

2008/2009 CALENDAR

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



**DALHOUSIE
UNIVERSITY**

Inspiring Minds

www.dal.ca

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Smoke Free/Scent Free Dalhousie

To protect people from involuntary exposure to tobacco smoke, Dalhousie has declared the University entirely smoke-free. Smoking is not permitted in University buildings, including residences, or on University property. Those wishing to smoke are asked to leave University property to do so.

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 or consult the websites www.dal.ca/scentfree and www.dal.ca/smokefree.

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Important Notices

Students are advised that the matters dealt with in this Calendar are subject to continuing review and revision. This Calendar is printed 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. 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
Halifax, Nova Scotia
Canada B3H 4H6
Telephone: (902) 494-2450
Fax: (902) 494-1630
E-mail: Registrar@dal.ca

Dalhousie Calendars on the Web

Dalhousie University calendars are available in electronic form on the Web at www.registrar.dal.ca. Please note that the electronic versions of the calendars are provided for your convenience. Formatting of the electronic version may differ from the official printed version. Where differences occur, please contact the Registrar's office at 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 Class Add/Drop Dates 2008/2009

ACADEMIC CLASS ADD/DROP DATES (For financial deadlines and refund dates, visit www.dal.ca/studentaccounts .)					
Part of Term Identifier	Duration of Classes	Last Day to Register	Last Day for Late Registration Last Day to Cancel Registration Last Day to Add Classes	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 2008					
1	May 5 - Aug 1, 2008	May 16, 2008	May 16, 2008	June 4, 2008	June 25, 2008
A	May 12 - June 27, 2008	May 7, 2008	May 23, 2008	May 27, 2008	June 15, 2008
D	May 12 - June 4, 2008	May 7, 2008	May 19, 2008	May 23, 2008	May 28, 2008
9	June 2 - August 27, 2008	May 23, 2008	June 23, 2008	July 8, 2008	August 6, 2008
E	June 5 - June 27, 2008	May 23, 2008	June 12, 2008	June 13, 2008	June 20, 2008
B	July 2 - August 15, 2008	June 25, 2008	July 7, 2008	July 16, 2008	August 3, 2008
F	July 2 - July 25, 2008	June 25, 2008	July 7, 2008	July 9, 2008	July 16, 2008
G	July 28 - August 20, 2008	June 25, 2008	August 5, 2008	August 7, 2008	August 13, 2008
Fall Term 2008					
X/Y	September 4, 2008 - April 9, 2009	September 2, 2008	September 19, 2008	November 3, 2008	February 2, 2009
1	September 4, - December 1, 2008	September 2, 2008	September 19, 2008	October 3, 2008	November 3, 2008
Winter Term 2009					
1	January 5 - April 9, 2009	January 16, 2009	January 16, 2009	February 2, 2009	March 9, 2009
Summer Term 2009					
1	May 4 - July 31, 2009	May 15, 2009	May 15, 2009	June 3, 2009	June 24, 2009
A	May 11 - June 26, 2009	May 6, 2009	May 22, 2009	May 26, 2009	June 14, 2009
D	May 11 - June 3, 2009	May 6, 2009	May 19, 2009	May 22, 2009	May 27, 2009
9	June 1 - August 26, 2009	May 22, 2009	June 22, 2009	July 7, 2009	August 5, 2009
E	June 4 - June 26, 2009	May 22, 2009	June 11, 2009	June 12, 2009	June 19, 2009
B	July 2 - August 14, 2009	June 24, 2009	July 6, 2009	July 15, 2009	August 2, 2009
F	July 2 - July 24, 2009	June 24, 2009	July 6, 2009	July 8, 2009	July 15, 2009
G	July 27 - August 19, 2009	June 24, 2009	August 4, 2009	August 6, 2009	August 12, 2009

Other Academic Dates

2008

May

- 5 Summer Academic term begins
- 19 Victoria Day - University closed
- 20-28 - Spring Convocations

July

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

August

- 1 Co-op summer academic term ends
- 4 Halifax/Dartmouth Natal Day - University closed
- 5 Examinations begin commerce co-op, computer science & engineering
- 9 Examinations end except commerce co-op
- 15 Examinations end commerce co-op

September

- 1 Labour Day - University closed
- 4 Classes begin, fall term
- 10 IPL Module - Palliative care (Senior), dentistry, health professions and medicine
- 19 Last day to apply for honours programs
- Last day to change from Dalhousie to King's and vice versa

October

- 13 Thanksgiving Day - University closed
- 15 IPL Module - Working in Interprofessional Teams #1 (Entry)
- 18-19 - Fall Convocations

2008**November**

- 11 In lieu of Remembrance Day - University closed
- 13 IPL Module - Disability (Intermediate) dentistry, health professions and medicine
- 15 Last day to apply for admission to winter term

December

- 1 Classes end, fall term
- 1 Last day to apply to graduate in May
- 3 Examinations begin
- 13 Examinations end

2009**January**

- 1 New Year's Day - University closed
- 5 Classes begin, winter term

February

- 6 Munro Day - University closed
- 23 Study break begins

March

- 2 Classes resume
- 4 IPL Module - Family violence (Intermediate), dentistry, health professions and medicine

April

- 9 Classes end, regular session
- 10 Good Friday - University closed
- 13 Examinations begin, regular session
- 27 Examinations end, regular session

May

- 4 Co-op summer academic term begins
- 18 Victoria Day - University closed
- 19-27 - Spring convocations

July

- 1 Canada Day - University closed
- 2 Last day to apply to graduate in October
- 31 Co-op Summer academic term ends

August

- 3 Halifax/Dartmouth Natal Day - University closed
- 4 Examinations begin, commerce co-op, computer science and engineering
- 8 Examinations end, computer science and engineering
- 14 Examinations end, commerce co-op

Admission Dates 2008/2009

Final Dates for Receipt of Applications for Admission

Regular Session 2008/2009

Faculties of Arts and Social Sciences, Computer Science, Engineering, Management, and Science

International Students (except USA)	April 1
Transfer Students entering from Canada or USA ¹	June 1
Returning Dalhousie Students ⁵	August 15
Diploma in Meteorology	June 1

Faculty of Architecture and Planning

Bachelor of Community Design ¹	June 1
Bachelor of Environmental Design Studies ²	March 1

Faculty of Health Professions

Pharmacy	February 1
Social Work, Health Sciences	February 15
BSc (Recreation) ¹ , BSc (Kinesiology) ¹ , and BSc (Health Promotion) ¹	June 1
BSc (Nursing) for Post RN ¹	August 1
Health Services Admin (DHSA, DEHSM)	July 1
BSc (Nursing)	March 15
Diploma in Nurse Practitioner Studies for Remote & Underserved Communities (DNPS)	June 1
Diploma in Disability Management (DDM)	July 15

Internal Transfers³

Fall term	September 22
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Dentistry⁴

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 1

Medicine⁴

MD	October 31
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Law⁴

LLB	February 27
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Winter Term

BA and BSc programs only	November 15
BSc (Nursing) for Post RN only	November 15
Returning Dalhousie Students ^{1,5}	November 15
BEDS Transfer students	November 1

¹ Late applications may be considered up to August 1 but we cannot guarantee space in programs.

² An early response will be given to an application arriving by March 1. Late applications may be considered up to August 1, space pending. Applications from transfer students are considered throughout the year; however, transfer students applying for May admission must apply by March 15.

³ For students currently registered at Dalhousie wishing to change degree programs

⁴ Information on these programs is included in the appropriate calendar.

⁵ For students returning to BA, BSc, BEng, BCSc, BScN 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 39, 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 Sessions

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

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". Audit students must apply in the normal way. 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 must be fulfilled concurrently with the class being considered.

Course

The term "class" is used in place of the word course.

Credit

A unit by which University class work is measured. A full class is normally worth one full credit (6 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.

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 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.

Exclusion

An exclusion is when one course is sufficiently similar to another course that credit will not be given twice if both are taken.

Externship

See Internship.

Fieldwork

See Internship.

Full-time Students

Those registered for three full classes (18 credit hours) or more in the Regular term, or the equivalent of three half credit (9 credit hours) classes or more in either the Fall or Winter term.

Good Standing

Students who meet the required GPA are considered to be in good academic standing. (see Academic Regulations, page 39, 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.

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

These terms are used in Faculty of Health Professions' 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 undergraduate levels of study:

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

Matriculation Standing

Senior Matriculation designates the level of studies attained by students who have successfully completed Grade XII in public high school in Nova Scotia or its equivalent elsewhere.

Mature Student

A person who is at least 23 years old, does not meet the usual admission requirements and has been absent from full-time high school study for at least four years.

Part-time Students

Students registered for fewer than three full-credit classes (18 credit hours) or the equivalent of three half-credit (9 credit hours) classes in either the Fall or Winter term. A full credit class is equivalent to 6 credit hours.

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 39, section 19).

Scholarship GPA

See Awards section page 536.

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 only, 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.

University Explorers

Students admitted under the mature students category who are not candidates for a degree.

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 of 13-16 weeks 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

1000-level classes are introductory
2000-4000 level classes are advanced
5000-9000 level are Graduate level (with some exceptions)

Credit Hours—examples only

0.06 credit hours = 1 full credit
0.03 credit hours = ½ credit
0.00 credit hours = no credit

Subject Codes

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

AGRI - Agriculture	INWK - Engineering Internetworking
ANAT - Anatomy & Neurobiology	ITAL - Italian
ARBC - Arabic	JOUR - Journalism
ARCH - Architecture	KINE - Kinesiology
ARTC - Applied Health Services Research	KING - King's Foundation Year Programme
ASSC - Arts and Social Sciences Interdisciplinary	LAWS - Law
BIOC - Biochemistry and Molecular Biology	LEIS - Leisure Studies
BIOE - Biological Engineering	MARA - Marine Affairs
BIOL - Biology	MARI - Marine Biology
BIOT - Bioethics	MATL - Materials Engineering
BMNG - Biomedical Engineering	MATH - Mathematics
BUSI - Business Administration	MDLT - Medical Lab Technology
CANA - Canadian Studies	MECH - Mechanical Engineering
CH&E - Community Health & Epidemiology	MEDI - Medicine
CHEE - Chemical Engineering	MEDS - Medical Science
CHEM - Chemistry	MGMT - Management
CHIN - Chinese	MICI - Microbiology & Immunology
CIVL - Civil Engineering	MINE - Mining Engineering
CLAS - Classics	MUSC - Music
COMM - Commerce	NESC - Neuroscience
CPST - Complimentary Studies	NUMT - Nuclear Medicine Technology
CRWR - Creative Writing	NURS - Nursing
CSCI - Computer Science	OCCU - Occupational Therapy
CTMP - Contemporary Studies	OCEA - Oceanography
DCYT - Diagnostic Cytology	ORAL - Oral & Maxillofacial Surgery
DEHY - Dental Hygiene	PATH - Pathology
DENQ - Dentistry Qualifying	PETR - Petroleum Engineering
DENT - Dentistry	PGMD - Post-Graduate Medicine
DISM - Disability Management	PGPH - Post-Graduate Pharmacy
DMUT - Diagnostic Medical Ultrasound Technology	PHAC - Pharmacology
ECED - Electrical and Computer Engineering	PHAR - Pharmacy
ECMM - Electronic Commerce	PHIL - Philosophy
ECON - Economics	PHYC - Physics and Atmospheric Science
EDUC - Education	PHYL - Physiology
EMSP - Early Modern Studies Programme	PHYT - Physiotherapy
ENGI - Engineering	PLAN - Planning
ENGL - English	POLI - Political Science
ENGM - Engineering Math	PROS - Prosthodontics
ENVE - Environmental Engineering	PSYO - Psychology
ENVI - Environmental Studies	PUAD - Public Administration
ENVS - Environmental Science	RADT - Radiological Technology
ERTH - Earth Sciences	REGN - Registration Course - Graduate
EURO - European Studies	RELS - Religious Studies
FOSC - Food Science & Technology	RSPT - Respiratory Therapy
FREN - French	RUSN - Russian Studies
GEOG - Geography	SCIE - Science
GERM - German	SLWK - Social Work
GWST - Gender and Women's Studies	SOSA - Sociology and Social Anthropology
HAHP - Health and Human Performance	SPAN - Spanish
HEED - Health Education	STAT - Statistics
HESA - Health Services Administration	THEA - Theatre
HINF - Health Informatics	TYPR - Transition Year Programme
HIST - History	VISC - Clinical Vision Science
HLTH - Health Professions	
HPRO - Health Promotion	
HSAI - Health Services Administration (International)	
HSCE - Health Sciences	
HSTC - History of Science and Technology	
HUCD - Human Communication Disorders	
IDIS - Interdisciplinary Studies	
IENG - Industrial Engineering	
INFO - Information Management	
INFX - Informatics	
INTD - International Development Studies	
INTE - Interdisciplinary Studies (Graduate)	

Undergraduate Programs

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)*
 Bachelor of Software Engineering (4 years)**

Faculty of Engineering

Bachelor of Applied Science (Food Science)
 Bachelor of Engineering (4 years)*
 Bachelor of Software 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 Disability Management (2 years)*
 Diploma in Emergency Health Services Management (1 year)
 Diploma in Health Services Administration (1 year)
 Diploma in Nurse Practitioner Studies for Remote and Under-served Communities (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 (Occupational Therapy) (3 years)***
 Bachelor of Science (Pharmacy) (4 years)
 Bachelor of Social Work (3 years)
 Bachelor of Science (Recreation) (4 years)
 Bachelor of Science (Recreation)/Bachelor of Management (5 years)

Faculty of Management

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

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

**Offered jointly by Engineering and Computer Science. Also available as a co-op program.

*** Final class admitted in September 2004.

Dalhousie University

Dalhousie University, located in the heart of Halifax, Nova Scotia, an international port city known for its scenic beauty, vibrant culture and rich heritage, is one of Canada's leading universities. We are widely recognized for outstanding academic quality and the opportunities presented by our broad range of educational and research activities.

