memorial Prize***

The Wilfred Berman Memorial Prize is payable from the income of a fund provided by former students of the late Professor Wilfred Berman to the student obtaining the highest mark in the class in first year Accounting.

***Commerce Alumni Association Awards***

The Commerce Alumni Association sponsors seven annual non-monetary awards to recognize academic achievement. There is one award for each of Accounting, Finance, Entrepreneurship, Marketing Management, Marketing Logistics, International Business and Managing People and Organizations.

***The Stewart Lockie Gibson Memorial Prize***

The Rowe School of Business offers a prize to the graduating student in the general Bachelor of Commerce program who has achieved the highest standing.

***The D.C. Mackay Award in Money Management***

An endowment has been established by Dr. Douglas C. Mackay, a successful investment banker, valued alumnus and active member of the Rowe School of Business Advisory Committee. A major prize is available to a student whose program concentration is Finance, whose career preparation is Money Management, who achieves excellent performance in COMM 3206 and who achieves satisfactory performance in research in the Money Management area.

### ***Christopher McKee Award of Merit***

This award is established in memory of Christopher McKee, a Commerce graduate of 1981, through the generosity of his family. The recipient will have at least a “B” average, and will have made significant contribution to the university as an organizer, or participant in university or community activities. Application to department is required.

### ***John R.E. Parker Prize in Accounting***

Established by Professor's John Parker and Joan Parker, who are passionate about the accounting profession, this prize is awarded to a Commerce student for excellence in attaining the best overall mark in Intermediate Financial Accounting I and Cost Management.

### ***University Medal in Commerce***

The Rowe School of Business offers a medal to the top graduate in the Bachelor of Commerce program. The awardee will be one who has fulfilled the high scholastic standard for this award.

## **2. Management**

### ***University Medal in Management***

The Faculty of Management offers a medal to the top graduate in the Bachelor of Management program. The awardee will be the one who has fulfilled the high scholastic standard for this award.

### ***Vincent Chew Memorial Award***

Vincent Chew graduated from Dalhousie University with a Bachelor of Commerce degree in 1997 and a Law degree in 2001. He was working as Communication & Marketing Manager with the International Council for Sport Science & Physical Education when he passed away in 2008 as a result of a road accident in Berlin, Germany. Prior to that, he was with the 15th Asian Games in Qatar, and the Commonwealth Games in Melbourne, Australia. An avid sports and music fan, he enjoyed his varied interests while traveling extensively. Considering his passion for sport, sport management, and business, the Vincent Chew Memorial Award has been established by his parents at Dalhousie that will recognize academic excellence in the joint Recreational Management degree program (Bachelor of Management/Bachelor of Science - Recreation).

## **J. Faculty of Science**

### ***Hertzman Prize***

In 1997 an endowment was established to fund an annual prize in memory of Dr. Victor Hertzman. The Faculty of Science awards the Hertzman Prize to the first year Bachelor of Science student who has achieved the highest GPA on the Dean's List.

## **1. Biochemistry & Molecular Biology**

### ***Peter Dolphin Memorial Prize in Biochemistry***

In memory of Professor Peter Dolphin, this prize is awarded annually to the fourth year science student who is judged to have the best overall performance in the Honours Research Project (Biochemistry 4604/4605).

### ***Kilmer MacMillan Memorial Book Prize***

This prize is awarded annually to the student who attains the highest aggregate mark for the three half-classes, BIOC 3700, 3300 and 3400.

### ***Douglas Russell Memorial Book Prize***

In memory of Dr. Douglas Russell, the Department of Biochemistry & Molecular Biology has established a prize to be awarded to the student with the highest standing in Biochemistry 2300, a class which owes its existence in large part to his efforts.

### ***The Society of Chemical Industry, Canadian Section, Merit Award***

This award (an engraved plaque) may be made to the Honours graduate in Biochemistry with the highest standing in the final year. A minimum average of 75% is required.

### ***University Medal in Biochemistry and Molecular Biology***

The Department of Biochemistry and Molecular Biology offers a medal to the top First Class Honours graduate in the Biochemistry program. The awardee will be the one who has attained the high scholastic standard of the Department.

## **2. Biology**

### ***The Aldous Prize***

On the occasion of the retirement of Dr. John G. Aldous, friends, colleagues and students established an endowment to provide for an annual prize to be awarded for the best achievement in Biology 4404 and 4407 combined. (This entry appears here for the information of Biology students. The Fund is administered by the Department of Pharmacology in the Faculty of Medicine.)

### ***B'nai B'rith Prize***

Two prizes are available annually to students for the highest standing in Biology 1010 and Biology 1011, when offered.

### ***Developmental Biology Prize***

This prize of \$500 is awarded annually to the top student, based on percentage grade mark, in Developmental Biology (BIOL 3050).

### ***David Durward Memorial Prize***

This prize is to be awarded to the best student in the Physiology of Marine Animals (MARI 3074 and MARI 3076).

### ***Alex Graham Memorial Prize***

This award was established in memory of Alex Graham, a Marine Biology graduate, who died tragically in a rafting accident in 2003. It is awarded annually to a Marine Biology major/undergraduate who has shown outstanding participation, dedication, and contribution to the Marine Biology program and to the Dalhousie Association of Marine Biology Students (DAMS) society; and has satisfactory academic performance.

### ***Gary Hicks Memorial Prize***

This award was established to honour the late Dr. Gary Hicks, an accomplished botanist and excellent teacher. It is awarded annually to an Honours student in the Plant Sciences.

### ***Shao Hua & Wen Hsiang Yoh Prizes***

Two prizes in memory of Shao Hua and Wen Hsiang Yoh, renowned Chinese educators, are awarded annually to two second year students who placed first and second in the core Biology classes (Biology 2020, 2030, 2040 and one of 2060, 2003, or 2004).

### ***The Dr. Ming Fang Li Memorial Prize in Marine Biology***

An endowment has been established to fund an annual prize to a third year student in the Co-operative Education program in Marine Biology. The recipient will be the one who is deemed to be the best, assessed on academic standing and work term performance.

### ***The Dr. J.G. Ogden Memorial Prize***

This prize will be awarded annually to a top fourth year honour student whose research falls within the realm of freshwater ecology, with preference given to those who study freshwater plant ecology. The recipient will be determined during the Cameron conference poster and oral presentations. In the event that there is more than one student whose research project meets these criterion, overall GPA will be the deciding factor.

### ***Cecelia Rajaratnam Memorial Prize in Plant Cell Biology***

The purpose of this prize is to recognize and reward a student who demonstrates a passion for the subject of Plant Cell Biology (Biology 4220) and excels academically in the class.

### ***University Medal in Biology***

The Department of Biology offers a medal to the top First Class Honours graduate in the Biology program in recognition of superior achievement.

### ***University Medal in Marine Biology***

The Department established this medal in 1983-84 to be awarded, where appropriate, to the student who stands highest among the First Class Honours graduates in the Marine Biology program.

## **3. Chemistry**

### ***The John Hamilton Barrett Prize***

This is the gift of his widow, Mrs. Marjorie Barrett. It is offered annually at the end of the fourth year of the class to a student who has shown exceptional ability in chemistry or other science. Application not required.



***The Canadian Society for Chemistry Silver Medal***

The CSC Silver Medal is provided to each university with a chemistry department and is awarded to the student with the highest standing in chemistry and allied subjects in the penultimate year. The successful student receives a medal and an inscribed certificate. Application not required.

***The John Carstairs-Arnell Prize***

This endowment was established to provide an annual prize to the student who has submitted and defended the best Honours Research Project in Chemistry. Dr. Arnell received his BSc (High Honours) from Dalhousie in 1939 and held many senior positions with the Canadian Armed Forces and the Department of National Defence. Application not required.

***Chemistry Achievement Award***

This award is available to undergraduate students in the chemistry program and is awarded on the basis of academic standing, demonstrated proficiency in chemistry, and other criteria such as employment, community service and extracurricular activities. Application not required.

***Walter J. Chute Prize in Chemistry***

This endowment was established to provide an annual prize to a chemistry student, with an outstanding record in organic chemistry, entering his or her final year in the Honours Chemistry program. Application not required.

***The CRC Freshman Achievement Award***

Awarded on the basis of outstanding academic achievement in freshman chemistry, the CRC Press Freshman Achievement Award is given at more than 2,000 schools. Winning students receive a complimentary copy of the CRC Handbook of Chemistry and Physics and a commemorative scroll to be mounted on the inside front cover. Application not required.

***The Hugh Graeme Fraser Memorial Prize in Advanced Chemistry***

This award was founded by members of the Class of 1931 and is awarded annually to a student at the end of his/her third year, who has, in the opinion of the Department, shown such aptitude for chemistry as to merit the award. Application not required.

***Kenneth and Dorothy Hayes Memorial Prize***

This endowment provides an annual prize to the student who has demonstrated interest in physical chemistry. The prize is awarded at the end of the penultimate year in the honours chemistry program to that student who has achieved satisfactory academic standing in third or fourth year level classes in physical chemistry. Application not required.

***Hypercube Scholar Award***

Awarded to a graduating BSc student going on to graduate school, where molecular modeling might be part of his/her future. Winning students receive a free copy of HyperChem software plus a small commemorative plaque. Application not required.

***Osvald Knop Prize in Chemistry***

This prize is awarded to the top student (or students, in the event of a tie) for the best achievement in both class and laboratory work in the 2000-level inorganic chemistry class.

***The Society of Chemical Industry, Canadian Section, Merit Award***

This award (an engraved gold key and subscription to Chemistry and Industry) may be made to the Honours graduate in chemistry with the highest standing in the final year. A minimum average of 75% is required. Application not required.

***The Spirit of Chemistry Prize***

The undergraduate Student Society Spirit of Chemistry Prize is meant to benefit students who are majoring in chemistry, and who help promote the subject through their enthusiastic participation in their studies and chemistry related activities. To be eligible to receive this prize, students must be majoring in chemistry, have a minimum of 2.30 GPA and must be nominated by a professor or instructor. Application not required.

***Undergraduate Award in Analytical Chemistry***

The Division of Analytical Chemistry of the American Chemical Society offers a number of gift subscriptions to Analytical Chemistry. These awards are intended to recognize students who have shown an aptitude for a career in analytical chemistry. Application not required.

***University Medal in Chemistry***

The Department of Chemistry offers a medal to the top First Class Honours graduate in recognition of superior achievement in chemistry.

**4. Earth Sciences*****The David Barlow Memorial Award***

The family, friends and classmates of David Barlow established in 1984 an endowment fund to provide an annual prize in his memory. The Dawson Geology Club in consultation with the Departmental Chairman will select a student in second year Earth Sciences who has demonstrated both a good academic record and leadership qualities.

***Canadian Society of Petroleum Geologists Award***

The Society sponsors an annual award consisting of a certificate and a one-year student membership to an undergraduate student who has demonstrated outstanding competence in petroleum geology or closely related fields.