Since 1818, Dalhousie has a long tradition of excellence and achievement. Dalhousie offers more than 3,600 diverse courses in over 180 undergraduate, graduate and professional degrees. We also encourage student learning through exchange programs, fieldwork, community service and co-operative education. Our collaborative learning environment encourages our nearly 16,000 students to interact with one another and with faculty experts to share ideas and offer new perspectives.

Our collaborative spirit extends off campus, as well. We conduct research in partnership with teaching hospitals, professional organizations, businesses, nonprofit agencies, and other universities. As Atlantic Canada's leading research university, we attract more than \$93 million in research grants and awards annually, allowing us to conduct a wide variety of research projects.

In 1997, the Technical University of Nova Scotia amalgamated with Dalhousie University, creating a dynamic new centre of advanced technical education and research in Nova Scotia, in the areas of architecture, computer science and engineering.

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. Degrees in agriculture, awarded to students of the Nova Scotia Agricultural College, are awarded by Dalhousie in co-operation with the College.

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

Executive Officers

President and Vice-Chancellor

Tom Traves, BA, MA, PhD

Vice-Presidents

Academic and Provost

Alan Shaver, BSc (Hon), PhD

Finance and Administration

Ken Burt, BA, MBA

External

Floyd W. Dykeman, BA, MPL

Student Services

Bonnie Neuman, BA, MA, EdD

Research

W. Carl Breckenridge, BSc (Hon), MSc, PhD

Associate Vice-President, Academic

Larry Maloney, B.P.E., BEd, MA, PhD

Associate Vice-President, Research

Russell J. Boyd, BSc, PhD

Assistant Vice-President, Communications and Marketing

Jim Vibert, BA

Assistant Vice-President, Financial Services

Ian Nason, BComm

Assistant Vice-President, Human Resources

Katherine Sheehan, BA, CHRP

Deans of Faculties

Architecture and Planning

J. Grant Wanzel, BArch, MArch (Toronto), MRAIC

Arts and Social Sciences

Marian Binkley, BA, MA, PhD (Toronto)

Computer Science

Michael Shepherd, MSc, PhD (Western)

Dentistry

David S. Precious, CM, DDS, MSc, FRCDC, FICD, FADI, FACD, FRCS (England)

Engineering

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

Graduate Studies

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

Health Professions

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

Law

Phillip Saunders, BA (Hon), MA, LLB (Dal)

Management

David Wheeler, BSc (Hons) (Surrey), PhD (Surrey)

Medicine

Harold W. Cook, BSc, MSc, PhD (Dal)

Science

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

College of Continuing Education

Andrew Cochrane, BPER, MBA

College of Arts and Science, Provost

Marian Binkley, BA, MA, PhD (Toronto)

Administrative Officers

University Legal Counsel

Karen Crombie, BA (Hon), JD

University Librarian

William Maes, AB, MA, MLS

University Registrar

Asa Kachan, BA, MLIS

Director of Government Relations

Gillian Wood, BA, MA (Economics)

Coordinator, Special Projects, President's Office

Kim Thomson, BSA, MBA

Executive Directors

Computing and Information Services

John Sherwood, BSc, EP

Centre for Learning and Teaching

Lynn Taylor, BSc and BEd (Memorial), MA (Dal), PhD (Ottawa)

Office of Institutional Analysis and Research

Elizabeth Lane, BA, MA

Directors**Alumni and Donor Relations**

Ian Murray, BA

Arts Centre

Heather McGean, BA

Athletics and Recreational Services and Dalplex

Al Scott, BPE (Calgary), MSc (Oregon)

Counselling and Psychological Services

Victor Day, PhD

Environmental Health and Safety

William Louch, PhD

Facilities Management

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

Health Services

Kim Plaxton, MD (UofT), CCFP (Dal) FCFP

Housing, Conference and Ancillary Services

Heather Sutherland, BSc, MEd

Student Resources

Sharon Johnson-Legere, BBA, MBA, CA, CHRP

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.

The President and Vice-Chancellor is the Chief Executive Officer of the University, responsible to the Board of Governors and Senate for supervision of the University's administrative and academic work.

Chancellor

Dr. Richard B. Goldbloom, O.C.

Chancellor Emeritus

Dr. Rueben Cohen

Sir Graham Day

Dr. Ruth Goldbloom

Executive

Hon. Lorne Clarke

Senator James S. Cowan, Chair

Mr. Mike Tipping

Dr. Lloyd A. Fraser

Ms. Cathy MacNutt, Vice Chair

Mr. Don Mills, Honourary Secretary

Mr. Robert Chisholm

Mr. William Black

Dr. Jim Spatz

Mr. Bruce Towler, Honourary Treasurer

Dr. Tom Traves, President

Members

Mr. Jay Abbass

Mr. Jamie Baillie

Ms. Elizabeth Beale

Mr. Level Chan

Prof. Richard Evans

Dr. Richard Goldbloom

Ms. Lynn Irving

Ms. Nancy MacCready-Williams

Prof. Sunny Marche

Mr. Robert Radchuck

Mr. David Russell

Mr. Chris Smith

Mr. Lawrence Stordy

Mr. Jim Wilson

Ms. Shannon Zimmerman

University Secretary

Susan Brousseau

Observer for Faculty Association

Dr. Kevin Grundy

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, Centres 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 73 members - 49 elected Faculty representatives, 16 academic administrators (President, Vice-President Academic, Vice-President Research, University Librarian, and the Deans of each faculty), six students elected by the Dalhousie Student Union, and a representative from the university of Kings College and the Nova Scotia Agricultural College.

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

Chair of Senate

Lloyd A. Fraser, EdD

Vice Chair of Senate

Peter M. Butler, PhD

Secretary of Senate

Bruce Dunphy, MD, MEd, FRSC (c)

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 20.

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. Students from Canadian High Schools

For general admission to most programs, students require academic grade 12 level university preparatory academic English and four additional university preparatory courses. 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.

2. Students from a College of Applied Arts and Technology (CAAT) or a CEGEP

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

3. Students who have completed a Diploma

Students who do not qualify for admission based on high school, CAAT, or CEGEP results may be eligible if they have completed a two-year, or three-year diploma which provides academic preparation in subjects related to their program of study at Dalhousie. In this case, the student will not be eligible for transfer credit assessment.

4. Acceptable Classes for Atlantic Provinces

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

5. 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 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.

6. Students from Outside Canada

American High School Curriculum

If you're studying in an American-based curriculum (in the United States, or abroad), you are required to present a Grade 12 high school average of "C" or better. In addition, you must present an SAT 1 score (a minimum combined SAT 1 score of 1650 on the new SAT test or 1100 on the old SAT test) or an ACT score of 23 or better.

British Curriculum (GCE and GCSE)

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

Advanced Placement (AP), Baccalauréat (French Baccalaureat) and International Baccalaureate (IB) courses are accepted towards meeting admission requirements. Please refer to the General Admission Requirements section of the Calendar for specific admission requirements.

Advanced Placement, International Baccalaureate, Advanced Level and Baccalauréat (French Baccalaureat) courses 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 <https://discover.dal.ca/dal/intlstud/bycountry.ezc> for more information.

7. English Language Proficiency Requirements

Because English is the language of study at Dalhousie, 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
 - TOEFL (paper based) - 580
 - TOEFL (iBT) - 90
 - Students must achieve 4.0 or better on the essay or TOEFL Writing Test
- International English Language Testing System (IELTS) - 6.5
- 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 course 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 course with a minimum grade of B
- 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 in the country was English
- Student has studied full-time for at least one year in a recognized university where the language of instruction and examination in the country was English and the course curriculums 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
 Halifax, NS B3H 4H6
 Canada
 Dalhousie University TOEFL Code: 0915

8. 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 7.6 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.

9. Students with Learning Disabilities

Dalhousie University is committed to providing equal educational opportunities and full participation for students with learning disabilities. See University Regulations, page 23 for complete information.

10. Mature Students

If you are at least 23 years old and have been out of high school study for four years and have not attended university or community college, you may apply for the University Exploration Program as a mature student. To directly enter a degree program, you must meet the academic requirements. Dalhousie's College of Continuing Education provides a wide variety of services to mature and/or part-time students and welcomes the opportunity to discuss your special needs with you. It is recommended that prospective students meet with an advisor well in advance of their intended registration as upgrading classes may be required. Contact the College of Continuing Education at (902) 494-2526. Students who completed the Nova Scotia High School diploma for adults will be eligible for general admission.

If you apply as a mature student, enclose a letter indicating your activities since leaving high school and your reasons for expecting to successfully complete a university program if you are admitted. A transcript of academic work in high school and beyond is required. The number of classes a University Exploration student may take in a single academic year is restricted to a maximum of four full credits. Advising sessions with the Mature Student Advisor may be arranged by calling (902) 494-1468 (see page 42; College of Continuing Education for more details).

11. 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.

12. International Baccalaureate, Baccalauréat (French Baccalaureat) and Advanced Placement Classes

If you are taking any of these classes, you may qualify for advanced placement or transfer credits.

Transfer credits will be awarded based on equivalent Dalhousie classes. For students with an AP national exam with 4 or 5, or Higher Level IB classes with 5, 6, or 7, the credits listed will be awarded upon admission.

IB Course	Dalhousie Equivalent
Arabic B	Arabic 1020
Biology	Biology 1010.03 and 1011.03
Chemistry	Chemistry 1011.03/1012.03 or 1021.03/1022.03 or 1041.03/1042.03
Computer Science	Computer Science 1100.03 and 1101.03
Economics	Economics 1101.03 and 1102.03
English	English 1000.06
French	French 1045.06
Geography	Geography 1030.03 or Earth Science 1030.03
German	German 1010.06
History	History 1501.03 and 1502.03
Information Technology in a Global Society	Computer Science 1200.03 + Sociology/Social Anthropology 1999.03
Latin	Classics 1800.06
Mathematics	Mathematics 1000.03 and 1010.03
Music	Music 1001.03 and 1002.03 (students may consult department for Music 1201.03 and 1202.03)
Philosophy	Philosophy 1000.06 or 1010.06
Physics	Physics 1100.06 or 1300.06
Psychology	Psychology 1001.06
Sociology	Sociology/Social Anthropology 1000.06
Spanish	Spanish 1020.06
Theatre	Theatre 1999.06 (elective)
Theory of Knowledge	Philosophy 2999.06 (elective)

At present, transfer credit is not offered for IB Art History or Business Management.

AP Course	Dalhousie Equivalent
Biology	Biology 1010.03 and 1011.03
Chemistry	Chemistry 1011.03/1012.03 or 1021.03/1022.03 or 1041.03/1042.03
Computer Science	Computer Science 1100.03 and 1101.03
English Literature and Composition	English 1000.06
Environmental Science	Environmental Science 1000.06
European History	History 1004.06
French Language	French 1045.06
French Literature	French 1999.06 (elective)
German	German 1010.06
Greek	Classics 1700.06
Human Geography	Geography 1035.03
Italian Language and Culture	Italian 2999.06 (elective)
Latin Vergil	Classics 1800.06
Latin Literature	Classics 2800.06
Mathematics	Mathematics 1000.03 and 1010.03
Macroeconomics	Economics 1102.03
Music	Music 1001.03 and 1002.03 (students may consult department for Music 1201.03 and 1202.03)
Physics	Physics 1100.06 or 1300.06
Political Science – US Government	Political Science 1999.03 (elective)
Political Science – Comparative Politics	Political Science 1999.03 (elective)
Psychology	Psychology 1000.06
Statistics	Statistics 1060.03
US History	History 1999.06 (elective)
World History	History 1501.03 and 1502.03

At present, transfer credit is not offered for AP Art History, English Language and Composition or Spanish. If you have completed AP Spanish please contact the department for possible advanced standing.

For students with a Baccalaureat exam result of 11 or higher, transfer credits will be awarded based on equivalent Dalhousie credits.

Please note that the above is intended as a guide only. Transfer credits are evaluated on an individual basis and will vary depending on each student's personal academic program. Please consult the Registrar's Office for information concerning your application and transfer credits.

13. 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).

14. 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 universities outside the Halifax Regional Municipality must also submit an application fee. Local visiting students in the Halifax Regional Municipality are not required to pay an application fee.

At the end of each academic session, grades will be forwarded to the home university on the student's behalf for students attending Halifax Regional Municipality universities. All other students must arrange for transcripts to be sent to the home university.