***Canadian Society of Petroleum Geologists Student Industry Field Trip***

The society sponsors a field trip to a third-year Earth Sciences student who has an interest in petroleum geology, sedimentology and stratigraphy. The award consists of travel expenses and most field expenses for a trip to the Sedimentary Basin and Rocky Mountains of Western Canada.

***G.V. Douglas Memorial Prize in Earth Sciences***

In 1958-59, friends and former students of the late Professor G.V. Douglas, established a memorial fund from which the interest would provide a prize to be awarded to an outstanding student in first year Earth Sciences.

***Geological Association of Canada Student Prize***

Based on overall academic standing this prize is awarded annually to a student entering fourth year. The prize will consist of a one-year free membership in the GAC and a GAC "Special Paper" volume to be chosen by the recipient.

***Michael J. Keen Memorial Award***

This award was established to encourage greater participation of women in science. It will be awarded to a female student entering the second year earth science program who shows an interest in and commitment to the pursuit of a career in science and whose performance is of honours calibre.

***MacEachern-Ponsford Memorial Award***

Family, friends and classmates of Ian Joseph MacEachern and Mark Anthony Peter Ponsford have established a memorial fund. The purpose of the endowment is to provide an annual award to a student who has completed the second year of a program majoring in Earth Sciences, whose academic performance is of an honours calibre and who has been an active participant in student activities. The award is to be made on the recommendation of the Chairman of the Earth Sciences Department after consultation with the Dawson Geology Club and departmental staff.

***Mineralogical Association of Canada Student Prize***

This prize is open to an undergraduate student who has completed at least second year and has demonstrated excellence in one of mineralogy, crystallography, geochemistry, petrology and mineral deposits. The recipient will receive his/her choice of one of the MAC special publications.

***The Mining Society Centennial Scholarship Medal***

The Mining Society of Nova Scotia sponsors annual medals to students who have distinguished themselves during university studies in the mineral, metallurgical or petroleum fields. The Department awards the medal allocated to Dalhousie to the best all round graduating student.

***University Medal in Earth Sciences***

The Department of Earth Sciences offers to the top First Class Honours graduate a medal in recognition of superior achievement.

**5. Economics*****The Anonymous Economics Prize***

This prize, consisting of a book(s) and a sum of money, is open to the Dalhousie undergraduate who is not in the final year of study and who has shown through an essay during the second year of study of economics, the best promise of successfully applying economics to the solution of human problems as determined by the selection committee.

**Econometrics Prize**

The purpose of this prize is to provide an annual prize for an undergraduate Economics major. The Econometrics Prize will be awarded to the undergraduate Economics major with the highest combined average in the Econometrics I (ECON 3338) and Econometrics II (ECON 3339) sequence of classes.

**Economic Theory Prize**

The purpose of this prize is to provide an annual prize for an undergraduate Economics major. The Economic Theory Prize will be awarded to the undergraduate Economics major with the highest combined average in the Intermediate Microeconomics (ECON 2200 or 2220) and Intermediate Macroeconomics (ECON 2201) sequence of classes.

**Economics Honours Thesis Prize**

The purpose of this prize is to provide an annual prize for an undergraduate Economics major. The Economics Honours Thesis Prize will be awarded to the undergraduate Economics honours student with the best honours thesis, as determined by the Selection Committee.

**Economics International Student Essay Prize**

The purpose of this prize is to provide an annual prize for an undergraduate Economics major. The prize will be awarded to the undergraduate Economics 2+2 international student with the best essay written in their third year, as determined by the Selection Committee.

**Principles of Economics Prize**

The purpose of this prize is to provide an annual prize for an undergraduate Economics major. The prize will be awarded to the undergraduate Economics major with the highest combined average in the Principles of Microeconomics (ECON 1101) and Principles of Macroeconomics (ECON 1102) sequence of classes.

**University Medal in Economics**

The Department of Economics offers a medal to the top First Class Honours graduate in recognition of superior achievement in Economics.

**6. Environmental Science****Environmental Science Award**

This award is given to an Environmental Science student in her/his third year of study who has shown academic promise in her/his environmental class work.

**Environmental Science Honours Society Award**

The Honours Society Award is awarded annually to students graduating with a BSc Honours/Major in Environmental Science or BSc Combined Honours or a Double Major in Environmental Science who have achieved a cumulative GPA of 3.5 or more.

**Environmental Science Thesis Prize**

This prize is awarded annually to the student who is judged to have submitted and defended the best Honours Thesis.

**Owen Hertzman Prize**

The Owen Hertzman Prize is granted annually to an Environmental Science student who is deemed to have contributed significantly to Environmental Science school life.

**University Medal in Environmental Science**

Environmental Science offers to the top First Class Honours graduate a medal in recognition of superior achievement in environmental science.

**7. Mathematics and Statistics****Bernoulli Prize**

The Bernoulli Prize will be awarded annually to the student registered in the Co-op Mathematics Program who has the best cumulative academic record, subject to the restrictions that the prize can be awarded only once to a given individual and that the winner must have performed acceptably in all work term assignments.

**The Dr. Emil and Mrs. Stella Blum Prize in Mathematics**

A fund was established by Dr. Ilya Blum in memory of his parents Emil and Stella Blum. The prize will be awarded to an advanced major or Honours Mathematics student who achieves the highest grade in second year calculus.

**The Katherine M. Buttenshaw Prize**

This prize will be awarded annually to the student standing highest in the advanced mathematics classes.

**Ken Dunn Memorial Prize**

The fund which was established in memory of Ken Dunn will provide an annual prize to a student who has completed the third year of an Honours program in Mathematics or Statistics, or a combined Honours program in Mathematics and Statistics.

**Barry Ward Fawcett Memorial Prize**

Established by friends and colleagues of the late Dr. Barry Ward Fawcett who was an associate professor of Computing Science from 1982 until his untimely death at age 50 in 1991. This prize is awarded annually to a student who has completed between 30 and 60 credit hours, registered in a mathematics or statistics program, and has achieved the highest grade in MATH/CSCI 2113 (Discrete Structures II).

**The Ellen McCaughin McFarlane Prize**

A Fund has been established in memory of Ellen McCaughin McFarlane, Class of 1927. Initially, the Fund is to provide an annual prize to an Honours mathematics student who at the end of his/her first year\* in the honours program has achieved the highest standing. (\*Normally, this would be upon the completion of the second year at Dalhousie.)

**The Waverly Prize**

This prize will be awarded annually to the student with the highest standing in Mathematics 1010.

**The Sir William Young Gold Medal**

Founded by the bequest of the late Sir William Young, this medal will be awarded on graduation to the student who stands first among those taking First Class Honours in Mathematics, this is the University Medal in Mathematics.

**University Medal in Statistics**

The Department established this medal to be awarded to the student who stands highest among the First Class Honours graduates in the Statistics program.

**8. Microbiology and Immunology****Ron Carr Award**

The Department of Microbiology and Immunology offers a book award to a student who displays academic achievement, commitment to the betterment of colleagues, makes substantive contributions to the broader community and is involved in extra-curricular activities in the arts or environment.

**Honours Student Prize**

The Department of Microbiology and Immunology offers \$100 award for outstanding academic achievement during the Honours Program.

**University Medal in Microbiology**

The Department of Microbiology and Immunology offers to the top First Class Honours graduate a medal in recognition of superior achievement in the program.

**9. Physics and Atmospheric Science****The Dr. William J. Archibald Prize in Physics**

An annual prize will be awarded to a student who is considered by the Physics Department to be the most promising among those entering a second year Honours Physics program with first class standing.

**The Dr. E.W. Guptill Memorial Prize**

This is to be awarded to the undergraduate student who best exemplifies the qualities of Dr. E.W. Guptill in showing initiative, experimental skill, leadership and enthusiasm for Physics, thereby making an outstanding contribution to physics in this University. This prize will not necessarily be awarded every year.

**The Dr. George Henderson Prize in Physics**

This prize is awarded to the student with the best overall GPA in the first three years of an Honours degree in Physics.

**The James Gordon MacGregor Memorial Prizes**

Relatives of the late Dr. J.G. MacGregor contributed to the James Gordon MacGregor Memorial Fund which now provides awards to undergraduates in the study of physics. The undergraduate awards are scholarships.

**The Dr. A. Stanley MacKenzie Prizes in Physics**

These prizes will be awarded by the Department of Physics and Atmospheric Science to the most promising students in the first two years of the Physics program. The fund was established under the will of the late Miss Mary Alice Smith.

### ***The Burgess McKittrick Prizes in Physics***

The funds for these prizes come from the estate of F.J.A. McKittrick who graduated in 1894 with Honours in Mathematics and Mathematical Physics. He was the first Dalhousie graduate to receive the 1851 Exhibition Scholarship. The prizes are in memory of his brother, Burgess McKittrick, who graduated in 1877. A prize will be awarded to undergraduate students achieving the highest standing in each of Physics 1280/1290, 1300 and the core second year Physics classes. No student may receive more than one such prize in any one year. A prize will be awarded to the female Honours students whom achieves first class standing in each of second, third and fourth year levels. Consideration will occur in the fall.

### ***Burgess McKittrick Summer Research Studentships in Physics***

The Department offers up to two 3-4 month studentships for first year students intending to go into an Honours Physics program at Dalhousie.

### ***Darrell Montgomery Memorial Prize***

An endowment has been set up to provide an annual prize to a third year student in the Physics 3000/3010 experimental laboratory who is deemed to have shown a love of experimentation, the qualities of leadership and participation in student activities in physics related areas.

### ***The Diploma in Meteorology Prize***

This prize is awarded to the student with the highest GPA in the program.

### ***Dr. Masayoshi Senba Memorial Prizes***

One prize will be awarded to an undergraduate student attending classes typically taught by Masayoshi Senba, who, in the opinion of the faculty, possess outstanding skills, interest, promise, and determination in theoretical physics. The other prize will be awarded to a student in Physics (major or honours) in their third or fourth academic year who, compared to the previous academic year, exhibits the greatest improvement in his/her studies.

### ***The University Medal in Physics***

The Department of Physics and Atmospheric Science offers to the top First Class Honours graduate a medal in recognition of superior achievement in the Physics class.

## **10. Psychology and Neuroscience**

### ***Dr. Lilian E. White Prize***

A bequest from the Estate of Dr. Lilian E. White established an endowment to fund a prize to an undergraduate student in Psychology and in Neuroscience. The Department assigns prizes for use in recognizing the best performance of a student in second year in each program.

### ***Dr. W.K. Honig Prize in Psychology***

A fund has been established to provide for one or more annual prizes to students who have achieved the highest performance in the introductory psychology class(es) and who are undertaking a Major or Honours degree in Psychology or Neuroscience.

### ***Frances L. Stewart Memorial Prize in Psychology***

A fund has been established to provide a prize to a fourth year Honours student who shows outstanding potential as a scientist practitioner in Clinical Psychology.

### ***Susan Paula Forward Memorial Prize in Psychology***

Established in the memory of Susan Paula Forward who graduated in 1994 with a Bachelor of Science with Honours in Psychology. She achieved academic excellence during her time, being on the Dean's list for three consecutive years and receiving the University Medal in Psychology upon graduation. This prize is awarded to a graduating Psychology student who has achieved an excellent academic standing, with a strong background and demonstrated interest in pain research and child development.

### ***The David and Ruth Hubel Undergraduate Neuroscience Prize***

The Neuroscience Institute Prize was established in 1998 by donations from members of the Neuroscience Institute, Dalhousie University. Upon receiving a generous gift from Dr. David and Mrs. Ruth Hubel, the Neuroscience Institute changed the name of the prize in honour of the Hubels. The prize is awarded to a fourth year Neuroscience Honours student who shows outstanding potential as a researcher in Neuroscience.

### ***University Medal in Neuroscience***

The Department of Psychology and Neuroscience offers a medal to the top graduating student with First Class Honours in the program.

### ***University Medal in Psychology***

The Department of Psychology and Neuroscience offers a medal to the top graduating student with First Class Honours in the program.

## **K. College of Sustainability**

### ***Deborah Buszard Prize***

This prize is awarded annually in March to an ESS student who has contributed significantly to academic life in the College of Sustainability. Faculty members nominate students to the Awards Committee.

### ***ESS Academic Improvement Prize***

This prize is awarded annually in March to an ESS student in her/his fourth year of study who has shown the most academic improvement in her/his class work throughout the degree.

### ***ESS First-year Prize***

This prize is awarded annually in March to an ESS student in their second year of study who had the highest GPA in their first year classes at Dalhousie.

### ***ESS Honours Society***

Awarded at Convocation to ESS students graduating with a cumulative GPA of 3.7 or higher.

### ***ESS Second-year Prize***

This prize is awarded annually in March to an ESS student in their third year of study who had the highest GPA in their second year classes at Dalhousie.

### ***ESS Student Travel Award***

A fund has been established to support ESS students for travel with grants of \$300 - \$500. Students submit a cover letter and budget to the College of Sustainability Awards Committee. The cover letter should explain how the proposed travel will contribute to research experiences or to the application or expansion of the undergraduate academic experience. The budget should include all expected sources of income (including other successful and unsuccessful grant applications) and a list of expected experiences.

### ***ESS SUST-star Prize***

This prize is awarded annually at Convocation to the ESS student graduating with the highest average in all SUST classes.

### ***ESS Thesis Prize***

This prize is awarded annually at Convocation to the student that is judged to have submitted and defended the best Honours thesis.

### ***Rookie-of-the-year Prize***

This prize is awarded annually in March to an ESS student in their first year of study who has contributed significantly to life in the College of Sustainability. Faculty members nominate students to the Awards Committee.

### ***University Medal in Environment, Sustainability and Society***

The College of Sustainability offers to the top First Class Honours graduate a medal in recognition of superior achievement in Environment, Sustainability and Society. Awarded at Convocation.

## **V. Financial Aid and Loans**

### **A. Government Student Loans**

**IMPORTANT:** Please note that federal and provincial student loan regulations include stipulations for the Borrower in terms of the minimum class load, expressed as a percentage of the normal class load at the University, which the Borrower must carry in order to benefit from the program. This minimum must be maintained throughout the academic year, e.g., a student who wishes to receive either money or interest-free status under the Canada Student Loan Plan for the entire academic year must carry not fewer than 60 per cent of the normal class load (expressed in credit hours) for each term. Please note, to be eligible for provincial loan funding from Newfoundland, you must be registered in 80% of the normal class load. At Dalhousie, the normal credit hour load for student loan purposes is 30. The Borrower must carry not fewer than 18 credit hours, distributed equally between the terms, i.e., nine. If your particular program does not conform to this scheme, you should apply to Student Aid for funding for only that term in which your class load would fulfil this regulation. Federal and provincial rules can differ on this matter.

If you must drop or add classes, exercise care so as not to jeopardize your governmental student loan(s).

## B. Addresses of Provincial Student Aid Authorities

Canadian students are to apply for government assistance to the appropriate agency in that province or territory in which the applicant is a bona fide resident.

### Alberta

Alberta Students Finance  
PO Box 28000  
Station Main  
Edmonton, AB T5J 4R4  
Fax: (780) 422-4516  
Tel: (780) 427-3722  
1-800-222 6485 (toll-free in Canada)  
<http://www.alis.gov.ab.ca>

### British Columbia

Student Services Branch  
Ministry of Advanced Education  
PO Box 9173  
Stn Provincial Government  
Victoria, BC V8W 9H7  
Fax: 1-800-262-2112  
1-800-561-1818 (toll-free in Canada/US)  
<http://www.aved.gov.bc.ca/studentaidbc>

### Manitoba

Manitoba Student Aid Advanced Education  
409 - 1181 Portage Avenue  
Winnipeg, MB R3G 0T3  
Fax: (204) 948-3421  
Tel: (204) 945-2313 (outside Manitoba)  
1-800-204-1686 (toll free in Manitoba)  
<http://www.studentaid.gov.mb.ca>

### New Brunswick

Student Financial Services  
Department of Education  
PO Box 6000  
440 King Street, Suite 420  
Fredericton, NB E3B 5H1  
Fax: (506) 444-4333  
Tel: (506) 453-2577 or  
1-800-667-5626 (Atlantic Provinces, Ontario and Quebec only)  
<http://www.studentaid.gnb.ca>

### Newfoundland & Labrador

Student Financial Services Division  
Department of Youth Services and Post-Secondary Education  
PO Box 8700  
St. John's, NL A1C 4J6  
Fax: (709) 729-2298  
1-888-657-0800  
<http://www.ed.gov.nl.ca/studentaid/>

### Northwest Territories

Student Financial Assistance  
Department of Education  
Cultural and Employment  
Government of NWT  
PO Box 1320  
Yellowknife, NT X1A 2L9  
Fax: 1-800-661-0893  
Tel: (867) 873-7190  
1-800-661-0793  
<http://www.nwtsfa.gov.nt.ca>

### Nova Scotia

Student Assistance Office  
Department of Education  
PO Box 2290, Halifax Central

Halifax, NS B3J 3C8  
Fax: (902) 424-0540  
Tel: (902) 424-8420 (metro)  
1-800-565-8420 (within province)  
(Street location: Trade Mart Building, 2021 Brunswick at Cogswell Street,  
Halifax, NS)  
<http://studentloans.ednet.ns.ca>

### Nunavut

Adult Learning & Post-Secondary Services  
Nunavut Department of Education  
Box 390  
Arviat, NU X0C 0E0  
Fax: 1-877-860-0167  
1-877-860-0680  
<http://www.edu.gov.nu.ca/>

### Ontario

Ontario Student Assistance Program  
Student Support Branch  
Ministry of Training,  
Colleges and Universities  
PO Box 4500  
Thunder Bay, ON P7B 6G9  
Fax: (807) 343-7278  
Tel: (807) 343-7260  
<http://osap.gov.on.ca>

### Prince Edward Island

Student Financial Services  
Department of Education  
PO Box 2000  
16 Fitzroy St  
Charlottetown, PE C1A 7N8  
Fax: (902) 368-6144  
Tel: (902) 368-4640  
<http://www.studentloan.pe.ca>

### Québec

Residents of Québec apply to:  
Ministère de l'Éducation  
Aide financière aux études  
1035, rue De La Chevrotière  
Québec, QC G1R 5A5  
Tel: (418) 646-4505  
1-888-345-4505  
<http://www.afe.gouv.qc.ca>

### Saskatchewan

Student Financial Assistance Branch Saskatchewan Learning  
3085 Albert Street, Walter Scott Building  
Regina, SK S4P 3V7  
Tel: (306) 787-5620  
1-800-597-8278  
<http://www.student-loans.sk.ca>

### Yukon Territory

Students Financial Assistance  
Advanced Education Branch  
Department of Education  
Government of Yukon  
PO Box 2703  
Whitehorse, YT Y1A 2C6  
Fax: (867) 667-8555  
Tel: (867) 667-5929  
1-800-661-6408 Local 5929 (within Yukon)  
<http://www.education.gov.yk.ca>

## C. Temporary Loans

### 1. For all Dalhousie Students

#### *Temporary Loans*

The University has established a temporary loan program to assist registered Dalhousie students with certain types of short-term financial difficulty when no other resource is available. Students must provide proof of their ability to repay the loan within the time period. (Loans are not made for tuition fee payment.) These loans have a short interest-free period, after which interest will be charged. Refer to the Temporary Loan Application for further details. Applications may be picked up in the Registrar's Office, Room 130, Henry Hicks Academic Administration Building, the Sexton Campus Student Service Centre, or online [www.moneymatters.dal.ca](http://www.moneymatters.dal.ca).

### 2. For Architecture and Planning, Computer Science & Engineering Students

#### *Student's Medical Response Trust Fund*

The fund was established with a generous donation from Professor and Mrs. Surain S. Sarwal, a member of Dalhousie Faculty along with Students, Staff, Faculty and Friends of Dalhousie.

The concept of the fund was developed in response to a medical emergency. Prior to the establishment of this Fund, Students, Staff, Faculty and Friends of Dalhousie joined together to provide special funding to assist a student. A committee will decide upon the distribution of funds. This committee will consist of the President of the Student Union, Dean of Students, Co-ordinator of International Students, presidents of all "A" societies (including the Engineering Undergraduate Society, the Graduate Student Society, the Architecture Students Association, the Graduate Planning Society and the Computer Science Society). Distribution of funding will be subject to the judgement of the committee taking into account the individual circumstances and needs.

## VI. Dalhousie Bursaries

The University's bursary program is intended as possible supplementary assistance to help qualifying students with a portion of their educational costs.

### General Intent of University Bursaries

The University has funds for the purpose of assisting its students who may face certain types of financial situations. These bursaries are awarded primarily on the basis of demonstrable need as determined by the appropriate University office or committee, satisfactory academic standing (see as defined in Academic Regulations) is also expected. Students whose financial needs are exceptionally large and/or students whose academic standing is unsatisfactory may not be assisted. Normally, bursaries will be awarded only to students who have availed themselves of assistance under the Canada Student Loan Program and/or corresponding provincial or territorial loan programs or bank loans. Normally, receipt of the first installment of such funding is a prerequisite to the University's consideration of an application for bursary assistance. Students may access the bursary program for a maximum of five years.

### A. General—All Faculties

The following bursaries, unless indicated otherwise, are administered by the Registrar's Office. Awards are made through the online bursary program. Please refer to [moneymatters.dal.ca](http://moneymatters.dal.ca) for the deadline dates for the online bursary program.

#### *Helen Archibald Memorial Bursary*

To provide one or more bursaries for undergraduate students from Cape Breton, NS, with preference given to students from Richmond County. Students will be first year full-time students. Apply through the general online bursary program. Deadline October 15.

#### *The Eva and David Ashkins Memorial Bursary*

The donors established this fund for the purpose of assisting pupils who have matriculated from selected high schools to enter Dalhousie. These high schools are (first) North Queen's Rural High School or Bridgewater High School, and (secondly) other high schools in the province of Nova Scotia. The recipient may be considered in subsequent years for further assistance. Apply through the general online bursary program.