II. Specific Program Requirements

A. 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 School seeks applicants with a good academic record and creative ability. The minimum requirements for admission are:

- a portfolio of design work that demonstrates creativity and/or artistic skill; it may include freehand drawings, paintings, furniture, sculpture, craft objects, creative photography, construction projects, etc.
- two years in a university degree program (ten full-year courses, twenty half-year courses, or a combination), with a 2.5 grade point average (B-average), including the following courses:
 - a full-year course (or two half-courses) in mathematics or natural sciences, for which Grade 12 math is a prerequisite: e.g., algebra, calculus, trigonometry; astronomy, biology, botany, chemistry, engineering, geology, geography, physics, zoology;
 - a full-year course (or two half-year courses) in humanities or social sciences: e.g., art history, classics, literature, music history, philosophy; anthropology, political science, psychology, sociology;
 - a half-year course 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 normally is 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
Dalhousie University
Halifax, NS B3H 4H6

- 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
P.O. Box 1000
Halifax, NS B3J 2X4

- An official academic transcript from all previous post-secondary institutions (to be sent directly by the institution);
- A portfolio of design work (about 10-15 items) that demonstrates creativity and/or artistic skill. The portfolio may include free-hand sketches, paintings, furniture, sculpture, craft objects, creative photography, construction projects, etc. Building designs are not expected. Three-dimensional objects and large works should be included as photographs so that the portfolio can be sent safely and easily through the mail. The portfolio need not be large or elaborate; a folder or binder is sufficient. The applicant's name and address should be identified on the portfolio and any separate items.
- A letter written by the applicant, describing his/her interest in architecture and in the BEDS program, and giving the Admissions Committee some information about the applicant as a person: aspirations, interests, travel, activities, etc.
- 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.

4. Application Deadline

The deadline for undergraduate applications from Canada and all other countries is March 1. For transfer students seeking entry in January, the deadline is November 1.

2. School of Planning

2.a Bachelor of Community Design

High School completion (grade 12 or academic equivalent)

- English
- Academic Math
- One Science (Biology or Geography are recommended)
- 2 additional university preparatory courses
- Minimum average of 70%

B. Faculty of Arts and Social Sciences

1. Bachelor of Arts

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

2. Bachelor of Music

- 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 (equivalent to Grade II theory, Royal Conservatory of Music in Toronto) and aural dictation: each is assessed through written diagnostic tests as part of the audition/interview
- Submit the supplementary application form for the Department of Music.

It is recommended that students apply early for 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 some foundation classes. Applicants with severe 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 (2 years)

- Satisfy the admission requirements for Bachelor of Arts
- Minimum 65% in Grade 12 English
- Classes as outlined on page 236

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.

C. 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
- 3 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
- 3 other acceptable university-preparatory classes
- Minimum final grades:
 - English and mathematics - 65%
 - Other subjects - 60%
 - Overall average - 70%

3. Bachelor of Software Engineering

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

D. Faculty of Engineering

1. Bachelor of Applied Science in Food Science

- English
- Pre-calculus mathematics
- 3 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
- 1 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 course load. Transfer of credits will not be granted for any class in which a final grade was less than C or equivalent, or for any class in which a final grade was granted conditionally.

2.c Associated Universities

Admission and registration for the Associated University program is the responsibility of the Associated University. Students interested in studying engineering should contact the Associated University of their choice. On completion of the engineering program at the Associated University, each student may be granted a certificate or diploma. To enter the Faculty of Engineering at Dalhousie, students must complete an Application for Admission form (available from the Registrar's Office), and submit his or her form plus an official transcript of their Associated University academic record verifying completion of the program entrance requirements to the Registrar by the date shown on the application form.

2.d Program Admission

A student must apply to be admitted into one of the ten engineering programs. Application must be made by February 15 of any year, for conditional acceptance into year two, or full admission into year three, of a specified engineering program.

Every engineering program 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; this will be referred to as the engineering grade point average (EGPA). Note that courses that are not required for the Diploma will not be counted in the EGPA.

The procedure is as follows:

1. By February 15, each student must specify ordered preferences for three or more engineering programs. The application may be for conditional acceptance into year two of an engineering program, or for full acceptance into year three of an engineering program.
2. Any student who has completed all of the entry requirements for an engineering program, with an EGPA of 3.30 or better, will be guaranteed a place in that engineering program.
3. In a single competition, students with an EGPA greater than or equal to 2.00 and less than 3.30 will be assigned conditional places (year two) or full places (year three) in engineering programs, proceeding in strict order of EGPA.
4. Any student with an EGPA between 1.70 and 2.00 may be offered conditional acceptance on academic probation, provided that all courses for the Diploma of Engineering have been completed, and provided that there is space in an engineering program for which they have no course deficiencies.
5. Any student with an EGPA of less than 1.70 will not be offered acceptance.
6. Students with more than two course deficiencies of the entry requirements for an engineering program, or missing more than one credit, will not be offered acceptance into the Upper Division of that program.

2.e Other Situations

Students who wish to enter the Faculty of Engineering and who have completed a program equivalent to that offered by the Associated Universities should submit complete transcripts of their university studies to the Registrar's Office prior to June 1. Such students will be placed in the program at a level determined by the Faculty of Engineering if they meet the entry and promotional requirements of the Faculty of Engineering.

The Faculty may permit persons not registered for a degree at the University to enroll in individual classes. Such students are referred to as non-degree students. Registration takes place on the dates shown in the Calendar of Events.

Enquiries and Applications for Admission should be directed to:
Registrar's Office
Dalhousie University
Halifax, Nova Scotia
B3H 4H6

E. 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 action is required to increase the number of graduates from under-represented Indigenous minority groups of the Maritime and Atlantic Provinces, particularly Blacks and First Nations people. Therefore, the Faculty, through its constituent units, will develop and implement affirmative action policies that are approved by the Human Rights Commission. Further, the Faculty will work to identify and develop recruitment and support systems that will ensure that members of these under-represented groups apply and graduate.

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 course 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 course, 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 \$200.00 (applicable to tuition fees) is required on admission. For transfer students, this deposit is payable within three weeks of notification of acceptance.

1. Diploma in Disability Management

Applicants to the DDM program will be employees of the Worker's Compensation Boards of Canada or perform similar work with a public or private agency dealing with the return to work process for injured workers.

Applicants with an academic high school completion, or who already possess a university degree are admissible according to Dalhousie standards and should apply through the regular admissions process.

Applicants without high school completion, or a GED, can apply as mature students. They should meet the following requirements:

- Academic grade 12 English
- At least two of the following at Academic grade 12 level: biology, chemistry, mathematics, physics
- Minimum overall average of 70%

2. School of Health and Human Performance

2.a Bachelor of Science (Health Promotion)

Applicants should have completed Nova Scotia Grade 12 (or equivalent) with an average of 70% in five university preparatory subjects, including:

- English (minimum 70%)
- Biology or Chemistry (minimum 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. Inquiries about admission to this program should be directed to the School of Health and Human Performance.

The deadline for receipt of applications to the program is June 1st of each year. Selection will be made as soon as final grades are available. Students applying directly from high school must apply by March 15 for scholarship consideration.

2.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 and Chemistry and 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).

The deadline for receipt of applications to the program is June 1st of each year. Selection will be made as soon as final grades are available. Students applying directly from high school must apply by March 15 for scholarship consideration.

2.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%)
- Biology or Chemistry (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 4.3 scale).

The deadline for receipt of applications to the program is June 1st of each year. Selection will be made as soon as final grades are available. Students applying directly from high school must apply by March 15 for scholarship consideration.

2.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%)
- Biology or chemistry (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 4.3 scale).

The deadline for receipt of applications to the program is June 1st of each year. Selection will be made as soon as final grades are available. Students applying directly from high school must apply by March 15 for scholarship consideration.

3. School of Health Sciences

3.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. 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 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 5 university preparatory classes used to meet admission requirements
- No grade lower than 70% in the 5 classes
- Personal suitability for the practice of the selected health profession

2. Applicants with Previous University 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%.
- GPA of 2.75 in most recent year of full-time studies
- Personal suitability for the practice of the selected health profession

3. Alternative Admissions

(See definition of Mature Student, page 4)

- High School, or GED with post-secondary or upgrading classes in English, Math and two sciences or Adult Diploma program at the Nova Scotia Community College
- Readiness for university study
- Personal suitability for the practice of the selected health profession
- Consultation with the mature student advisor

4. Application Submission

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

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

Applicants must submit the following:

- Completed application form and fee
- For high school applicants, an official record of high school work
- For other applicants, an official transcript from all previous post-secondary institutions
- Completed letter of intent, declaration of honesty and a statement of fitness (forms and detailed instructions on the School of Health Science website www.dal.ca/SHS click on admissions)
- Resume with two contact references

5. Non-Academic Criteria

As part of the selection process, applicants will also be assessed on non-academic criteria, including:

- Demonstrated knowledge of the selected health profession
- Problem-solving ability
- Oral and written communication skills
- Maturity

6. Personal Suitability

Students in the professional streams included in the BHSc program work with clients who trust them to provide safe and competent care. Certain types of conduct or impairments may be considered unsuitable for acceptance of an applicant. Examples of criteria used to assess unsuitability in aptitude and fitness, include, but are not limited to:

- Unethical behaviour
- Any medical condition that affects an individual's ability to perform the duties expected of a practitioner in the selected profession
- Persistent substance abuse
- Conviction of criminal activity

All entering students are required to report a criminal conviction or any fact or circumstance involving them or their background that would render them unsuitable for a career in the Health Professions.

7. Admission Decisions

The Admissions Committee assesses applicants on academic and non-academic criteria. An initial screening will be done based on academic performance as demonstrated in the applicant's transcripts. The letter of intent will be used by the Admissions Committee to assess non-academic criteria. Successful applicants will be notified by mail.

Incomplete applications and applications submitted after the deadline of February 15 will not be considered.

3.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

4. School of Health Services Administration

4.a Diploma in Health Services Administration

Applicants must meet the Dalhousie University undergraduate admission requirements. You may not apply from high school. A complete application consists of the following documents:

- Application and fee
- An official transcript of the record of work done at high school and previous post-secondary institutions
- One letter of reference
- Resume

4.b Diploma in Emergency Health Services Management

Applicants must meet the Dalhousie University undergraduate admission requirements. In addition, applicants are required to have worked or volunteered at least 3 years within the Emergency Health Services industry. You may not apply from high school. A complete application consists of the following documents:

- Application and fee

- An official transcript of the record of work done at high school and previous post-secondary institutions
- One letter of reference
- Resume

5. School of Nursing

5.a Bachelor of Science (Nursing) - Basic

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 5 university preparatory classes used to meet admission requirements

Applicants with Previous University 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 university level.
- A minimum cumulative GPA of 2.5 based on overall university 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.

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 check "Yes" on the Supplemental Form. Applicants must meet the minimum admission requirements.

4. Final Date for Receipt of Applications for Admission

March 15th

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.

6. Deposit Fee

Due to the large number of applications a non-refundable deposit of \$200.00 (applicable to tuition fees) is required on admission.

For High School students the \$200 deposit is payable by May 15th 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.

6. School of Occupational Therapy

Please refer to the Dalhousie University Graduate Calendar.

7. College of Pharmacy

7.a Bachelor of Science (Pharmacy)

Applicants to the BSc Pharmacy program must fulfil 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.

Courses required for admission are the following Dalhousie courses:

- CHEM 1011.03 and 1012.03 or 1021.03 and 1022.03 or equivalent
- MATH 1000.03 or 1215.03 and STAT 1060.03 or 2060.03 or equivalent
- BIOL 1010.03 and 1011.03 or BIOL 1020.03 and 1021.03 or equivalent
- ENGL 1000X/Y.06 or ENGL1010.03 and 1020.03 or equivalent
- One full year of a Social Sciences (one full credit or 2 half credits in a single subject)

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 all prerequisites and the most recent year of university or high school. 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 the College of Pharmacy to participate in an interview and to complete a questionnaire. 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 by the Admissions Committee to applicants who do not meet all admission requirements.

4.a Affirmative Action

The College of Pharmacy has an Affirmative Action Policy for residents of the three Maritime provinces who belong to the indigenous Black 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.

8. School of Physiotherapy

Please refer to the Dalhousie University Graduate Calendar.

9. School of Social Work

9.a Bachelor of Social Work

1. Recommended preparation for Social Work

1.a Academic

The Academic requirements for the Bachelor of Social work degree are the same for the on- campus and the on-line distance delivery methods.

The minimum academic requirement is five general university credits in subject areas other than social work.

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

- a minimum cumulative grade point average of 2.70 (B- or 70%) on a 4.3 scale.

1.b Other

Acceptance for professional Social Work training requires a well-developed background as expressed not only in solid academic achievement but also in relevant work and/or volunteer experience. Summer or part-time jobs in areas of social or human services that bear a direct relationship to social work are definite assets. Voluntary activities in which there is personal contact, and/or on-the-job training and supervision, can contribute meaningfully to the applicant's preparedness for social work practice.

1.c References

The BSW application package requests three reference forms. These assist the Admission Committee in assessing the candidate's personal suitability and readiness for professional training in social work.

1.d Personal Statement

Candidates complete a personal statement that asks them to discuss a current social issue and their motivation for social work. This also assists the Admission Committee in assessing the candidate's personal suitability and readiness for professional training in social work.

1.e Personal Suitability for Social Work

Aptitude and fitness for the profession of social work, as determined by the BSW Admissions Committee, is a requirement for admission. Because the study and practice of social work places clients in a position of special trust in relation to social workers and social work, certain types of conduct or impairments may be considered unsuitable for the acceptance of an applicant. The following list illustrates examples of criteria used to assess unsuitability in aptitude and fitness. Other behaviour may also be considered:

- unethical behaviour (as defined by the Nova Scotia Association of Social Workers Code of Ethics)
- any medical condition that affects an individual's ability to perform as a social worker if that condition is chronic and/or affects judgement.
- persistent substance abuse (e.g. Alcoholism, drug addiction, use of illegal drugs)
- conviction of criminal activity (e.g. Sexual assault, fraud and drug trafficking)

In considering the applicant's qualifications, including personal suitability for the study and practice of social work, the Admissions committee observes the principles of confidentiality, natural justice, and due process.

2. Application Procedure

Application and all supporting documents must be received by the deadline date, February 15. Collection of the application material for submission is a self-managed process. It is advisable to arrange for the three references and official transcripts in late December/early January. Dalhousie application form, and application fee are forwarded to the Registrar's Office. All other supporting documents should be submitted directly to the School of Social Work.

Candidates should ensure that they receive the undergraduate Application for Admission form and the BSW Supplementary Forms and Application Instructions. Incomplete and late applications are not considered.

The completed BSW application includes the Dalhousie University Undergraduate Application Form, the fee (\$70.00), the BSW supplementary forms and other required documents.

The BSW application is self-administered. The downloadable sections of the BSW application package itemized below contain the necessary instructions and forms for completing the BSW application process.

To view and print all of the available forms, you must have Adobe Acrobat Reader 5.x or higher.

We strongly suggest printing these forms using a laser or a high-resolution ink-jet printer.

- 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

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

3. Selection criteria and process

Enrollment is limited to a specified number of places that are offered once a year to the best 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. Please note that it is not possible to transfer between on-site and the online delivery or to register in classes other than those applicable to the delivery method for which the student has been accepted.

Applicants are selected on a combined basis of:

- Completion of the admission prerequisites
- Level of academic achievement, particularly in relevant subject areas
- Related work or volunteer experience
- Strength of academic and work/volunteer references
- Evidence of personal maturity and suitability
- Preparedness for social work and social work education

Applicants other than those applying under the Affirmative Action option are considered in relation to others with similar types of academic, work and volunteer experience who apply in the same year. Interviews are not part of the admissions 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.

4. Admission Requirements

These admissions prerequisites define the minimum level of qualifications necessary for submitting an application. In order to gain admission to the limited number of places available each year candidates need to develop qualifications that will enable them to place well in the group of applicants with whom they will be considered.

4.a Academic Eligibility

An initial screening is made on the basis of academic eligibility. 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. Grades and grade point averages are interpreted

according to the grading scale of the university attended, as stated in the transcript key. In the case of academic credits currently in progress, calculations are made on the basis of Fall-term grades. Credits from non-university programs do not qualify for consideration and are not included in the cumulative university average.

A cumulative GPA of 2.7 (B- or 70%) is necessary for an application to be considered further unless exceptional circumstances are a factor.

4.b 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. If you will be residing outside Canada, please check with Canada Customs to determine your residency status, complete the Residency Form and submit it with your application package.

Contact numbers for Canada Customs:

Within Canada: 1-800-461-9999 (toll free)

Outside Canada: 204-983-3500 or 506-636-5064 (long distance charges apply)

5. 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. Courses are delivered through an on-line learning management system known the Blackboard Learning System (BLS). Students are expected to participate in ongoing discussions in the courses. This requires students to post comments on the course discussion boards, to respond to other students' postings, and to work in small groups as required. The web-based courses 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 courses. Regular ongoing access to a home computer is essential for effective interactivity in your courses.

Distance study is part time, undertaken in accordance with a pre-determined three year schedule.

If you are thinking about studying by distance we suggest you visit www.distanceeducation.dal.ca.

Applicants are reminded that the online (distance delivery) option is only available to residents of Canada as defined by Canada Customs and Revenue Agency. Refer to 4.b for more information.

F. Faculty of Management

1. Bachelor of Commerce Co-op

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

** 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 - Math 12 U 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 they were previously enrolled in, students who have earned at least 4 full credits (or 8 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 course)
- Micro Economics (half-year course)
- Macro Economics (half-year course)
- Core Business Applications (Computer Science) (half-year course)
- Business Communications (written) (half-year course)
- Business Communications (oral) (half-year course)
- Introduction to Financial Accounting (half-year course)
- One other full-year (or two half-year) courses, in any areas of study
- Mathematics for Commerce (half year course)

Otherwise, students will normally be placed in the first year of the program, but may be able to use transfer credits to reduce their course 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 Dalhousie Commerce 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 courses must be completed at Dalhousie.
4. Students transferring into the Commerce program are permitted to transfer a maximum of four commerce electives.
5. 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 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 **
- 3 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 621 or 611
- NB - Math 120, 121, 122
- NFLD - Math 3204 or Math 3205 or 3207
- Western Canada - Math 12/Math 30/Math 40
- Ontario - Math MDM4U or MHF4U or MCV4U

Students transferring into the Bachelor of Management Program should have completed an Introduction to Business course as well as Introductory Micro and Macro Economics.

G. Faculty of Science

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

- English
- Pre-calculus Math
- 3 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. Dalhousie Integrated Science Program (DISP)

- Satisfy requirements for Bachelor of Science
- At least one grade 12 or 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 Department entry, page 490 for details.)

H. 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 Office of the Registrar:

- A completed application form (forms not properly completed will delay processing)
- 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 native 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, BEng, BEDS, BMgmt, B.Comm 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 to avoid any delay in notification.

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 enrollment 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 an admission average in the mid 70's or higher 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.

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; in addition to the above University regulations, 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. 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. 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.
4. All students must report their local address while attending the University to the Office of the Registrar, on registration or as soon as possible thereafter. Subsequent changes must be reported promptly. This may be done online at www.dal.ca/online.
5. 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.
6. Students who change their name while attending Dalhousie must provide proof of name change to the Registrar's Office.
7. Students are bound by the regulations of the home faculty regardless of the faculty in which the student takes classes.
8. In the interests of public health in the University, students are encouraged to have a tuberculin test. This is compulsory for Dentistry, Dental Hygiene, Physiotherapy and Nursing students. Facilities for testing are arranged by the University Health Services.
9. Except for university purposes, transcripts, official, or unofficial, will be issued only on the request of the student, and where appropriate, on payment of the required fee. A student may receive only an unofficial transcript. Official transcripts will be sent on a student's request to other universities, or to business organizations, etc. 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.
10. Students withdrawing voluntarily from the University should consult the individual faculty regulations and the Fees section of this Calendar.
11. 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.
12. Any graduating student who is unable to appear at the convocation is expected to notify the Registrar in writing prior to May 1, for Spring convocations (or October 1 for Fall convocations), giving the address to which the degree/ diploma is to be mailed. Students whose accounts are delinquent on April 15 will not receive their degree/ diploma parchment nor their transcripts. For October graduation the date is September 1.
13. Students should be aware that certain classes at the University involve required laboratory work where radioactive isotopes are present and are used by students. Since there are potential health risks associated with the improper handling of such radioactive isotopes, Dalhousie University requires that, as a condition of taking a class where radioactive isotopes are to be used, students read and agree to comply with the instructions for the safe handling of such radioactive isotopes. In the event that students do not comply with the instructions for the safe handling of radioactive isotopes, 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 thirty 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 books, papers, etc. not specified on the printed paper as well as electronic computing, data storage and communication devices must be deposited with the invigilator. 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. Answers to questions must be written on the right hand pages and properly numbered. The left hand pages may be used for rough work, but no sheets may be detached.
6. Each question should be started on a separate page.
7. 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.
8. 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, shall be subject to expulsion.

- 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 fifteen 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.

- If more than fifty 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.
- If less than fifty 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 (www.registrar.dal.ca).
- 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.
- 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. 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.

Religious Holidays/Examination Schedule

The University acknowledges that, due to the pluralistic nature of the University community, some students may on religious grounds require alternative times to write examinations and tests. Accordingly, a student who requires an alternative examination or test time on religious grounds should consult with the instructor regarding alternative arrangements. Such a request should be made in writing within one week of the announcement of the test or examination date.

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.

Freedom of Information and Protection of Privacy

The Freedom of Information and Protection of Privacy Act (FOIPOP) 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 FOIPOP 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

- Students have the right to inspect their academic record. An employee of the Registrar's Office will be present during such an inspection.
- 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". The University will not release copies of transcripts if students owe monies to the University.
- 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

- 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.

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.ca> or by writing to the Postsecondary Section, Centre for Education Statistics, 17th Floor, R.H. Coats Building, Tunney's Pasture, Ottawa, K1A 0T6.

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.

Policy on Accessibility for Students with Disabilities

1. Dalhousie University is committed to the goal of providing equal opportunity for qualified students with disabilities. To demonstrate full respect for the academic capacities and potential of students with disabilities, the University seeks to remove attitudinal and environmental restrictions which may hamper or prevent academically-qualified students with disabilities from participating fully in University life. The University understands that persons with disabilities may have different ways of doing things, recognizing that performance is not inferior merely because it is different.
2. The University recognizes, subject to its financial and other resource constraints, that qualified students with disabilities have a right to:
 - 2.1 full access to all educational programs;
 - 2.2 full access to the educational process and learning environment (including but not limited to classes, laboratories, workshops);
 - 2.3 full access to the University campus; and
 - 2.4 full access to University facilities and services.
3. The University recognizes that qualified students with disabilities have a right to assistance that is individualized with respect to scope and pace, consistent with the student's needs, legitimate academic demands, and the University's capacity to respond.
4. To ensure that qualified students with disabilities may pursue quality post-secondary education, the University shall:
 - 4.1 be proactive in fostering, creating and maintaining a barrier-free environment, including:
 - a) the provision of support services, within reasonable financial and resource limitations; and
 - b) promoting an attitude of respect for persons with disabilities, and
 - c) promoting sensitivity to the needs and abilities of persons with disabilities;

- 4.2 inform the University community about the services available to qualified students with disabilities and seek to ensure that such services are delivered in ways that promote equity;
- 4.3 where warranted and without compromising the academic standards, and through the relevant academic authority, modify:
 - a) workload;
 - b) examination procedures;
 - c) other class requirements; and
 - d) scholarship and other financial assistance requirements; and
- 4.4 take all reasonable steps to consult students with disabilities as fully as possible about decisions relating to matters affecting them.
5. In accordance with provisions in the Human Rights Act, the University may also define essential requirements for professional performance for students in programs, where these are appropriate, and this policy is not intended to replace or supersede these requirements.
6. Students with disabilities requiring assistance from the University shall:
 - 6.1 initiate contact with the Advisor to Students with Disabilities and make the nature of their disability and/or their needs known; and
 - 6.2 be expected to undertake a reasonable measure of self-advocacy to ensure they are provided with an equal opportunity by Dalhousie University.
7. The responsibility to implement these policies throughout the University rests on all members of the University community, including all faculty, administration, staff, students and the Advisor to Students with Disabilities.

Procedures Regarding Students with Learning Disabilities

Dalhousie University is committed to providing equal educational opportunities and full participation for students with learning disabilities. These procedures regarding students with learning disabilities derive from the University's Policy on Accessibility for Students with Disabilities as stated above. These students are intellectually capable and possess potential which may not be fully realized without a recognition of their special needs. We are both morally and legally required to supply such support consistent with the Policy on Accessibility for Students with Disabilities.

I. Admission

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 the 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 (i.e., 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.

II. Academic Accommodation for Students with Learning Disabilities

Students requesting academic accommodation will arrange a personal interview with the Advisor to Students with Disabilities. Schools and Faculties will provide relevant Faculty committees and individual Faculty members with fairly specific instruction as to the circumstances in which certain types of accommodation are normally to be made (e.g., the language requirement of the Faculty of Arts and Social Sciences). The Advisor to Students with Disabilities will assist faculty and students in developing reasonable accommodations.

A. Documentation Required

The student will provide the Advisor with a current (within three years) psychological report documenting the presence of a learning disability as outlined in Section A. above.

B. Procedures Regarding Academic Accommodation

Students are expected to identify themselves as having a learning disability and inform the Advisor to Students with Disabilities as early as possible and preferably before the beginning of the term. They should make this initial contact during office hours and be prepared to discuss strengths, weaknesses and the types of accommodation that may be necessary.

The Dalhousie University Policy on Accessibility for Students with Disabilities will guide the Faculties and the relevant committees in their deliberations. That policy specifies three factors that must be taken into account when considering requests for accommodations from students with disabilities: the needs of the students; preservation of the academic integrity of the programs; and the ability of the University to provide resources.

C. Types of Academic Accommodation

The types of academic accommodation provided for students with learning disabilities may vary depending on the nature of the learning disability and the class content. For example, a student may benefit from an oral exam in one subject area, but not in another. It is not unusual for there to be an initial trial-and-error period of finding the best way to evaluate a student's ability to demonstrate mastery of class material.

Accommodations for students with learning disabilities typically can include but are not necessarily limited to the following:

1. Extend the time permitted for a student with a learning disability to earn a degree;
2. Modify program requirements (e.g., class substitutions);
3. Permit examinations to be proctored, read orally, dictated or typed;
4. Allow extra time for completion of examinations and extend the time for the examination period;
5. Change the test format (e.g., multiple choice to essay);
6. Provide alternative formats for class materials;
7. Permit basic four-function calculators and standard desk dictionaries during examinations;
8. Use alternative methods for students to demonstrate academic achievement (e.g., a narrative tape instead of a journal);
9. Permit review of final drafts of term papers with a proofreader and make changes without altering content; and
10. Use computer software programs to assist in test-taking.

D. Appeals

Admission and program appeals by students with learning disabilities will follow the usual procedures of the relevant Faculty at Dalhousie University.