#### *Helen and Earl Atkins Memorial Bursary*

A trust from the estate of Helen and Earl Atkins to provide bursaries for those who might otherwise be unable to attend university. Trust will provide one or more bursaries to first or second year undergraduate students. Preference given to students domiciled in rural Nova Scotia. Apply through the general online bursary program. Deadline: October 15

#### *Donnell and Betty Beaton Bursary*

This bursary is to provide one or more bursaries for undergraduate students from Cape Breton, NS; with first preference for students from Baddeck Rural High School entering full time studies in the Faculty of Arts and Social Sciences or the Faculty of Science. Recipients will have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary program. Deadline: October 15

#### *Harry and Kaye Bernstein Bursary*

A bursary to an undergraduate student born and living in Halifax from a low income family, who shows financial need. Apply through the general online bursary program.

#### *George Boyd Bursary*

The income from the George Boyd Trust will provide an entrance bursary. Preference is to be given to a needy student from the Sydney, NS area. Apply through the general online bursary program.

#### *Ernest Brehaut Memorial Bursaries*

These bursaries were established by the gift of Mrs. Ernest Brehaut of Colorado Springs, USA, in memory of her husband, a distinguished graduate of Dalhousie, Harvard and Columbia. These bursaries are to be awarded by the Registrar's Office - Awards of the University, which will take into consideration any financial need of the applicant, to students from Prince Edward Island. Preference is to be given to relatives of the late Dr. Brehaut. The bursaries are to be continued throughout the classes of the students if they maintain creditable academic standing and show genuine need. Apply through the general online bursary program.

#### *The Lt.(E) Harry J. Brewer, MBE, CD, RCN (Ret.), Memorial Bursary*

A memorial bursary fund has been established to provide financial assistance to a full-time student who is enrolled in a degree or diploma program. The recipient(s) will have demonstrated financial need and satisfactory academic standing as defined in academic regulations. Apply through the general online bursary program.

#### *George Burris Scholarship*

The Scholarship was established by Mary Burris and Grace Burris in memory of their father, George Burris, to support Dalhousie students wishing to study in England as part of their academic program. Scholarships are awarded on the basis of academic and extracurricular excellence, financial need, and international experience.

Open to Dalhousie University upper year Canadian students who have applied for admission to participate in an International Program/Placement in England. Value: up to \$5,000 each. Interested students should complete an application available from the International Student and Exchange Services Office. Students must submit application a minimum of one month before departure.

#### *Enid Hager Clarke Textbook Fund*

A bequest from the Estate has set up an endowment from which to award bursaries to assist students from certain geographic areas of New Brunswick. Students who are domiciled in King's and Saint John counties are eligible under the terms of the bequest. Apply through the general online bursary program.

#### *Howard C. Clarke International Study Award*

A special endowment fund to assistance a Dalhousie student who is participating in a recognized study abroad or exchange program for academic credit. Student must demonstrate great financial challenges. Please contact the International Student and Exchange Office for details.

#### *The Rebecca Cohn Bursary Fund*

A gift of \$4,000 by the executors of the Estate of the late Rebecca Cohn provides an endowed bursary fund for needy students. Apply through the general online bursary program.

#### *Lenore Smith Cumming Bursary*

From the Estate of Charles Gordon Cumming came a bequest of \$10,000 US to endow a bursary fund to assist needy students. Mr. Cumming expressed a

preference for matriculants from Naparima College in Trinidad should such students attend Dalhousie. Apply through the general online bursary program.

#### ***Dalhousie Leadership Bursaries***

A limited number of bursaries are available annually to students who have exhibited a record of considerable leadership achievement. Candidates must also demonstrate consistent satisfactory academic accomplishment. The Selecting Committee may consider such other matters as financial need, service to the University and the community, and character. Submit completed forms to the Department of Athletics and Recreational Services, which will forward your application with supplementary information.

#### ***Dalhousie Memorial Bursary Fund***

From time to time at Dalhousie contributions have been made to the University as a memorial subscription in honour of some student or former student. Until now there has been no proper place into which these funds could be channeled. Because of these occurrences a Dalhousie Memorial Bursary Fund has been established. The existence of the fund will be commemorated by a book of remembrance to be located in a prominent place in the Killam Library. Names of persons in whose memory contributions have been made by relatives, friends, individuals or groups, to the Memorial Fund will be recorded in the book, along with the date of their birth and death. The pages will be turned on a regular basis. All money contributed to the Fund will be invested by the Board of Governors and only the investment income will be awarded. The award will be available to any full-time Dalhousie student, already registered and in attendance at classes, who can show a need for additional support. A student in straitened financial circumstances may be considered for possible assistance by applying through the general online bursary program. For further information please contact the External Relations Office, Dalhousie University.

#### ***Alfred George Darville Memorial Bursary***

This fund provides one bursary to a qualifying Dalhousie student. Applicants must be matriculants of Halifax West High School, be enrolled in first-year studies in an undergraduate program (as commonly understood), and demonstrate financial need to the satisfaction of the Selecting Body. Apply through the general online bursary program.

#### ***Charles Robert Raeffe Douthwaite Memorial Bursary***

To honour the memory of Charles Robert Raeffe Douthwaite, an endowment was established to provide bursaries for students graduating from Nova Scotia high schools. Apply through the general online bursary program.

#### ***The John Dunlop Memorial Bursary***

An endowment to provide a bursary to an academically sound student from a rural area. Apply through the general online bursary program.

#### ***Frances Hamilton Grant Bursaries***

An endowed bursary fund was established under the will of the late Constance Patricia Hamilton in the amount of \$18,900, the income to be used to assist students. Apply through the general online bursary program.

#### ***DSU Student Wise Health Plan Bursary***

To provide financial aid to an undergraduate student or students who are covered by the DSU health care plan. Apply through the general online bursary program. Deadline October 15.

#### ***MacCallum S. Grant Charitable Foundation Bursary***

The MacCallum S. Grant Charitable Foundation supports a number of bursaries for Dalhousie University students each year. First priority will be given to students who have lived in Halifax County, Guysborough County and Preston for a period of at least two years immediately prior to receiving a bursary. Students from the former City of Halifax, Dartmouth and the town of Bedford are not eligible to receive a bursary. The recipients will have demonstrated financial need and satisfactory academic progress. Apply through the general online bursary program. Deadline: October 15.

#### ***Annie M. Harrison Bursary***

The annual income from the bequest of \$5,000 from the Estate of Annie M. Harrison provides a number of bursaries. Apply through the general online bursary program.

#### ***Alice M. Haverstock Bursary***

From the Estate of Gertrude H. Fox came a bequest to endow a bursary fund in the name of Alice M. Haverstock. Apply through the general online bursary program.

#### ***The Annette S. Hill Bursaries***

The University received an endowment under the will of the late Annette S. Hill to set up a fund, the income to be used to assist needy students. Apply through the general online bursary program.

#### ***Ann Lavers Howe Hall Bursary***

The Ann Lavers How Hall Bursary was founded, by alumni and friends of Howe Hall, to provide financial assistance to a Dalhousie student who is a current Howe Hall resident. It is named in honour of Ann Lavers, staff member of Howe Hall from 1967-1994, who befriended many residents over her term of employment, in a variety of positions, at Howe Hall. The recipient must have a demonstrated financial need, be in good academic standing and also be an individual who has made a positive contribution to the residence community at Howe Hall. Application information is posted within the residence each January.

#### ***Kostman Family Bursary***

An endowment has been established in memory of Harry Kostman to provide one or more bursaries for undergraduate students of First Nations or African-Canadian descent who are graduates of TYP entering full-time studies. First preference will be given to single parents.

Harry Kostman had an enduring passion for education, and generously provided for his children and grandchildren while they attended university. Through this bursary, they strive to continue his legacy of support. Apply through the general online bursary program. Deadline: October 15.

#### ***Annie E. Longard Memorial Bursary***

An endowment has been established to provide an annual bursary in memory of an accomplished alumna and long-time participant in the Women's Division of the Dalhousie Alumni Association. The bursary is available to an undergraduate student at Dalhousie on the basis of demonstrated need and satisfactory academic standing. Apply through the general online bursary program.

#### ***The Rev. Kenneth Mackenzie Bursary***

Mrs. Harriet Mackenzie Morrison of Stornoway, Scotland, daughter of the Rev. Kenneth Mackenzie of Pictou County, bequeathed \$1,000 to the university in 1887 to be used as a bursary fund. Apply through the general online bursary program.

#### ***The Neil and Jessie Matheson Bursaries***

Established under the will of Miss Margaret J. Matheson, Truro, the income from this fund provides several bursaries. Students from the rural districts of Pictou County are to be given preference. Apply through the general online bursary program.

#### ***Military District No. 6 Provost Corps Bursary***

The Number 6 Provost Mutual Association established this bursary fund to assist descendants of those members of the Canadian Provost Corps who served in Military District No. 6. Applicants must fulfil the Corps' selection criteria, show satisfactory academic progress and demonstrate financial need. There are several sets of criteria. Apply through the general online bursary program. Deadline: October 15.

#### ***Tom Norwood Bursary***

The fund was established by Barbara Nielson to honor the memory of her son, Tom Norwood. The bursary is available to full-time Undergraduate students at Dalhousie on the basis of demonstrated financial need and satisfactory academic standing. First priority will be given to Canadian Citizens from Nova Scotia. Apply through the general online bursary program. Deadline: October 15.

#### ***Senator Donald Oliver Bursary for Black Atlantic Canadians***

Hugh J. Maccagno and Senator Donald Oliver (LLB 1964) established this bursary in 2004 to assist Black Atlantic Canadians in pursuing post-secondary educational opportunities at Dalhousie University. This fund provides one or more bursaries annually to Black Atlantic Canadians registered as full-time students. Apply through the general online bursary program. Deadline: October 15.

#### ***The Warren Publicover Class '25 Memorial Bursary***

The Warren Publicover Class '25 Memorial Fund was established in memory of Warren Publicover. The annual income from this fund is to be awarded in the form of a bursary for an individual who has successfully completed one year of university work at Dalhousie and is continuing as a full time student at this University. The bursary is to be awarded on the basis of satisfactory academic performance and demonstrated financial need, and is subject to renewal provided that the original requirements are maintained. It is a condition of the gift that

applicants for this bursary need not have availed themselves of governmental funding as is usually required by the University. Apply through the general online bursary program.

#### ***The S & L Bursary***

This bursary was established to provide financial assistance for a student with demonstrated financial need who is entering Dalhousie directly from high school. Students must be graduates of a high school in one of the following counties: 1) Colchester; 2) Guysborough; 3) Cumberland; or Pictou County. Apply through the general online bursary program. Deadline October 15.

#### ***Mr. & Mrs. Morris Saffron Bursary***

Established to provide financial assistance to students who are residents of the town of Springhill, Cumberland County. Apply through the general online bursary program.

#### ***Joe A. Muir Phi Kappa Pi Bursary***

This bursary was established by Joe Muir to provide an annual bursary to a brother of the Phi Kappa Pi Fraternity. The Fraternity will provide Dalhousie a short list of second year students who have a demonstrated financial need. Please contact the Phi Kappa Pi Fraternity for the application form. Deadline: September 30.

#### ***Leslie Shaw Bursary***

This bursary was established by Allan, Gabrielle and Sarah Shaw for Leslie Shaw to honour her and to celebrate her 60th birthday. Leslie Shaw dedicates her professional and volunteer life to the betterment of our society. This bursary is awarded annually to landed immigrants and/or international students whose first language is not English. First preference will be given to students who are either landed immigrants or intending to become landed immigrants. Apply through the general online bursary program. Deadline: February 15.

#### ***Charles A. Smith Memorial Bursary***

Charles A. Smith was a black Nova Scotian born in 1926. He pursued his career on the railway, starting as a sleeping car attendant and retiring at a senior level in customer service with Via Rail.

This renewable bursary will be available to assist one or more Nova Scotia black students who are single parents enrolled in undergraduate studies at Dalhousie. Apply through the general online bursary program. Deadline: October 15.

#### ***The Rt. Honourable Robert L. Stanfield Bursary***

Established by the Windsor Foundation in recognition of the contributions of the Rt. Honourable Robert L. Stanfield. This fund provides one or more bursaries annually to Black Nova Scotians who are full-time students at Dalhousie University. Apply through the general online bursary program. Deadline: October 15.

#### ***Supertemp Bursary***

This bursary, of \$1,000, is awarded annually to a mature undergraduate student who has demonstrated financial need. Apply through the general online bursary program. Deadline: October 15.

#### ***SWIF/ Study Work International Fund***

SWIF has been established by Dalhousie University, as part of the Student Assistance Program, to provide financial assistance to Dalhousie and King's students who wish to undertake international placements as part of their educational experience. Please contact the International Student and Exchange Office for details. Students must submit application a minimum of one month prior to departure.

#### ***TD Bank Financial Group Bursary***

This bursary is available to part-time or full-time students who demonstrate financial need. Recipients may be residents of any province or territory in Canada. Apply through the general online bursary program.

#### ***Dean and Marie Trimper Bursary***

Provides one or more bursaries to students who have graduated from Sir John A. MacDonald High School. Apply through the online bursary program.

#### ***Helen Tupper Memorial Bursary***

Provides one or more bursaries for students in their first year of an undergraduate degree program at Dalhousie University. Apply through the general online bursary program.

#### ***Dr. Gerald Turner Bursary***

An endowment has been established to provide a bursary to assist a needy student from Cape Breton in First Year. Apply through the general online bursary program.

#### ***Women's Division Bursaries***

A number of bursaries, based on financial need, will be offered directly from the Women's Division of the Dalhousie Alumni Association. Apply through the general online bursary program. A separate essay and one page application will also be required to be submitted to the Alumni Office addressed to the Chair of the Scholarship Committee, Women's Division. Deadline: for online application October 15; for additional essay and one page application to the alumni office December 10.

### **B. Faculty of Architecture and Planning**

Unless otherwise noted, selection for these bursaries is made by the Undergraduate Awards and Scholarships Committee of the Faculty of Engineering augmented by representatives of the Faculty of Architecture and Planning. Application forms are available from the Offices of the Deans of Engineering or Architecture and Planning.

#### ***Architecture and Planning Bursaries***

Proceeds from the former TUNS Board of Governors Fund are used at the Dean's discretion. They provide up to five \$1,000 bursaries to assist full-time students entering the winter term of the BEDS or MArch program in the School of Architecture or the BCD or MPlan program in the School of Planning. Applicants must be making satisfactory academic progress and must demonstrate financial need by submitting a bursary application. Selections are made by the Scholarship Committees of the School of Architecture and the School of Planning.

#### ***Dr. Ruth M. Goldbloom Bursary***

This fund was established in 1995 to honour Dr. Goldbloom CM, on the occasion of her installation as Chancellor of the Technical University of Nova Scotia. This bursary is awarded annually to a female student entering her third year of study in the Faculty of Architecture and Planning, Faculty of Computer Science or the Faculty of Engineering. The recipient will have achieved satisfactory academic standing and demonstrated financial need. Application required. Deadline: April 30

#### ***Maritime Hobbies and Crafts Bursary***

This \$500 bursary, donated by Maritime Hobbies and Crafts, provides financial assistance to a full-time student entering the winter term of the BEDS program or MArch program in the School of Architecture. Applicants must be making satisfactory academic progress and must demonstrate financial need by submitting a bursary application. The selection is made by the School of Architecture Scholarship Committee.

#### ***Barry and Margo Johns Family Bursary***

This \$1,000 bursary, donated by Barry Johns (BArch 1972), provides financial assistance to a student entering the B5 term of the BEDS program. Applicants must be making satisfactory academic progress and must demonstrate financial need by submitting a bursary application. The selection is made by the School of Architecture Scholarship Committee.

#### ***The Michael G. Johnston Memorial (Entrance) Bursary***

This annual \$500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfil the minimal entrance requirements for the BEDS program in Architecture, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Application required. Deadline: April 30.

### **C. Faculty of Arts & Social Sciences**

#### ***Robert Bruce Bursaries***

Several bursaries tenable in the third year of an Arts or Science class, will be awarded to students of promising abilities but of straitened circumstances. Apply through the general online bursary program.

#### ***R. J. Hill Bursary***

This award was created with a gift from Ronald James Will. The gift will provide a bursary to more undergraduate student(s) enrolled in the Faculty of Arts &

Social Sciences at Dalhousie University. The recipient must have demonstrated financial need and satisfactory academic standing. Please contact the Faculty of Arts & Social Sciences for the application process.

#### ***Eric Stanley Hillis Memorial Bursary***

An annual bursary for a student enrolled in the second, third, or fourth year of a Bachelor of Arts degree. Apply through the general online bursary program.

#### ***Wilfred E. Hillis Bursary***

The late Mrs. Olga Munro Hillis made provision for the establishment of the Wilfred E. Hillis Bursary Fund. The income derived therefrom is to be used as bursaries for worthy Arts and Science students who are in need of financial assistance. Apply through the general online bursary program.

#### ***Dr. Rosemary Theresa Holton & Stephen A. Holton Bursary***

Provides financial assistance for one or more undergraduate students who are majoring in English. Apply through the general online bursary program.

#### ***Annie S. MacKenzie Class of 1911 Bursary***

Under the will of the late Emelyn L. MacKenzie the University has been given a bequest to provide bursaries in Arts & Science, Dentistry and Law. One-third of the net income is allotted to the College of Arts and Science for the purpose of funding a bursary to one or more students. The recipient must be a bona fide resident of and domiciled in the County of Victoria (as defined by the boundaries then extant in AD 1900), Nova Scotia. Character and financial need are the main criteria. Apply through the general online bursary program.

#### ***Charles and Mary MacLennan Bursary in Theatre***

Established to honour the memory of Charles G. MacLennan, who was active in the musical life of Dalhousie University, and his wife, Mary Jackson MacLennan, who had a lifelong interest in amateur theatre. This bursary is awarded to one (or more) undergraduate student(s) in the Department of Theatre who has (have) shown artistic excellence in theatre (acting), writing, design, etc.). Eligible recipients will have completed at least one year of study in their undergraduate program at Dalhousie University. Applicants will apply to the general online bursary program as well as to the Department of Theatre's Awards Committee. Deadline: October 15.

#### ***Charles and Mary MacLennan Bursary in Music***

Established to honour the memory of Charles G. MacLennan, who was active in the musical life of Dalhousie University, and his wife, Mary Jackson MacLennan, who had a lifelong interest in amateur theatre. This bursary is awarded to one (or more) undergraduate student(s) in the Music Department who has (have) shown artistic excellence in music (vocal, instrumental or other). Eligible recipients will have completed at least one year of study in their undergraduate program at Dalhousie University. The value of the award is \$2,500. Applicants will apply to the general online bursary program as well as to the Department of Music Scholarships Committee. Deadline: October 15.

#### ***The Sophie MacLeod Memorial Bursary***

Sophie MacLeod (1901-2001) received a Bachelor of Arts from Dalhousie in 1925. She enjoyed a long and distinguished career in teaching and for many years taught English at Bloomfield School in Halifax. This bursary is awarded annually to students majoring in English or undertaking a double major or combined honours degree with English as one of their focuses. Apply through the general online bursary program.

#### ***John David and Ellen Matheson Allen Endowment Fund***

The bursaries to be known as John David and Ellen Matheson Allen bursaries, are in memory of John David Allen and his wife, Ellen Margaret Allen, both graduates of the Department of Education of the University. The bursaries are for students in the Arts and Science faculties. In the selection of the recipients of the bursaries, priority is to be given to First Nations, but where no such persons apply, the bursaries are to be given to other applicants as determined by the appropriate office of the University. Apply through the general online bursary program.

#### ***Professor W. Russell Maxwell Memorial Bursaries***

Any residual income remaining in the Fund after the annual scholarships have been determined may, after consultation with the Department of Economics, be used to fund one or more bursaries for deserving students entering the fourth year of the Honours program in Economics. Awarded by the Department of Economics and the Registrar's Office. Application not required.

#### ***The Kenneth and Lloyd McDonald Bursary***

A gift of the McDonald family in 1976 makes possible the funding of an annual bursary to a deserving and needy student. Apply through the general online bursary program.

#### ***Elizabeth McKenna Bursaries***

The Elizabeth McKenna Scholarship Fund was established in 1928 for the purpose of providing what are known today as bursaries. Applicants must be bona fide residents of one of the Maritime Provinces and be entering the first year in the College of Arts & Science. Apply through the general online bursary program.

#### ***The Ross Millar Bursary***

Under the will of Dr. Ross Millar, the sum of \$10,000 was bequeathed to the Board of Governors in trust to set up a bursary to be awarded annually. It is stipulated that "Other things being equal the recipient shall be an undergraduate in Arts or Letters who is qualifying himself for the Ministry of the Presbyterian Church in Canada by taking the Arts or Letters degree at Dalhousie." Apply through the general online bursary program.

#### ***Reverend J.W.A. Nicholson Bursaries***

This Fund was established in commemoration of the unselfish life of a distinguished Dalhousie graduate (BA 1897). One of his concerns was to help young people discover their talents. The income is used to assist Black Nova Scotians who are full-time students in the College of Arts & Science at Dalhousie. Awards are made at the discretion of the Registrar's Office - Awards. Apply through the general online bursary program.

#### ***Kathleen Stewart Memorial Bursary in Music***

An annual in-class bursary to one (or more) undergraduate student(s) in a Music degree program who demonstrate financial need and have shown academic excellence as demonstrated by GPA in relevant classes. The bursary is awarded to a student in their second, third or fourth year of Music studies. First preference will be given to students studying Piano and second preference will be given to students studying Voice. If there are no eligible students in these areas of study, the award may be granted to a Music performance student in any discipline. This award was created by family and friends in honour of Kathleen Stewart who was a passionate supporter of Dalhousie from 1954 until her death in 2008.