E. Release of Information About Students

A student will be told before disclosing any information on learning disabilities that such information will be governed by the University Regulations on the Release of Information as indicated in this calendar.

III. 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 Submission of Student Papers

Any instructor may require student papers to be submitted in both written and electronic (computer-readable) form, e.g., a text file on floppy disk or as an email attachment, as defined by the instructor. The instructor may submit the material to a third-party computer-based assessment system(s) for the purpose of assessing the originality of the paper. The results of such assessment may be used as evidence in any disciplinary action taken by the Senate.

Intellectual Honesty

A university should be a model of intellectual honesty. Failure to meet the University's standards in this regard 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 which could result in a student gaining 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

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 which 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 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.

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 or the Dalhousie Libraries at infolit.library.dal.ca/tutorials/Plagiarism/.

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 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

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 all assignments are 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, using or having in one's possession, 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

I. Preamble

These procedures deal with academic dishonesty 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 dishonesty to the Faculty level.

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 Secretary of Senate 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 Secretary of Senate.

III. Faculty Procedures

1. 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.
2. 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 not 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.
3. 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) 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, 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 5 working days upon receipt of the allegation by the student, which time may be extended at the request of the student or instructor in appropriate circumstances;
 - e) If the meeting does not take place within the time set out above, refer the allegation to the Senate Discipline Committee.
4. 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.
 5. 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 5 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.
 6. 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 section IV page 26, 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 5 working days of the meeting, and the student shall have 2 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 Secretary of Senate.
 7. Upon being advised of the finding and agreed penalty, the Secretary of Senate shall bring the matter before Senate for ratification at the next sitting of Senate following the procedures set out for ratification of academic appeals, with necessary changes in point of detail. Following Senate's ratification, the Secretary of Senate 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.
 8. 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 section IV of these Procedures, the Academic Integrity Officer shall, within 5 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.

Senate Discipline Committee

I. Composition

The Committee comprises ten representatives of the faculty elected by Senate for staggered three-year terms, one of whom shall be the Chair (chosen annually by the Committee), five representatives of the Dalhousie University student body, and two representatives of the University of King's College student body. A student who is a member of the Judicial Board of the DSU may not at the same time be a member of the Senate Discipline Committee.

The Senate Nominating Committee shall arrange for nominations to fill casual vacancies for the remainder of the second term.

II. Functions

The Senate Discipline Committee shall:

1. consider all complaints or allegations respecting offenses or irregularities of an academic nature, including those relating to admissions procedures and evaluation procedures, and may impose penalties in cases where the Committee finds an offence or irregularity has occurred;
2. have the power to discipline a student who, before or during the course of the disciplinary process involving him or her but prior to adjudication, has:
 - a) been compelled to withdraw academically;
 - b) chosen to withdraw from the class, program or University prior to being disciplined;
 - c) chosen not to register at the University;
3. assume jurisdiction when a complaint or allegation respecting offenses or irregularities of an academic nature are brought to its attention by the Secretary of Senate; complaints or allegations may be made by faculty or other evaluators of academic work done by students; a panel of Discipline Advisors is available to assist and advise evaluators, and guidelines for evaluators are set out in the document entitled Guidelines for Academic Evaluators Regarding Violations of Academic Regulations by students;
4. conduct hearings according to the rules of natural justice and such other procedures as the Committee may decide in advance, with due notice to all interested parties. A panel of three faculty and two students shall hear each complaint, including complaints made under the Code of Student Conduct. The Committee Chair or alternate chosen by and from the Committee shall chair each hearing;
5. evaluate the evidence of innocence or guilt of an accused student. This evaluation shall include the premise that the more senior the student in terms of chronological age, year of university registration, extent of other exposure to university rules and regulations at Dalhousie University or elsewhere, the less credible are assertions of ignorance or innocence and the stronger is the case for a more severe penalty than would be imposed on a less senior student;
6. report its findings, and any penalty imposed to the Secretary of Senate who shall forward a copy of the report to the student; if the alleged offender is not a student, a copy shall also be sent to the Vice-President (Academic and Provost)

III. Appeals

Appeals from decisions of the Senate Discipline Committee may be made to a Senate Discipline Appeal Board, but only on the limited grounds: (a) denial of natural justice; (b) disputed jurisdiction of the Senate Discipline Committee. Decisions of a Senate Discipline Appeal Board are final and binding on all parties. At the time of filing the appeal a student must specifically indicate the facts and allegations that will form the basis of the appeal. An appeal will be limited to matters so alleged.

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.

IV. Penalties

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 (1) or more years, but not exceed five (5) 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 (3) 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.

PLEASE NOTE: 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 of transcripts issued while the case was pending

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.

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 class, 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:

1. is specifically assigned to another disciplinary body within the University; or
2. is subject to action as an alleged failure to meet standards of professional conduct as required by a college, faculty or school; or
3. 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
4. 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;
5. 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 Guide to Responsible Computing. 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 sixty 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 (7) 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 behaviours 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.

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 behaviours that might indicate unsuitability for the various health professions. The nature of these behaviours 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 behaviours that are deemed unsuitable. These behaviours 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.

Guide to Responsible Computing

In recognition of the contribution that computers can make to furthering the educational and other objectives of the University, this Guide is intended to promote the responsible and ethical use of University computing resources. It is in the best interests of the community as a whole that these resources be used in accordance with certain practices which ensure that the rights of all users are protected and the goals of the University are achieved.

This Guide applies to all computer and computer communication facilities owned leased, operated, or contracted by the University. This includes word processing equipment, micros, mainframes, minicomputers, and associated peripherals and software, regardless of whether used for administration, research, teaching, or other purposes.

It should be noted that system administrators of various campus computing facilities and those responsible for the computer access privileges of others may promulgate regulations to control use of the facilities they regulate. System administrators are responsible for publicizing both the regulations they establish and their policies concerning the authorized and appropriate use of the publicly available equipment for which they are responsible.

A. Basic Principles

Individuals should use only those University computing facilities they have been authorized to use. They should use these facilities:

1. with respect to the terms under which they were granted access to them;
2. in a way that respects the rights of other authorized users;
3. so as not to interfere with or violate the normal, appropriate use of these facilities;
4. so as not to impose unauthorized costs on the University without compensation to it.

B. Elaboration

1. Individuals should use only those University computing facilities they have been authorized through normal University channels to use. They should use these resources in a responsible and efficient manner consistent with the objectives underlying their authorization to use them.
2. Individuals should respect the rights of other authorized users of University computing facilities. Thus, they should respect the rights of other users to security of files, confidentiality of data, and the benefits of their own work. Users should respect the rights of others to access campus computing resources and should refrain from:
 - a) using the computer access privileges of others without their explicit approval;
 - b) accessing, copying, or modifying the files of others without their permission; and
 - c) harassing others in any way or interfering with their legitimate use of computing facilities.
3. Individuals should respect the property rights of others by refraining from the illegal copying of programs or data acquired by the University or other users or putting software, data files, etc. on University computers without the legal right to do so.
4. Individuals should not attempt to interfere with the normal operation of computing systems or attempt to subvert the restrictions associated with such facilities. They should obey the regulations affecting the use of any computing facility they use.

C. Disciplinary Actions

Reasonable suspicion of a violation of the principles or practices laid out in this Guide may result in disciplinary action. Such action will be taken through normal University channels.

Nothing in this Guide diminishes the responsibility of system administrators of computing services to take remedial action in the case of possible abuse of computing privileges. To this end, the system administrators with the approval of the President and with due regard for the right of privacy of users and the confidentiality of their data, have the right, to suspend or modify computer access privileges, examine files, passwords, accounting information, printouts, tapes, and any other material which may aid in an investigation of possible abuse. Whenever possible, the cooperation and agreement of the user will be sought in advance. Users are expected to co-operate in such investigations when requested. Failure to do so may be grounds for cancellation of computer access privileges.

Academic Regulations

These regulations apply to all students in the College of Arts and Science and the faculties of 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 33), 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 Office of the Registrar 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 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 classes at Dalhousie. Classes in the 2000, 3000 and 4000 series are usually first available to students in the second, third, and fourth years, respectively. Often these classes have prerequisites. 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.

An example of a class identifier is as follows: CHEM1011

CHEM subject code

1011 class number & level

Classes with numbers below 1000 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) 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 should consult with an academic advisor in the appropriate department or school. Students in their final year of study or who, in the preceding year of study earned a sessional GPA less than 3.0 should not exceed five classes per term.

NOTE: University Exploration students may take a maximum of 4 full-credits (24 credit hours) per regular session.

3.1.2 School of Business

Five full credits in the first and second years, six half credits in the academic term in the third year and first term of the fourth year, and five half credits in the final academic term, will be regarded as constituting a normal workload for a BComm Co-op student.

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

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

Students who wish to exceed the normal workload must apply for permission to the Program Manager, School of Business Administration. 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 courses in any single academic term.

3.1.3 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 academic advisor 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 material for September 2008 will be available on the web at www.registrar.dal.ca in February. Registration for classes is completed using Dal.online. Students are strongly encouraged to register early.
2. A student is registered only after financial arrangements have been made at the Student Accounts Office.
3. The final step in registration is obtaining an ID card or validating 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 courses 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.

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 and Dalplex 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

Students may not transfer from full to part-time status by withdrawing from classes after the deadlines listed in the schedule of Academic Class/Add Drop dates.

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 or written notification is received at the Office of the Registrar.

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.

6. Counting of Credits for Two Dalhousie 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 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 ten 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.

6.2 Management

1. For the BComm co-op degree a minimum of ten (10) new full credits (plus 3 work terms) must be taken, of which at least eight (8) must be in the core area and include the three work term half class credits.
2. For the Bachelor of Management degree (20 credits), a minimum of ten (10) new full credits must be taken, and all core requirements met.

6.3 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.

6.4 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.

6.5 Computer Science and Engineering

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

6.6 Transfer Credits from Dental Hygiene

Students who have completed the Diploma in Dental Hygiene at Dalhousie University may receive 5 credits towards a BA or BSc, including credit for Biology 2004 which may be used towards a concentration or major in Biology.

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 ten (10) years old may not be used to fulfil degree requirements unless a waiver is granted. See Regulation 15, page 33 for information on other faculties.

No classes taken at another institution will be counted towards fulfilment of the concentration, major or honours or Commerce core area requirement of a bachelor's degree without 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 ten (10) full credits (plus 3 workterms) must be taken, of which at least eight (8) must be in the core area and include the three workterm half-class credits.

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 should not be 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 degree, at least half of the credits must be taken at Dalhousie. Ten CSCI classes, including 6 of the 3rd and 4th 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 Office of the Registrar 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 Office of the Registrar. 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.registrar.dal.ca/forms. 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 course 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 have special arrangements whereby up to 5 full credits taken at other universities may be considered as part of a student's program at Dalhousie (see Regulation 13, page 33).

No credit will be given for any classes taken at another university while a student is not in good standing at Dalhousie. See page 4 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 and the Faculty of Management. See Regulation 15, page 33 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. Part-time students are encouraged to consult with the College of Continuing Education for advice on their academic programs and other matters (see College of Continuing Education).

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 33), 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, the School of Social Work, and the Bachelor of Science (Nursing) programs for Registered Nurses.

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 33), 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 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. Correspondence and Summer School Classes

12.1 Faculty of Health Professions

In the Faculty of Health Professions, up to six credits (36 credit hours) from summer school and correspondence classes may be accepted towards the requirements of a degree. No student may receive more than two full credits (12 credit hours) by correspondence classes. In total, no more than six full credits in summer school and correspondence may count towards a degree.

See section 7.6, page 32 for information on classes taken at other institutions on letter of permission.

12.2 Summer Session

Dalhousie currently offers a Summer session of approximately sixteen weeks, May - August. See Regulation 3.2, page 30 for permitted workload.

13. International/Exchange Programs

The College of Arts and Science, and the Faculties of Architecture and Planning, Computer Science, Engineering, Health Professions, Law, Management, and Medicine offer a number of programs which enable students to pursue part of their studies in another country and culture, often in a foreign language environment. For details regarding classes taken at other universities see Regulation 7.6, page 32.

There are two types of student exchange programs at Dalhousie. University-wide programs allow for the exchange of students from any appropriate academic unit at the universities involved and are coordinated by Dalhousie's Study Abroad Advisor at the International Student and Exchange Services Office, Killam Library main floor, phone (902) 494-1566. Department/faculty-based programs normally involve the exchange of students between two similar academic units at the universities who are party to the exchange agreement, and are normally coordinated by an individual within the department/faculty. Additional information on exchange programs can be found at the following Website: internationalstudentservices.dal.ca

It is important to note that there are academic sessional deadlines for some of these programs; plan to apply at least six months to one 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: Able and ambitious students are encouraged to consider seriously entering a graduate program at Dalhousie or elsewhere. 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 5 full credits at the university level of one regular session's duration in the following: biology, psychology, sociology, a writing class, a one term course in introductory statistics and a one term course 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.

Pharmacy and Social Work: One year of work in the College of Arts and Science, or the equivalent elsewhere, is required for admission to these programs. For details, see the admissions information section of this calendar.

Occupational Therapy and Physiotherapy: National Certification standards will require a Master's degree in 2010. Accordingly, admission consideration will require a 4-year undergraduate degree.

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 ten 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.

Student Exchange and Study Abroad Agreements Department-based Programs

Department	Country	Name of University	Type/Status	Dalhousie Contact	Eligible Students	Duration	Fees paid to:
French	France- Dijon	Centre International d'Etudes Françaises (Université de Bourgogne)	Study Abroad	Natalie Wood	French (Open to Non-French Majors)	Up to 1 Year	Dalhousie
	Senegal- Dakar	Université Cheikh Anta Diop	Study Abroad	Natalie Wood	French (Open to Non-French Majors)	1 term (Winter)	Dalhousie
	Italy	Università di Macerata	Exchange Program	Francesco Ciabattoni	All FASS students (2 years of language instruction)	Up to 1 Year	Dalhousie
	Italy	Università di Urbino	Summer Study Abroad	Francesco Ciabattoni	All Students (no language requirement)	4-12 weeks	Università di Urbino
German	Germany	DAAD Summer Program	Study Abroad	Dr. H.G. Schwarz	German (Open to Non-German Majors)	Varies	Dalhousie
International Development Studies	Cuba	Cuba Study Tour/ University of Havana-FLASCO	Study Abroad	Marian MacKinnon	IDS/ Spanish and other Majors	6 weeks	Dalhousie
	Cuba	Cuba Semester Program/ University of Havana-FLASCO	Study Abroad	Marian MacKinnon	IDS/ Spanish and other Majors with SPAN 2020 or equivalent	1 Term (Sept/ Jan)	Dalhousie
	Uganda, Rwanda, Kenya	East Africa Study Tour	Study Abroad	Owen Wills	Contact IDS for details	Summer	Dalhousie
Theatre	Czech Republic	Baroque Theatre Foundation of the Castle at Cesky Krumlov	Study Abroad	Dr. Peter Perina	Contact Theatre Department	4 weeks Summer	Dalhousie
Russian	Russia	St. Petersburg State University	Study Abroad	John Barnstead	Contact Russian Department	Winter Term	Dalhousie
Spanish	Dominican Republic	Universidad Católica Madre y Maestra (UNIBE)	Study Abroad	Maria Jimenes	Spanish/ Open to non-Spanish Majors	1 Term	Universidad Católica a Madre y Maestra
	Mexico	Universidad Autónoma de Campeche	Study Abroad	John Kirk	Spanish	1 Term (Fall)	Universidad Autonomo de Campeche
	Spain	Universidad de Salamanca	Study Abroad	Emilia Santos Montero	Spanish/ Open to non-Spanish Majors	1 Term (Fall or Winter)	Universidad de Salamanca
Computer Science	Canada-EU: Canadian European Union Cooperation Program in Higher Education and Training	York University, Dalhousie, UNB and Fachhochschule Bonn-Rhein-Seig Warsaw University of Technology University of Crete	Student Exchange	Evangelos Milos	Computer Science	1 Term	Dalhousie
	Japan	Future University-Hakodate	Student Exchange	Undergraduate Chair	Computer Science	1 Term	Dalhousie
Engineering	France	Ecole Nationale Supérieure Bourges D'Ingénieurs (ENSI)	Student Exchange	Paul Amyotte	Chemical Engineering	Up to 1 Year	Dalhousie
	Sweden	Örebro University	Student Exchange	Anne Marie Coolen	Engineering	Up to 1 Year	Dalhousie
Process Engineering and Applied Science	Denmark/Ireland/ England	University of Copenhagen/ Cork Institute of Technology/ University of Nottingham	Exchange	Lisbeth Truelstrup Hansen	Food Science	1 Term	Dalhousie
Architecture	Germany	Fachhochschule Düsseldorf	Student Exchange	Catherine Venart	Architecture	1 Term	Dalhousie
Health Services Administration	Austria	IMC Fachhochschule Krems	Student Exchange	Thomas Rathwell	Faculty of Health Professions	Up to 1 Year	Dalhousie
Nursing	Tanzania	Dalhousie International Health Office	Study Abroad	Adele Vukic	Nursing	6 Weeks	Student pays travel expenses
	The Gambia & Sierra Leone	Work with NGO	Study Abroad	Adele Vukic	Nursing	6 weeks	Student pays travel expenses
Physiotherapy	Australia	LaTrobe University	Clinical Internship	Gail Wainwright	Physiotherapy	Clinical Placement	Dalhousie
	Finland	Arcada Polytechnic	Clinical Internship	Gail Wainwright	Physiotherapy	Clinical Placement	Dalhousie
	Iceland	University of Iceland	Clinical Internship	Gail Wainwright	Physiotherapy	Clinical Placement	Dalhousie
	Ireland	University of Dublin-Trinity College	Clinical Internship	Gail Wainwright	Physiotherapy	Clinical Placement	Dalhousie
	Sweden	Karolinska Institute, Stockholm	Clinical Internship	Gail Wainwright	Physiotherapy	Clinical Placement	Dalhousie

Department	Country	Name of University	Type/Status	Dalhousie Contact	Eligible Students	Duration	Fees paid to:
Occupational Therapy	Australia	Charles Stuart University	Academic Cooperation	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	England	University of Northampton	Clinical Internship	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	Finland	Arcada Polytechnic	Academic Cooperation	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	Iceland	University of Akureyri	Clinical Internship	Jennifer Saunders	O.T. Field placement	Up to 1 Year	Dalhousie
	New Zealand	Auckland University of Technology	Clinical Internship	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	Norway	Sør-Trøndelag University College Trondheim	Clinical Internship	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	Sweden	Karolinska Institutet	Academic Cooperation	Jennifer Saunders	Occupational Therapy	Contact school for details	Dalhousie
	India	Action on Development and Disability in India	Study Abroad	Jennifer Saunders	Occupational Therapy	Contact school for detail	Dalhousie
Maritime School of Social Work	The Netherlands, Sweden, UK and Finland	Canada- European Community Program for Cooperation in Higher Education and Training	Student Exchange	Joan Gilroy	Maritime Social Science	1 Term	Dalhousie
Law	Australia	Queensland University of Technology	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	Canada/USA/Mexico	North American Consortium on Legal Education (NACLE)- US Partners- University of Arizona, George Washington University, University of Houston. Canadian partners- McGill University and University of Ottawa. Partners in México- Instituto Tecnológico de Estudios superiores de Monterrey, Escuela de Derecho (ITESM), Universidad Nacional Autónoma de México, Universidad Panamericana	Student Exchange	Sherifa Elkaden	Law	1 Term	Dalhousie
	Canada (Quebec)	Université Laval	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	Germany	Bucerius Law School- Hamburg	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	The Netherlands	Vrije Universiteit Amsterdam	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	The Netherlands	Maastricht University	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	Singapore	The National University of Singapore	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	Sweden	University of Lund	Student Exchange	Sherifa Elkaden	3rd year Law	1 Term	Dalhousie
	Denmark	Copenhagen Business School	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	England	Lancaster University	Student Exchange	Tim Richard	MBA	1 term	Dalhousie
Faculty of Management	England	University of Nottingham (Nottingham University Business School)	Student Exchange	Tim Richard	MBA	1 Term	Dalhousie
	Finland	University of Jyväskylä (School of Business and Economics)	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	France	ESC Lille School of Management	Student Exchange	Tim Richard	MBA	1 Term	Dalhousie
	France	Grenoble School of Management	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	France	Institut de Formation Internationale	Student Exchange	Tim Richard	BComm, BMgmt	1 Term	Dalhousie
	Germany	Liepzig Graduate School of Management	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	Korea	Yonsei University, Seoul	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	The Netherlands	Arnhem Business School	Student Exchange	Tim Richard	BComm, BMgmt	1 Term	Dalhousie
	Norway	Norwegian School of Economics and Business Administration	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie

Department	Country	Name of University	Type/Status	Dalhousie Contact	Eligible Students	Duration	Fees paid to:
Faculty of Management	Sweden	Jönköping International Business School	Student Exchange	Tim Richard	BComm, BMgmt, MBA	1 Term	Dalhousie
	United States	Illinois State University (College of Business)	Student Exchange	Tim Richard	MBA, BComm and Management	1 Term	Dalhousie
	Wales	University of Wales, Swansea (European Business Management School)	Student Exchange	Tim Richard	BComm, BMgmt	1 Term	Dalhousie
School of Public Administration	Sweden, Finland, France, UK, Italy	Canada- European Community Program for Cooperation in Higher Education and Training; Partners-Lund University, Sweden; University of Turku, Finland; Institut d'études politiques de Lille, France; Aston University, UK; University of Pavia, Italy	Student Exchange	Keith Sullivan	Political Science and MPA Students	1 Term	Dalhousie
Neuroscience & Psychology	The Netherlands	Maastricht University	Student Exchange	Richard Brown	Neuroscience & Psychology	Up to 1 Year	Dalhousie
Faculty of Science	Canada-EU: Canadian European Union Cooperation Program in Higher Education and Training (TASSEP)	Schools in Denmark, Sweden, Austria, Germany, Scotland, Ireland, France, Italy, Switzerland, Greece and Belgium, Spain	Student Exchange	Patrick Ryall	Science	1 or 2 terms	Dalhousie
Chemistry	Wales	Cardiff University	Student Exchange	Alison Thompson	Graduate Students in Organic Chemistry	Up to 1 Year	Dalhousie
Economics	Argentina	Universidad Torcuato Di Tella (UTDT), Buenos Aires	Student Exchange	Talan Iscan	Economics	Up to 1 Year	Dalhousie
University-Wide	Australia	Australian National University	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Australia	University of Canberra	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Australia	Edith Cowan University	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Australia	Queensland University of Technology	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Canada	Simon Fraser University	Student Exchange	ISES	University Wide	1 Term	Dalhousie
	Denmark	University of Aarhus	Student Exchange	ISES	University Wide	1 Term	Dalhousie
	England	University of Birmingham	Student Exchange	ISES	University Wide	1 Term/1 Year	Dalhousie
	England	International Study Centre- Herstmonceux Castle	Study Abroad	ISES Office	University Wide	1 Term	Dalhousie
	England	University of Hull	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	England	Keele University	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	England	Oxford University	Study Abroad	ISES Office	University Wide	1 Term	Oxford
	Iceland	University of Iceland	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Ireland	University of Dublin-Trinity College	Study Abroad	ISES Office	University Wide	1 Term	University of Dublin-Trinity
	Korea	Kyungpook National University	Student Exchange	ISES Office	University Wide	1 Term	
	Malaysia	Universiti Sains Malaysia- Penang	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Malta	University of Malta	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Mexico RAMP	Instituto Tecnológico Autónomo de México (ITAM)	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Mexico RAMP	Universidad La Salle	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Mexico RAMP	Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Mexico RAMP	Centro de Enseñanza Técnica y Superior (CETYS)	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie

Department	Country	Name of University	Type/Status	Dalhousie Contact	Eligible Students	Duration	Fees paid to:
University-Wide	New Zealand	University of Otago	Student Exchange	ISES	University Wide	1 Term	Dalhousie
	New Zealand	Victoria University of Wellington	Student Exchange	ISES	University Wide	1 Term	Dalhousie
	Norway	University of Bergen	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Spain	University of Pablo de Olavide	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Spain	Universidad de Málaga	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Sweden	Göteborg University	Student Exchange	ISES	University Wide	1 Term	Dalhousie
	Sweden	Umeå University	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Scotland	University of Glasgow	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie
	Scotland	University of St. Andrews	Study Abroad	ISES Office	University Wide	1 Term	St Andrews
	Scotland	University of Edinburgh	Study Abroad	ISES Office	University Wide	1 Term	Edinburgh
	United States	Killam Fellowships Exchange Program	Student Exchange	ISES Office	University Wide	Up to 1 Year	Dalhousie
	United States	American University- Washington, DC	Study Abroad	ISES Office	University Wide	1 Term	American University
	United States	Nova Scotia/New England Exchange	Student Exchange	ISES Office	University Wide	1 Term	Dalhousie

15.4 Faculty of Computer Science

Students in the BCS degree program are normally required to complete their degree within 8 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 8 years of their first registration in the program.

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 ten 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.

16.1.1 Academic Accommodation for Students with Learning Disabilities

See University Regulations, Procedures for Students with Learning Disabilities.

16.2 Examinations and Tests

Tests are normally scheduled during class time. Mid-term tests scheduled outside class time are restricted to one per term between mid-October to mid-November and mid-February to mid-March. Such tests should not conflict with regularly scheduled classes.

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 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 (7) calendar days after an exam scheduled by the Registrar or fourteen (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 (Sept. - Apr.) classes.....	June 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:

- BIOL 2601, 3615, 3620, 3622, 3624, 3626, 3630, 3632, 3664, 3680;
- ENVS 3000, 3001, 3615, 3632, 4901, 4902;
- LEIS 4496;
- NURS 2220, 3290 and 4240;
- PHAR 3000;
- SLWK 2001, 3020, 4020, and 4030

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 Office of the Registrar 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.

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 supplemental exam is to be written within four calendar weeks following the original final examination at a time determined by the Commerce Program Manager.
- The grade obtained on the supplemental examination replaces the final examination grade in the calculation of the overall mark. However, under no circumstances shall the term mark be raised higher than a D.
- There is a \$25.00 non-refundable fee per exam.
- There is no limit on the number of classes a student may write a supplementary exam.

If you have questions about supplementary exams, please contact the Commerce Program Manager.

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 (Sept. - Apr.) classes.....	June 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 \$50.00 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	March 1
Winter and regular session (Sept. - Apr.) classes.....	July 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 Office of the Registrar, 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 \$50.00 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 (Sept. - Apr.) classes.....	June 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 41.