#### ***Walker Wood Foundation Theatre Bursary***

The Foundation will provide a four year renewable bursary to a student planning on majoring in Theatre. The student must major in Theatre, be in good standing, and must be Canadian Citizen with a demonstrated financial need. Preference will be given to a student entering directly from a high school in Atlantic Canada. Apply through the general online bursary program.

### **D. Faculty of Computer Science**

Unless otherwise noted, selection for these bursaries is made by the Undergraduate Awards and Scholarships Committee of the Faculty of Engineering augmented by representatives of the Faculty of Computer Science. Application forms are available from the Offices of the Deans of Engineering or Computer Science. Deadline: September 30.

#### ***Dr. Ruth M. Goldbloom Bursary***

This fund was established in 1995 to honour Dr. Goldbloom CM, on the occasion of her installation as Chancellor of the Technical University of Nova Scotia. This bursary is awarded annually to a female student entering her third year of study in the Faculty of Architecture and Planning, Faculty of Computer Science or the Faculty of Engineering. The recipient will have achieved satisfactory academic standing and demonstrated financial need. Application required. Deadline: April 30.

#### ***The Michael G. Johnston Memorial Entrance Bursary***

This annual \$500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfil the minimal entrance requirements for an undergraduate program in Architecture and Planning, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Application required. Deadline: April 30.



### ***The Rod Shoveller Memorial Bursary***

The bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoveller was the Athletic Director of TUNS from 1980 to 1991 and acted as counsellor, mentor, and friend to hundreds of students who came to know his compassion and understanding. The award of \$500 is made to a student who is maintaining an acceptable academic standard in the penultimate term of study in any faculty. Award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramurals and financial need. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Application required. Deadline: September 30.

## **E. Faculty of Engineering**

Unless otherwise noted, selection of bursary awardees is carried out by the Scholarships and Awards Committee of the faculty of Engineering. Application forms are available from the Office of the Associate Dean of Engineering, Sexton Campus.

### ***J.D. (Dan) Arbing Memorial Nova Scotia Road Builders Association Bursary***

The N.S. Road Builders Association established this award of \$2,000. Eligible students are to be registered in the Senior Year in the Faculty of Engineering. The Committee will consider the applicant's financial need, academic standing, interest in highway or construction engineering, and executive ability in a construction company or highway department. Preference will be given to students registered in Civil Engineering. Deadline: September 30.

### ***Margaret Archibald Memorial (Entrance) Bursary***

The Family, Friends and Associates of Margaret Archibald established this award of \$500. Mrs. Margaret Archibald was a Dalhousie employee from December 1962 to May 1979. During this period of time, she worked for three Presidents. After her official retirement as Administrative Secretary to the President, Mrs. Archibald continued with the University working in the Public Relations Office until 1983. Margaret Archibald was a very loyal and dedicated employee with a keen interest in the Dalhousie community. The eligible candidate must be a woman who has fulfilled or expects to fulfil the minimum entrance requirements into third year of an undergraduate program in Architecture, Computer Science, or Engineering. Apply through Sexton Campus. Deadline: April 30.

### ***Birks Family Foundation Bursary***

The Birks Family Foundation provides two bursaries of \$1,000 each. Eligible students must have completed at least their third year of study within the Faculty of Architecture and Planning or the Faculty of Engineering. The award is made on the basis of financial need, provided that the applicant is maintaining an acceptable academic standard. Deadline: September 30.

### ***Wade Gates Memorial Bursary***

This bursary of \$500 has been established in memory of Wade Gates by colleagues, family and friends. Mr. Gates was a technologist in the Department of Chemical Engineering at Dalhousie for many years. Eligible students are to be registered in Year 4 or 5 of an undergraduate engineering program with preference given to Chemical Engineering students. The award is based primarily on financial need but the Committee also considers the academic record of the applicant. Deadline: September 30.

### ***Dr. Ruth M. Goldbloom Bursary***

This fund was established in 1995 to honour Dr. Goldbloom CM, on the occasion of her installation as Chancellor of the Technical University of Nova Scotia. This bursary is awarded annually to a female student entering her third year of study in the Faculty of Architecture and Planning, Faculty of Computer Science or the Faculty of Engineering. The recipient will have achieved satisfactory academic standing and demonstrated financial need. Application required. Deadline: April 30.

### ***The John J. Jodrey (Entrance) Bursary***

John J. Jodrey established two awards of \$500 each. Eligible candidates must have fulfilled or expect to fulfil the minimum requirement for entrance into the third year of an undergraduate program in the Faculty of Engineering. This award is restricted to Atlantic Canadians. Deadline: April 30.

### ***The Michael G. Johnston Memorial (Entrance) Bursary***

This annual \$500 bursary has been established in the memory of Michael G. Johnston by the Board of Governors of the University. Michael G. Johnston was a valued member of the Dalhousie Board of Governors who expressed sincere

interest in all who came into contact with him. Candidates must have fulfilled or expect to fulfil the minimal entrance requirements for an undergraduate program in Architecture and Planning, or for entrance into the third year of Computer Science and Engineering. The bursary is awarded on the basis of community involvement, scholastic ability, and financial need. Deadline: April 30.

### ***J. Winston MacDonald Bursary***

An endowment has been established to provide an annual bursary to a student enrolled in the Engineering program at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. The bursary is given in memory of John Winston MacDonald who was graduated from Dalhousie University in 1929 with a Bachelor of Science degree and the Diploma in Engineering, and from the Nova Scotia Technical College in 1931. Apply through the Faculty of Engineering. Contact the department for the deadline.

### ***Ian Noseworthy Bursary***

This bursary has been established in memory of Ian Noseworthy by his family and friends. Mr. Noseworthy was a fourth-year student in Chemical Engineering at the time of his death. Eligible students are to be registered in the fourth year of a Bachelor of Engineering in Chemical Engineering. The award is made on the basis of demonstrated financial need and satisfactory academic standing. Deadline: September 30.

### ***Nova Scotia Department of Transportation and Public Works Bursary***

This endowment has been established to provide a bursary (ies) of \$1,250 to one or more full-time student(s) who are considered permanent residents of Nova Scotia and entering the third year of the undergraduate program of the Faculty of Engineering. The student(s) will have demonstrated financial need and achieved a 3.0 average. Co-op placement with the Department of Transportation and Public Works may be made available. Upon completion of study/graduation, an opportunity of employment may be extended. Applications should be submitted to the Awards committee of the Faculty of Engineering. Application deadline: April 30.

### ***The Jason Paquet Memorial Bursary***

This bursary, valued at \$500 has been established in memory of Jason Paquet by his family, friends, fellow students, faculty and alumni of mechanical engineering. Mr. Paquet was registered as a fourth year mechanical engineering student at the time of his death. Eligible students are to be registered in the Junior Year of the Mechanical Engineering program of the Faculty of Engineering. The award is based primarily on financial need. The Committee will also consider the academic record of the applicant and involvement in sports and community. Preference will be given to students who were residents of Prince Edward Island prior to attending Dalhousie. Deadline: September 30.

### ***The Rod Shoveller Memorial Bursary***

This \$500 bursary has been established by the Student Union of Dalhousie and is supported by students, alumni, family, friends and colleagues. Mr. Shoveller was the Athletic Director of TUNS from 1980 to 1991 and acted as counsellor, mentor and friend to the hundreds of students who came to know his compassion and understanding. Eligible students are entering their penultimate term of study in the Faculty of Architecture and Planning, Computer Science, or Engineering. The award is made on the basis of participation in Dalhousie athletics, with an emphasis on intramurals and financial need, provided that the applicant is maintaining an acceptable academic standard. Selection is carried out by the Scholarships & Awards Committee of the Faculty of Engineering. Deadline: September 30.

### ***The Dr. H.G. Sherwood Memorial Entrance Bursary***

This \$300 bursary has been established in memory of Dr. H.G. Sherwood by former employers, friends and colleagues. Dr. Sherwood was a dedicated professor in the Mining Engineering program at Dalhousie for many years. Eligible candidates must have fulfilled or expect to fulfil the minimum entrance requirements into year three of the Mining Engineering undergraduate program in the Faculty of Engineering. The Bursary is awarded on the basis of the applicant's academic record at an Associated University or in the previous years at Dalhousie. While academic excellence will be the primary criterion for the award, the selection committee may also weigh other considerations in reaching a decision. Deadline: April 30.

### ***Lloyd Hopkins Wickwire Bursary***

An endowment has been established through a bequest from the Estate of Lloyd H. Wickwire, an alumnus of the Nova Scotia Technical College and Dalhousie University. This endowment is meant to provide annual bursaries to students

studying engineering at Dalhousie University. Applicants must demonstrate financial need and be in good academic standing. Apply through the general online bursary program.

#### ***Susan (Cox) Wickwire Bursary in Engineering***

An endowment has been established in memory of Susan (Cox) Wickwire, a former school teacher whose four sons are University alumni. The bursary is open to students for promotion from Year I to Year II in the Dalhousie Faculty of Engineering. The recipient will have demonstrated financial need and satisfactory academic standing. Apply through the Faculty of Engineering. Contact the department for the deadline.

#### ***W. Lee and S. Wong Bursary***

This bursary celebrates 50 years of friendship between Wayne Lee and Sam Wong which roots in Halifax. To be awarded to international students within the Engineering Faculty (Undergraduate) on the basis of character, positive attitude and of need. Apply through the general online bursary program. Deadline: October 15.

## **F. Faculty of Health Professions**

### **1. College of Pharmacy**

PLEASE NOTE: The College administers the following bursaries. Applications are available directly from the College of Pharmacy and, upon completion, must be submitted to the College.

#### ***Alice and Louis Cassidy Award***

This award was established by Louis Cassidy in honour of Alice Cassidy. Mr. Cassidy graduated from Pharmacy in 1952 and practiced in the profession for over 50 years. This fund annually supports one or more bursaries for students in the Pharmacy program who have demonstrated satisfactory academic standing and financial need.

#### ***The Bert and Betty Collins Bursary***

An endowment has been established to award an annual bursary to a deserving pharmacy student from New Brunswick who demonstrates financial need and who has attained a satisfactory academic standing.

#### ***Jean Coutu Bursaries***

Two bursaries of \$500 each are offered annually to students from New Brunswick who are completing the first, second and third years of the Pharmacy program. These students must have satisfactory academic standing and financial need.

#### ***Elizabeth Foy Bursary***

In 2012 the Dalhousie University College of Pharmacy Student Endowment Committee established the Elizabeth Foy Bursary of \$1,000 to recognize Elizabeth Foy who retired from Dalhousie University after 43 years of dedicated service to thousands of pharmacy students. This bursary is given annually to a second or third year student who is an active participant in College activities, possesses excellent critical appraisal skills and demonstrates a financial need.