17. Academic Standing

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

Students entering the College of Pharmacy in 1997 or later are on a pass/fail grading system and should consult the College of Pharmacy for information on academic standing, probation and dismissal.

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 and Health Professions.
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	
T	Neutral	Transfer credit on admission	

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 4).

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

Effective May 2003, for 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, but both grades 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 Architecture and Planning, Arts and Social Sciences, Computer Science, Health Professions, Management, Science and Bachelor of Software Engineering a cumulative GPA of 2.00 is required. In the Faculty of Engineering (Lower Division), which includes Bachelor of Engineering, years 1 and 2, Bachelor of Food Science special and visiting students, a cumulative GPA of 2.00 is required. In the Faculty of Engineering (Upper Division), which includes Bachelor of Engineering, years 3 and 4, a term GPA of 2.00 is required.

19. Probation

19.1 Faculties of Architecture and Planning, Arts and Social Sciences, Computer Science, Bachelor of Software Engineering, 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 term GPA less than 2.00 and greater than or equal to 1.00 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 term GPA of 2.00. Students on probation whose term GPA is below 2.00 will be academically dismissed.

19.2.3 - Students require a cumulative GPA of 2.00 to graduate. No one will be allowed to graduate while on probation.

20. Academic Dismissal

20.1 Academic Dismissal - Faculties of Architecture and Planning, Arts and Social Sciences, Computer Science, Bachelor of Software Engineering, 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:

BSW students who fail SLWK 4030 /Field II 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.

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 twelve 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 required to withdraw 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.

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

20.2.1 - Students with a term GPA of less than 1.00 who have completed two full credits will be academically dismissed for an eight month period.

20.2.2 - Students on probation whose term GPA is below 2.00 will be academically dismissed.

20.2.3 - Students who have been placed on academic probation in two consecutive study terms will be academically dismissed.

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

20.2.5 - 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

20.A.1 Policy

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 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.2 Regulations

20.A.2.1 - Academic Forgiveness applies only to returning undergraduate students who have had an absence of at least three calendar years from their program or faculty at Dalhousie University.

20.A.2.2 - A minimum of 4 full credits of coursework 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.

20.A.2.3 - 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.

20.A.2.4 - No punitive grades resulting from an Academic Discipline hearing will be forgiven.

20.A.2.5 - 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 cumulative grade point average, with the exception of punitive grades awarded as the result of an Academic Discipline hearing. Students will be eligible to retain credit for courses in which they received a passing grade, however they will be required to complete at least 60 credit hours (10 full credits) 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 Architecture and Planning, Arts and Social Sciences, Computer Science, Engineering, Health Professions, Management and Science.

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 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. The notation "Distinction" will appear on the transcript.

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 537, 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 Office of the Registrar by the deadlines indicated:

Graduation Month	Deadline
May	November 15
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 9 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 9 credit hours during the academic year but less than 9 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 University Regulations, Procedures for Students with Learning Disabilities, page 22.

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 applicable faculty or school. 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.registrar.dal.ca/forms/ or in the Registrar's Office. The arguments and expectations of the petitioner must be clearly stated.

An appeal from a student, arising from a required withdrawal 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 or the Director of Academic Programs in the School of Business or to the Director, Bachelor of Management, as appropriate.

Students who wish to appeal on matters other than those dealt with by college or faculty regulations should consult with the faculty/school or Registrar's Office.

The document "Academic Appeals at Dalhousie University" is available in the Registrar's Office.

24.3 Faculty of Architecture and Planning

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

24.4 Faculty of Computer Science

Appeals should be directed to the Appeals Coordinator.

24.5 Faculty of Engineering

Appeals should be directed to the Academic Appeals Committee.

24.6 Faculty of Health Professions

School/College Committee on Undergraduate Studies

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

Faculty Committee on Undergraduate Studies

The Faculty Committee on Undergraduate Studies is concerned with the interpretation and application of the academic regulations of the Faculty of Health Professions. The jurisdiction of the Faculty Committee on Undergraduate Studies 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.

Agriculture

Location: Nova Scotia Agricultural College
Truro, NS B2N 5E3
Telephone: (902) 893-6722
Fax: (902) 895-5529

Programs Offered

1. Bachelor of Science in Agriculture

The BSc (Agr) is a four-year program, designed to provide a sound education in the science of agriculture. Students select one of seven majors within this program. Graduates of this program meet the formal educational requirements for Professional Agrologists in the provincial Institutes of Agrologists in the Atlantic provinces.

This degree is awarded by Dalhousie University in association with the Nova Scotia Agricultural College (NSAC). Please refer to the NSAC calendar for details or consult their website: <http://nsac.ca>.

2. Bachelor of Technology

This program allows students with a two year technical diploma from a community college to earn a degree in selected subject areas. Suitable two year technical diploma programs are available at the Nova Scotia Agricultural College (NSAC).

This degree is awarded by Dalhousie University in association with NSAC. Please refer to the NSAC calendar for details or consult their website: <http://nsac.ca>.

3. Bachelor of Technology with a Major in Applied Science

The NSAC also offers a four-year Bachelor of Technology with a major in Applied Science program that results in the awarding of an Engineering Technology Diploma after successful completion of year 2, and a Bachelor of Technology in Applied Science after successful completion of year 4. Graduates are eligible for direct admission into the B.Ed. at Acadia University.

This degree is awarded by Dalhousie University in association with NSAC. Please refer to the NSAC calendar for details or consult their website: <http://nsac.ca>.

4. Engineering Diploma

The engineering diploma program is the first two years of Dalhousie's Bachelor of Engineering (BEng) Diploma graduates are guaranteed admission to the BEng.

College of Continuing Education

Dean

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

Professors

Benoit, J., BA, MA (Guelph), PhD (Johns Hopkins) (retired)
Fraser, L., BA (MtA), BEd, MEd (Dal), EdD (Toronto)
Novack, J., BComm, MPA (Dal)

Associate Professors

Day, L., BBA (MSVU)
Holmes, S., BSA (Acadia), MEd (Dal)
MacDonald, G., BBA, BA (UNB), MPA (Dal)
MacLean, C., BBA (SFX), MBA (SMU), CMA
Williams, M.P., BA, MSc (Guelph)

Assistant Professor

Doyle-Bedwell, P., BA (Hons), LLB, LLM (Dal)

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. From its beginning, the College has had the legacies of Henson College and Continuing Technical Education on which to grow.

The programs and services of the College are offered through a number of locations across campus. Addresses for various programs are included in the program descriptions that follow.

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 Continuing Education programs are well-known and highly regarded outside the region; they serve regional, national, and international constituencies.

II. Programs and Services

The College offers a wide range of specific programs and services (including needs assessment and survey services, special seminars and conferences, 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 current College programs and themes.

1. University Preparation Courses

Address: 1220 LeMarchant St., 2nd Floor
Halifax, NS B3H 3J5
Phone: (902) 494-2375
Fax: (902) 494-6875
Website: <http://collegeofcontinuinged.dal.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 courses 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 Courses 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 courses. 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.

2. Programs and Services for Full and Part-Time Mature Students

Address: 1220 LeMarchant St., 2nd Floor
Halifax, NS B3H 3J5
Phone: (902) 494-2375
Fax: (902) 494-6875
Website: <http://collegeofcontinuinged.dal.ca>

What is a Mature Student?

A mature student is a person who is at least 23 years of age and has been out of high school for at least four years. You must not have previously attended Dalhousie or any other university or college.

Pre-Admission Counselling

Many mature students find it helpful to sit down and discuss their educational plans with an advisor. All full and part-time mature student candidates are encouraged to contact the College for pre-admission counselling with our Mature Student Advisor.

Mature Student Admission Program

The University Exploration (Mature Student Admission) program is one way for mature students who do not meet the regular admission requirements to be admitted to Dalhousie University as undergraduates. Please see Academic Regulations, Workload, on page 30 for information on the number of classes a University Exploration student may take in a single academic year. Otherwise the rules that govern the College of Arts and Science apply.

Mature Student Orientation

The "Returning to Learning" orientation, held in September, is an opportunity for mature students to learn more about university services and connect with other mature students.

3. Continuing Management Development and Education

Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-3662
Website: <http://collegeofcontinuinged.dal.ca>

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. More

recently, the College has developed a range of programs related to public safety in terms of the provision of fire and police services, emergency measures planning and delivery and front line emergency medical training.

The following are available by distance education:

- Certificate in Business Management
- Certificate in Financial Management
- Certificate in Human Resource Management
- Certificate in Local Government Supervisory Development
- National Advanced Certificate in Local Authority Administration
- Certificate in Fire Service Leadership
- Certificate in Fire Service Administration
- Certificate in Police Leadership

4. Continuing Technical Education

Address: 5269 Morris Street
Halifax, NS
B3J 1B6
Phone: (902) 494-6079; 1-800-565-1179
Fax: (902) 423-9859
Website: www.cte.dal.ca

For over 25 years Dalhousie University Continuing Technical Education (CTE) 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 courses, 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 courses 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 courses. Conversely, those who have taken component courses of a certificate program can submit their application for admission to complete the full certificate.

Certificates:

- Certificate in Computer Science
- Certificate in Software: Management and Development
- Certificate in Information Systems Management
- Certificate in Information Design & Management for the Web
- Certificate in Quality Management
- Certificate in Project Management
- Certificate in Advanced ISO 9001: 2000 Implementation and Management (AIIM): 2000
- Certificate in Environmental Management
- Certificate in Water Treatment Operations
- Certificate in Occupational Health & Safety Management
- Certificate in Ergonomic Program Management

5. Specialized Professional Development

Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-3662
Website: <http://collegeofcontinuinged.dal.ca>

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.

In cooperation with Dalhousie's Faculty of Management, the Institute of Canadian Bankers, and LOMA, the Masters of Business Administration (Financial Services) is aimed at professionals in the banking, trust, and insurance industries.

6. Transition Year Program

Address: 1400 LeMarchant St.
Halifax, NS B3H 3J5
Phone: (902) 494-3730
Fax: (902) 494-2135
Website: <http://collegeofcontinuinged.dal.ca>

The Transition Year Program (TYP) has served the post-secondary educational needs of the Mi'kmaq and Black Nova Scotian communities for over 30 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. The TYP was established to redress historical and current educational disadvantages to members of the Mi'kmaq and Black Nova Scotian communities.

The 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. The 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 the 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: March 15th.

7. Entrepreneurship and Labour Market Development

Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-3662
Website: <http://collegeofcontinuinged.dal.ca>

For more than ten years, the College has been a leader in policy development, applied research, program design and delivery in the Self Employment/Micro Enterprise field. The College offers Enterprise Development Programs to a wide variety of groups and individuals as well as designing and providing innovative entrepreneurial development programs for diverse audiences. This vast experience has led to the development of the Certificate in Small Business Creation.

8. Dalhousie Negotiation and Conflict Management Program

Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-7137

Fax: (902) 494-3662
Website: <http://collegeofcontinuinged.dal.ca>

The Negotiation and Conflict Management Program (NCMP) is a joint initiative of the Dalhousie Law School and the College of Continuing Education. It is designed to help strengthen the quality of public and private decision-making and conflict management. To this objective, Dalhousie brings a wealth of expertise in public consultation, law, dispute processing, critical analysis, education, and competency development.

The Program offers the Certificate in Negotiation and Conflict Management which requires completion of six NCMP workshops (each offered in a two day format) and a skills assessment as follows:

- Negotiating Agreement and Managing Conflict: An Interest-Based Approach
- Overcoming Resistance: Getting Past No
- Managing Difficult Conversations
- Facilitating Collaborative Problem Solving
- Resolving Complex Organizational and Community Problems
- Mediating Disputes: From Conflict to Creative Solutions
- Individual Skills Assessment and Feedback

Workshops can be taken individually or as part of the Certificate program.

In addition to its core program, NCMP also offers a range of specialized workshops, applying the principles of conflict resolution and interest-based negotiation to specific areas. The program periodically offers a one-day Learn for Free! - an informative and practical sampling from the workshops of the Certificate Program. For further information and registration, call the NCMP Program Manager at (902) 494-7317 or email ncmp@dal.ca. Customized training programs can be developed to address the needs of specific government, business, community, and other organizations.

9. Adult Education

Address: 1535 Dresden Row, Ste. 201
Halifax, NS B3J 3T1
Phone: (902) 494-2526
Fax: (902) 494-6875
Website: <http://collegeofcontinuinged.dal.ca>

The Certificate in Adult Education has been offered through the College since 1987. The program is designed to provide an opportunity for adult education practitioners to gain a broad overview of the field of adult education while achieving a nationally recognized certification. Ten modules integrate theory and practice: Historical Perspectives: From Past to Present, Facilitating Adult Learning: From Theory to Practice, Understanding Diversity in Adult Education, Needs Assessment, Program Design, Group Facilitation, Program Evaluation and the Community Practice of Adult Education or Public Policy Issues in Adult Education. Program faculty are selected to represent a wide spectrum of expertise in the field and include both Dalhousie faculty and community practitioners.

The Dalhousie Certificate in Adult Education is offered twice a year with start dates in September and January. The mode of delivery is blended with both in-class and on-line components for each module. Participants are expected to have some experience in adult education, either formal or informal, since much of the course processes draw on experiential learning models. To achieve the Certificate, participants must attend all ten modules and complete a written project that satisfactorily demonstrates the application of knowledge gained through the program.