#### ***The Jack Kidd/ANCA Bursary***

In 1982, an endowment was established first for a scholarship and then in 1987 changed to a bursary that recognizes 43 years of service of Mr. Jack Kidd, a pharmaceutical sales representative, with Anca Inc. It is awarded to a student from New Brunswick or Prince Edward Island who has successfully completed one or more years of the class leading to a degree in pharmacy and who is enrolled in pharmacy at the University for the ensuing year. The student must have a satisfactory academic standing and demonstrate financial need.

#### ***Lawtons Drugs Bursary***

This bursary of \$500 is awarded to a second, third or fourth year student from the Atlantic Provinces, who has attained a satisfactory academic standing and who demonstrates financial need.

#### ***George MacDonald Bursary***

An endowment was established to honour Mr. George MacDonald on his retirement from W. Horner Inc. recognizing 37 years of service to the industry. This Bursary is awarded to a deserving pharmacy student, from the Atlantic Provinces who has satisfactorily completed at least one year of study at the College of Pharmacy and who demonstrates financial need.

#### ***Manrex Medication Delivery Bursary***

This bursary of \$1,000 is awarded bi-annually to a student entering their fourth year of study at the College of Pharmacy as a full-time student. The student must have achieved satisfactory academic performance and demonstrate financial need.

#### ***Nicholas P. Meagher Memorial Bursary***

Established in honour of Nicholas P. Meagher who received a BSc from Dalhousie in 1948 and was a popular and respected pharmacist at Dunswoth's Pharmacy on Quinpool Road for all of his working life. This fund annually supports one or more bursaries for students in the Pharmacy program who have demonstrated financial need.

#### ***New Brunswick Pharmaceutical Society Bursaries***

The New Brunswick Pharmaceutical Society offers four bursaries to be awarded to the students from New Brunswick completing the first, second, and third years of the Pharmacy class. The amount of each bursary is \$1,000. The bursaries are awarded on the basis of need to those students whose academic achievement, promise, and character are acceptable.

#### ***Tung Chun Ngan Memorial Bursary***

To provide a bursary to a first year student who has demonstrated financial need. First preference will be given to a Pharmacy student. Apply through the general online bursary program. Deadline: October 15.

#### ***Pharmachoice Bursary***

This bursary of \$500 is offered to a student who shows future promise and an interest in independent community pharmacy. The student must have a good academic standing and demonstrate financial need.

#### ***Pharmasave Bursaries***

Three bursaries of \$1,660 each are offered annually to students who have completed one to three years, have satisfactory academic standing and show financial need.

#### ***Sandoz Canada Bursary***

This bursary of \$1,000 is awarded to a student enrolled full-time in the College who demonstrated financial need.

#### ***Shoppers Drug Mart Community Pharmacy Bursaries***

Shoppers Drug Mart will sponsor three bursaries of \$1,000 each to awardees selected by the College. The selection committee will consider candidates on the basis of financial need, student involvement, academic proficiency and potential for contributing to the pharmacy profession. Normally, successful applicants will have completed the first year. Apply to the College of Pharmacy.

### **2. School of Health Sciences**

#### ***Dorothy Archibald Bursaries***

These awards valued at \$250, are sponsored by Dorothy Archibald, a lifetime member of the CAMRT, are awarded to full-time students in Nuclear Medicine and Radiological Technology who have successfully completed clinical practicum I (year 2, 3, 4). This award is based on the students' professional attributes and accountability, involvement in the student association or school committees, and GPA. Contact the department for the deadline.

### **3. School of Nursing**

#### ***Doreen Carroll Bursary in Cancer Nursing***

As a result of receiving excellent care from registered nurses, the Carroll family sponsors a bursary to assist BScN students who demonstrate interest and proficiency in Cancer Nursing. Eligible recipients must be full time students in the third or fourth year of the BScN program. Applicants who have selected (an) oncology/palliative care nursing elective class(s) in their program of study will be given preference over other applicants. Students must complete the School of Nursing Undergraduate Bursary Application and also submit a written application to the School of Nursing, demonstrating their interest and proficiency in Cancer Nursing, as well as a desire to establish a career and practice in Cancer Nursing. Contact the School of Nursing for the deadline.

#### ***School of Nursing Undergraduate Bursary***

This endowment was established to provide an annual bursary to one or more students in the second or third year of the Bachelor of Nursing program. Students enrolled in the accelerated program must have completed at least one full year of the undergraduate nursing program before applying. Students must be enrolled in

at least four classes and be in good academic standing. Applications are available at the School of Nursing. Contact the School of Nursing for the deadline.

#### 4. School of Social Work

##### 1. The following Bursaries are offered by the Registrar's Office.

###### **Hannah G. Matheson Bursaries**

These bursaries are open to students enrolled in studies in the School of Social Work at either the undergraduate or graduate level. Apply through the general online bursary program.

###### **Lloyd MacInnis Memorial Bursary**

The Lloyd Y. MacInnis Memorial Award Fund was established to provide an annual bursary to a qualifying student who is continuing his or her studies at the School in the baccalaureate program beyond first year. Apply through the general online bursary program.

###### **Jane Wisdom Memorial Bursary**

When Jane Wisdom began her caring work in Halifax shortly before the Great Explosion of 1917, she was truly a pioneer in what has come to be known as Social Work. It is in recognition of her distinguished service that anonymous donors in 1977 established an endowment fund whereby one or more annual bursaries to one or more deserving students would be granted to students in the baccalaureate program of the School of Social Work at Dalhousie University. Apply through the general online bursary program.

##### 2. The following Bursaries are offered by the School.

###### **The Janet Lee Myers Memorial Bursary**

For one or more students in the Bachelor of Social Work degree program at Dalhousie University who are in need of financial assistance. Deadline: October 15.

###### **Nova Scotia Association of Social Workers' Bursary**

The NSASW provides an annual bursary to a BSW student who best meets the selection criteria of financial need, satisfactory academic progress, and demonstrates social work values in prior endeavours. The recipient is expected to contribute in some way to the NSASW while a student at the School. Deadline: October 15.

###### **The Sonja R. Weil Memorial Bursary**

Family and friends established this endowment as a memorial to Sonja Weil and in tribute to her work as a social worker and psychotherapist. This bursary is open to students in the MSW (preference is given to MSW students) and BSW programs who demonstrate financial need, satisfactory academic standing and interest in those areas which most closely reflect Sonja Weil's work in child and family therapy. Apply to the School of Social Work. Deadline: October 15.

###### **Eva Mary and Judge Hiram S. Farquhar Bursary**

To provide an annual bursary(s) for one (or more) student(s) enrolled in the Bachelor or Master of Social work program at Dalhousie University who demonstrate financial need. Preference given to a student born in, or a resident of Hants County.

#### G. Faculty of Management

##### **Northstar Trade Finance - Thomas J. Bata International Exchange Bursaries**

Up to eight bursaries of \$2,000 each to support students who have been accepted into the international exchange program and might otherwise not be able to participate in the exchange without external funding.

These Bursaries were originally created by Mr. Scott Shepherd, MBA '83, as the Northstar Trade Finance - Mary Grover LeBlanc Memorial Fellowship. It was renamed the Northstar Trade Finance - Thomas J. Bata Memorial Fellowship in 2010, in memory of Mr. Thomas Bata. (1914-2008). Mr. Bata immigrated to Canada in 1939 from the former Czechoslovakia to form the Bata Shoe Company of Canada. Long before it was fashionable to do so, he provided opportunities for education and advancement to people of all races and creeds. He introduced his workforce to modern technology and previously unknown standards of quality and workmanship and helped many of them establish businesses of their own. Apply through the Center for International Trade and Transportation.

##### **The Louisbourg Investments Bursary**

Two bursaries are funded annually by Louisbourg Investments in order to assist students enrolled in the Rowe School of Business. Students must demonstrate financial need and be of satisfactory academic standing. Application required to the Rowe School of Business. Contact the Rowe School of Business for the deadline.

##### **3M Canada Bursary**

Two bursaries in the amount of \$1,000 each are given to students entering their graduating year of studies in Science or Commerce who have maintained grades establishing them in the top quartile of their programs and who are in need of financial support. Apply through the general online bursary program. Deadline: October 15.

#### H. Faculty of Science

##### **Alysia D. Abriel Memorial Bursary**

Dr. Monique C. Grelot created this bursary to honor the memory of her granddaughter Alysia Abriel who always followed and never questioned her passions.

The bursary is to assist a female student enrolled in the Honours Biology, Chemistry or Biochemistry program who has demonstrated financial need and a good academic standing. Apply through the general online bursary. Deadline: October 15.

##### **The Marje Brady Bursary**

Margie Wahtras Brady is a member of a family of WWII refugees from Estonia who immigrated to Canada in 1950 via Sweden.

This bursary is to provide bursaries to undergraduate science students enrolled at Dalhousie University who demonstrated financial need and satisfactory academic standing. Apply through the general online bursary. Deadline: October 15

##### **Audrey-Lea Dawson Memorial Bursary**

A memorial bursary is open annually to one or more female students enrolled in the Bachelor of Science program who have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary program.

##### **David Andrew Dougall Memorial Bursary**

The intent of this award is to encourage and assist one or more students whose academic and financial status merit consideration. Please apply to the Department of Biology in September of each academic year.

##### **Allan Chaloner Hill Bursary**

The Allan Chaloner Hill Bursary endowment was established by his daughter Alison Biedermann-Hill in her father's memory. A bursary is available to a second or third year chemistry student. Apply through the general online bursary program. Deadline: October 15..

##### **Mathematics & Statistics Bursary Fund**

An annual bursary to be awarded to a student enrolled in the second, third or fourth year of an undergraduate program, leading to a degree in Mathematics or Statistics at Dalhousie University. The recipient will have demonstrated financial need and satisfactory academic standing. Apply through the general online bursary program. Deadline: October 15.

##### **Professor W. Russell Maxwell Memorial Bursaries**

Any residual income remaining in the Fund after the annual scholarships have been determined may, after consultation with the Department of Economics, be used to fund one or more bursaries for deserving students entering the fourth year of the Honours program in Economics. Awarded by the Department of Economics and the Registrar's Office. Application not required.

##### **Elizabeth McKenna Bursaries**

The Elizabeth McKenna Scholarship Fund was established in 1928 for the purpose of providing what are known today as bursaries. Applicants must be bona fide residents of one of the Maritime Provinces and be entering the first year in the College of Arts & Science. Apply through the general online bursary program.

##### **Dr. Catherine Olding Hebb Memorial Bursary**

This bursary was established in memory of Catherine Olding Hebb. The recipient must be a resident of one of the Atlantic provinces, must be studying in the Department of Biology, Bachelor of Science program and demonstrate financial need. Apply through the general online bursary program. Deadline: October 15.

### ***Ron Hayes and Dixie Pelluet Bursary in Biochemistry and Molecular Biology***

This bursary is to honour the memory of Ron Hayes and Dixie Pelluet by providing an annual bursary to a student enrolled in a BSc program in Biochemistry and Molecular Biology. Eligible recipients will have completed at least one year of study in their undergraduate program at Dalhousie. The bursary recognizes both academic excellence and financial need. Apply through the general online bursary program. Deadline: October 15.

### ***John E. Tasman Memorial Bursary in Chemistry***

Established in memory of John E. Tasman who graduated from Chemistry in 1942, this bursary is available to full-time students enrolled in the Faculty of Science and majoring in Chemistry. Apply through the general online bursary program. Deadline: October 15.

### ***Yau Hing Shum-Ngan Memorial Bursary***

Dr. Ngan established this bursary in memory of his mother, Yau Hing Shum-Ngan. The bursary shall be awarded to a first year undergraduate student enrolled with the Faculty of Science with demonstrated financial need. Apply through the general online bursary program. Deadline October 15.

### ***3M Canada Bursary***

Two bursaries in the amount of \$1,000 each are given to students entering their graduating year of studies in Science or Commerce who have maintained grades establishing them in the top quartile of their programs and who are in need of financial support. Apply through the general online bursary program. Deadline: October 15.

## **VII. Continuing Education Awards and Bursaries**

Students who are engaged in part-time studies for credit are eligible to be considered for awards and financial assistance. Each of these is described briefly below.

### ***The Frederick Thomas Parker Award for Part-Time Studies***

This award will provide an appropriate and flexible means of encouraging students intending to undertake degree or diploma studies at Dalhousie on a part-time basis. The selection committee will take into account both academic performance and financial need, depending upon circumstances. Applications are available at the College of Continuing Education.

### ***Canada Student Loan for Part-Time Students***

This particular federal loan is intended to help students who have a small cash-flow problem at the beginning of their studies. In order to qualify on the basis of class load for a standard academic year, a student must be planning to take between 20% and 59% of a class load. The application form is available from Nova Scotia Student Aid Office, and is to be completed by the Registrar's Office.

### ***Dalhousie University Undergraduate Bursaries***

Students who are registered in 6 credit hours per term will be considered for bursaries. Apply through the general online bursary program through the [monneymatters.dal.ca](http://monneymatters.dal.ca)

Program dates:	Fall:	September 15 - October 15
	Winter:	January 15 to February 15
	Summer:	May 15 - June 15

### ***Dalhousie Temporary Loans***

Students who are engaged in part-time studies for credit will be considered for temporary loans. Such loans are intended for short-term needs, and repayment is required after the expiration of a predetermined grace period. Application is to be made at the Registrar's Office.

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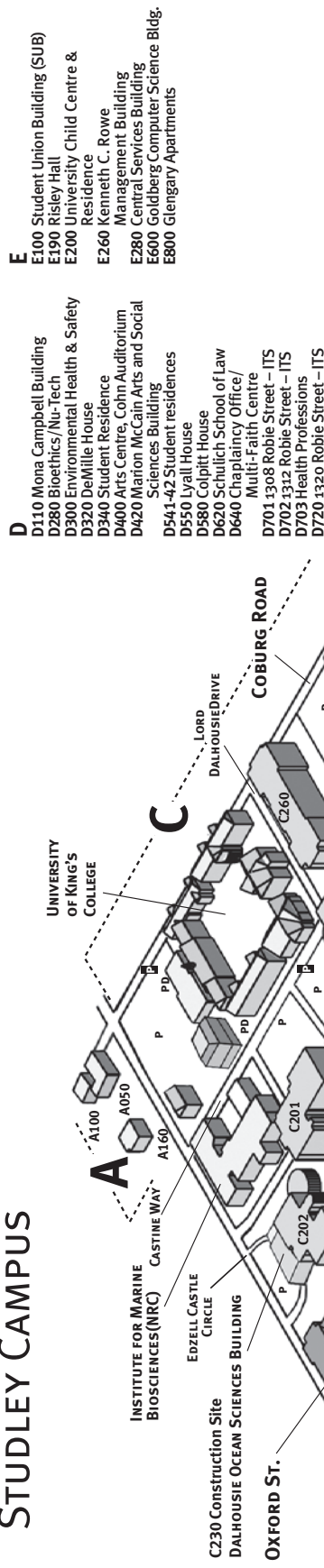
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# DALHOUSIE UNIVERSITY CAMPUS

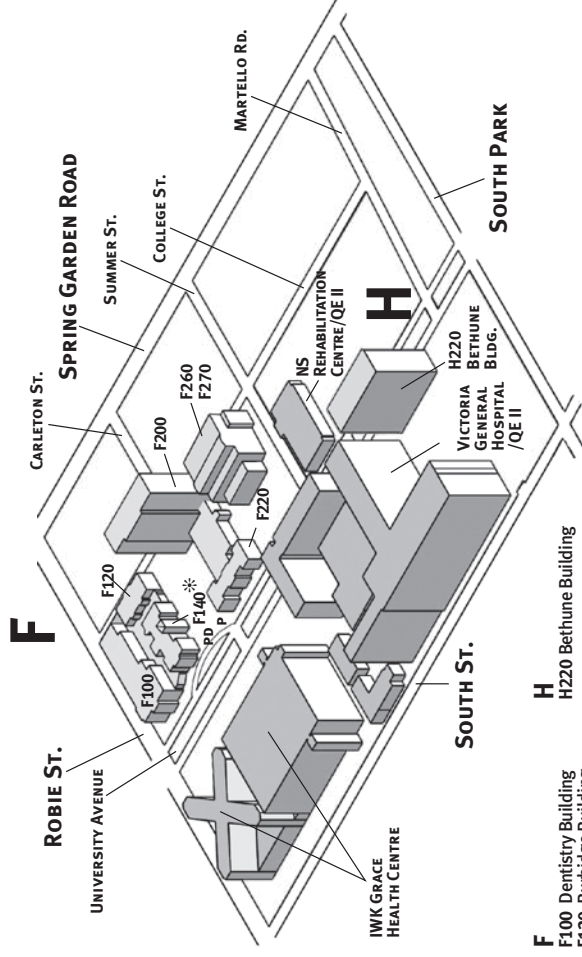
## STUDLEY CAMPUS



02/2013

# DALHOUSIE UNIVERSITY CAMPUS

## CARLETON CAMPUS



- F**
- F100 Dentistry Building
  - F120 Burridge Building
  - F140 Forrest Building
  - F200 Tupper Building
  - F220 Clinical Research Centre
  - F260, F270 LSRI & Innovacorp

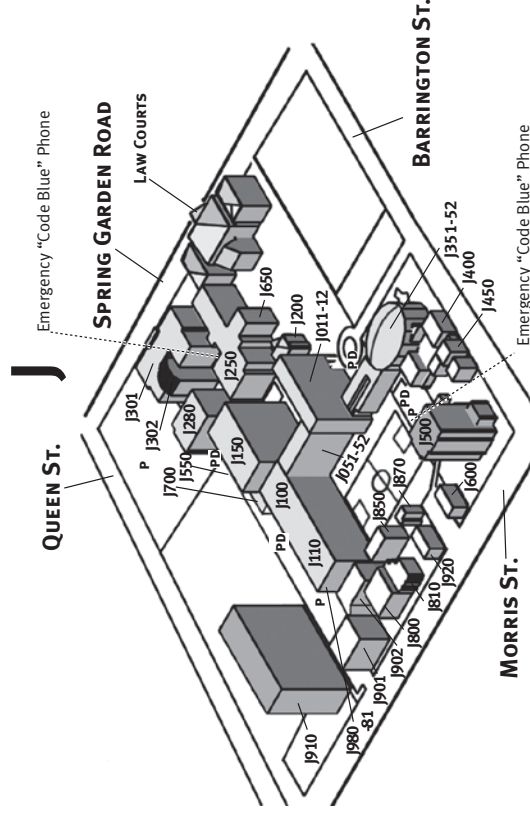
- H**
- H220 Bethune Building

- H**
- H220 Bethune Bldg.
  - VICTORIA GENERAL HOSPITAL /QE II

## SEXTON CAMPUS

Many Sexton Campus buildings are labelled both by name and letter (which appears in brackets in the listings where appropriate).

- J**
- J011-12 Ira MacLab Building (A)
  - J051-52 B Building
  - J100 Electrical Engineering (C)
  - J110 H.R. Theakston Building (C3)
  - J150 A.L. MacDonald Building (D)
  - J200 Sexton House (E)
  - J250 Chemical Engineering (F)
  - J280 G.H. Murray Building (G)
  - J301-02 Ralph M. Meduck Bldg. (Architecture and Planning) (H)
  - J351-52 F.H. Sexton Memorial Gymnasium
  - J400 Hart House, Engineering Mathematics (K)
  - J450 Moren House (L)
- M**
- M.M. O'Brien Hall (M)
  - N Building
  - Graduate Student Residence (O)
  - A.E. Cameron Building (P)
  - Bernard N. Cain Building (Q)
  - R1 Building
  - R2 Building
  - Dust Explosion Lab (T)
  - Metallurgy Research Lab (U)
  - Industrial Engineering, Dean of Engineering
  - Gerard Hall
  - Morris 5247
  - Electrical and Computer Engineering Mobile
- K**
- Engineering & Computer Science
  - Cooperative Education



# DALHOUSIE UNIVERSITY CAMPUS

## AGRICULTURAL CAMPUS

- |                                    |   |                                     |
|------------------------------------|---|-------------------------------------|
| 1. Day Care Services               | 18. Humanities House                        | 33. Physical Plant Shops            |
| 2. Athletic Field                  | 19. Turf Research Building                  | 34. Hancock Veterinary Building     |
| 3. Langille Athletic Centre        | 20. Greenhouse                              | 35. Haley Institute                 |
| 4. Cox Institute                   | 21. Boulden Building                        | 36. Central Heating Plant/IT Centre |
| 5. Banting Building                | 22. Machinery Shed                          | 37. Rock Garden                     |
| 6. Agricultural Engineering Annex  | 23. Farm Fields                             | 38. Dairy Building                  |
| 7. Crop Development Institute      | 24. Sheep Barn                              | 39. Cumming Hall                    |
| 8. Alumni Gardens                  | 25. Manure Storage Facility                 | 40. Jenkins Hall                    |
| 9. MacRae Library                  | 26. Beef Barn                               | 41. Trueman House                   |
| 10. Centennial Amphitheatre        | 27. Canadian Centre for Fur Animal Research | 42. Chapman House                   |
| 11. DeWolfe House                  | 28. Ruminant Animal Centre                  | 43. Fraser House                    |
| 12. International House            | 29. Chute Animal Nutrition Centre           | 44. Cobequid Trail                  |
| 13. Collins Horticultural Building | 30. Atlantic Poultry Research Centre        | 45. Chef's Garden                   |
| 14. Women's Institute of NS        | 31. Pesticide/Herbicide Storage             | 46. Baron's Pride Horse Stable      |
| 15. Harlow Institute               | 32. Storage                                 | 47. Cox Greenhouses                 |
| 16. Rural Research Centre          |   |                                     |
| 17. Orchard                        |   |                                     |