In addition to the Certificate program, the College offers, throughout the year, a number of intensive workshops on topics such as the art of facilitation, effective presentations, and designing workplace training.

10. 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, Conference Design and Focus Groups; Community Development, Needs Assessment; and programming for Small Business.

Interdisciplinary Studies

During the last two decades, numerous areas of interdisciplinary study have been developed in the Arts and Social Sciences, as well as in the Sciences. Research at the graduate and faculty level now increasingly crosses disciplinary boundaries, and is published in interdisciplinary journals. In response to this research, a variety of new interdisciplinary programs have been established at universities across North America.

At Dalhousie University, students can currently choose among interdisciplinary programs in Canadian Studies, Community Design, Contemporary Studies, Dalhousie Integrated Science Program (for the first year), Earth Systems Science, Environmental Studies, European Studies, Film Studies, Gender and Women's Studies, Health Studies, International Development Studies, Law and Society or Linguistics. Students can concentrate on a particular interdisciplinary area of study in their undergraduate program; they can combine an interdisciplinary program with study in a traditional discipline; or they can combine two interdisciplinary areas of study. In some cases, students can construct programs that bring together classes in the Arts and Social Sciences with classes in the Sciences.

For more information regarding these programs in the Faculty of Arts and Social Sciences, students should consult the entries in the calendar for the following:

- Canadian Studies, see page 76
- Community Design, see page 86
- Contemporary Studies, see page 87
- Early Modern Studies, see page 95
- European Studies, see page 111
- Film Studies, see page 114
- Gender and Women's Studies, see page 124
- Health Studies, see page 136
- History of Science and Technology, see page 155
- International Development Studies, see page 161
- Law and Society, see page 172
- Linguistics, see page 173

For more information regarding these programs in the Faculty of Science students should consult the entries in the calendar for the following:

- Dalhousie Integrated Science Program (DISP), see page 424
- Environmental Programs, see page 441
- History of Science and Technology, see page 155
- Science, Interdisciplinary Classes, see page 510

Entrepreneurial Skills Program

Location: Kenneth C. Rowe Management Building
Dalhousie University
6100 University Ave
Halifax, Nova Scotia
B3H 3J5
Telephone: (902) 494-6975
Email: Entrepreneurship@dal.ca
Website: <http://entrepreneurship.dal.ca>

Director

David C. Roach, MBA, P.Eng.

Program Co-ordinator

Leach, C.E., (Ed), School of Business
Telephone: (902) 494-1816
Fax: (902) 494-1107
Email: eleach@mgmt.dal.ca
ESP Website: www.plantentrepreneur.com
CEED Website: www.ceed.ednet.ns.ca

Dalhousie's Norman Newman Centre for Entrepreneurship, in collaboration with the Centre for Entrepreneurship Education and Development Inc. (CEED), is offering a Certificate Program in entrepreneurship. Known as the Entrepreneurial Skills Program (ESP), this Certificate Program is open to all Dalhousie University students.

ESP facilitates the development, growth and success of student-run business 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.

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.

What is the Entrepreneurial Skills Program (ESP)?

ESP is a post-secondary certificate program that facilitates the development, growth and success of student-run business ventures. ESP is designed to add to skills learned in the classroom through extracurricular, individualized, experiential learning. The program culminates in the development of a personal portfolio that illustrates a student's entrepreneurial capabilities. 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 currently no fee for enrolling in ESP. In the past, students have been charged a nominal fee for access to the program and its resources. Due to the generosity of our funders, student fees are not being charged in 2005-2006.

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 small business. 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 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.

Learning Connections

Co-ordination	Bonnie Neuman, Vice-President, Student Services Killam Memorial Library 6225 University Avenue Halifax, NS B3H 4H8 (902) 494-3077
Telephone:	(902) 494-6848
Fax:	learning.connections@DAL.ca
Email:	www.dal.ca/learningconnections
Website:	

Learning Connections @ DAL provides students with opportunities to successfully engage in learning and life at Dalhousie.

Dalhousie has always emphasized student-centered services and teaching. Through Learning Connections @ DAL, the University will further engage students in their own learning, personal and career development, and support them through their university journey via:

- Personal Connections With Faculty, Staff and other Students
- Comprehensive Information on Resources at Dal
- Support for 1st Year Students Making the Transition to University
- Experiential Learning Opportunities
- Skill and Career Development
- On-Going Self-Assessment and Portfolio Learning
- Involvement in Campus Life
- Engaging Students in Residence

This is accomplished by:

- connecting students electronically with programs and services to help them plan and organize their academic, personal and career development
- connecting students personally with professors, academic advisors, student service providers and other students to engage them in learning and personal development

Services, tools, and program initiatives:

- My Guide (<http://myguide.dal.ca>)—integrated information about academic, support service and extra-curricular programs presented to students on a just-in-time basis.
- My.ePortfolio—an online portfolio tool allowing students to track their learning, reflect upon their experiences, organize documents that represent their academic, personal and career development, and share portfolio elements with instructors, mentors and others.
- Enhanced academic advising, curriculum and residence life initiatives.

Learning Connections - engaging students in learning and life supported by the David and Leslie Bissett Centre for Academic Success Services.

Faculty of Architecture and Planning

Location: Ralph M. Medjuck Building
5410 Spring Garden Road
Halifax, NS B3J 1E7

Mail: Faculty of Architecture and Planning
Dalhousie University
P.O. Box 1000
Halifax, NS B3J 2X4

Telephone: (902) 494-3971
Fax: (902) 423-6672
Email: arch.office@dal.ca
Website: archplan.dal.ca

Dean

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Administrative Secretary to the Dean

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Assistant Dean

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Director of Career and Community Services

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Administrative Assistant (Finance)

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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.

School of Architecture

Location: Ralph M. Medjuck Building
5410 Spring Garden Road
Halifax, NS B3J 1E7

Mail: School of Architecture
Dalhousie University
P.O. Box 1000
Halifax, NS B3J 2X4

Telephone: (902) 494-3971
Fax: (902) 423-6672
Email: arch.office@dal.ca
Website: archplan.dal.ca

Director, School of Architecture

Galvin, T., BEDS, MArch (FP) (TUNS), MArch (McGill), PhD (Penn)
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Email: terrance.galvin@dal.ca

Undergraduate Secretary, School of Architecture

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Email: arch.office@dal.ca

Graduate Secretary, School of Architecture

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Email: grad.arch@dal.ca

Director of Career and Community Services, Architecture and Planning

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Email: paula.costello@dal.ca

Undergraduate Coordinator, School of Architecture

Kroeker, R., BES (Manitoba), AADipl, ARCUK
Telephone: (902) 494-3277
Email: richard.kroeker@dal.ca

Professors Emeriti

Baniassad, E., BArch (Illinois), MA, PhD (Manchester), FRAIC
Jackson, A., DiplArch (Poly London), ARIBA

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) (Calif.at Berkeley), MArch (MIT), Reg.Arch.WA.
Mannell, S., BES, BArch (Waterloo), NSAA, OAA.
Wanzel, J.G., BArch, MArch (Toronto), MRAIC.

Associate Professors

Bonnemaïson, S., BSc (Concordia), BArch (Pratt), MSc(Arch) (MIT), PhD (UBC).
Galvin, T., BEDS, MArch (FP) (TUNS), MArch (McGill), PhD (Penn).
Lilley, B., BES (Manitoba), AA Dipl.
Molesky, S., BArch (Cal. Poly.), MArch (Cranbrook).
Parcell, S., BArch (Toronto), MArch (Cranbrook), PhD (McGill).
Sassenroth, P., Dipl. Ing. (TU Berlin) Reg.Architekt NRW, Professor in Germany.

Assistant Professors

Mullin, R., BEDS, MArch (FP) (TUNS).
 Parsons, A., BSc (McGill), MES (Dal), SMBT (MIT).
 Savage, N., BA (Alberta), BEDS, MArch (FP) (TUNS), NSAA.
 Somerville Venart, C., Cert. Eng. (Mt. Allison), BFA (Toronto), MArch (SCI-Arc), AK NWF (Germany).

Lecturers

Henry, P., BEDS, BArch (TUNS), NSAA.
 Kelly, P., BSc (Dal), MSc (TUNS).
 Sweetapple, T., BEDS, MArch (FP) (TUNS), NSAA.

Cross-Appointed Faculty

Palermo, F., BArch (Toronto), MArch UD (Harvard) - Planning

Adjunct Professors

Butler, T., MEng (Leeds), MSt (Cambridge), MCIBSE, MICE, CEng, MBIFM
 Chi, L., BArch (Carleton), MPhil (Cambridge), PhD (McGill); Cornell University
 Lynch, P., BArch (Cooper Union)
 Rousseau, J., BArch (Montreal)
 Subotincic, N., BArch (Carleton), MArch (McGill); University of Manitoba
 Van Duzer, L., BA (Arch), MArch (Calif. at Berkeley); University of Minnesota

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. Its primary aim is to educate individuals who intend to become a professional architect. 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 co-op work terms in which students gain practical experience in an architectural office.

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 facilities, and a large exhibition hall. The University Library's architecture collection is located nearby.

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 - in Antigua, Australia, Barbados, Bermuda, Botswana, China, Czech Republic, Egypt, England, France, The Gambia, Guatemala, Germany, Hong Kong, India, Ireland, Italy, Kuwait, Morocco, Netherlands, New Zealand, Nicaragua, Norway, Peru, Portugal, Scotland, Sierra Leone, Singapore, South Africa, South Korea, Switzerland, Taiwan, Trinidad and Tobago, Turkey, Turks and Caicos, and the United States.

Accreditation

The School's professional degree program is fully accredited by the Canadian Architectural Certification Board. The entire six-year program consists of two years of general studies at a recognised 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 (CACB), which is the sole agency authorized to accredit Canadian professional degree programs in architecture, recognises 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, recognised 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. Reciprocal registration in Canada and the United States is facilitated by the standard Architectural Registration Examination (ARE) that is used in both countries. 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 recognises 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 undergraduate 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
Year 3 - BEDS B1 (academic term)	B2 (academic term)	Year 4 - BEDS B3 (academic term)
B4 (work term)	B5 (academic term)	Year 5 - MArch M1 (academic term)
M2 (academic term)	M3 (work term)	M4 (work term)
Year 6 - MArch 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: 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. 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 course 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 emphasised, but no prior experience in drawing or design is needed. With its focus on conceptualizing the concrete, outer world, this course is a useful complement to ARCH 2001.03.

INSTRUCTOR(S): E. Jannasch

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 emphasised, but no prior experience in drawing or design is needed. This course is a more abstract and reflective complement to ARCH 2000.03.

INSTRUCTOR(S): E. Jannasch

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): Staff

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 and sound in built environments are studied. Quizzes and tests are complemented by studio exercises.

INSTRUCTOR(S): Staff

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): P. Sassenroth

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. The class includes a parallel study of the development of methods of representation employed in architectural practice, from stone tablets to digital modeling.

INSTRUCTOR(S): N. Savage

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 basic principles of drawing, modeling, imaging, and composition. Students use manual media and photography to describe sites and designs. Topics include sketching, measurement and scale, orthographic and axonometric drafting, and image framing. Drafting and modeling equipment is required.

INSTRUCTOR(S): C. Venart

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 2D and 3D interplay in drawing, imaging, and materials. Topics include constructiveness, sketching, phenomenology, and tactility.

INSTRUCTOR(S): S. Molesky

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): T. Galvin

FORMAT: Lecture/seminar

RESTRICTION: Year 4 BEDS students

ARCH 4111.03: Architectural History and Theory - 19th Century.

This class studies significant buildings and architects in Europe and North America during the early modern era. It focuses on buildings related to influential theories or developments in material culture and technology. To develop skills in research and criticism, students examine primary and secondary sources, including articles, photographs, and drawings.

INSTRUCTOR(S): Staff

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): S. Mannell

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

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 workterm including job placement and the role of the student in a professional office.

INSTRUCTOR(S): Staff

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 builds on the previous Representation courses. It 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 Workterm).

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 (from 'Core Classes' or 'Electives' indicated below)

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 or Winter)

- ARCH 9007.06: MArch Thesis Preparation
- three graduate electives (ARCH 5xxx.03 or ARCH 6xxx.03)

Year 6 - Term M6 (Winter or Summer)

- ARCH 5311.03: Professional Practice [winter term only]
- 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 5008.06: Transhistorical Studio
- ARCH 5009.06: Ephemeral Architecture Studio
- ARCH 5010.06: Public Architecture Studio
- ARCH 5011.06: Coastal 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 5111.03: Integrated Coastal and Ocean Planning
- ARCH 5112.03: Documentation and Conservation of the Modern Movement in Architecture
- 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 5205.03: Earth Construction
- ARCH 5206.03: Natural Finishes
- 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 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 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

CO-REQUISITE: ARCH 5102.03 or ARCH 5103.03

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): S. Mannell

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): C. Macy

FORMAT: Studio

CO-REQUISITE: ARCH 5104.03

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): S. Mannell

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 5008.06: Transhistorical Studio.

This studio incorporates architectural design and architectural history - not for direct practical applications such as conservation, but for considering more basic definitions of architecture, roles of the architect, and elements of practice. Historical and/or cultural differences provide the framework for a speculative design project. The studio also involves

strategies for defining a project and mapping characteristics of program and site.

INSTRUCTOR(S): S. Parcell

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

CO-REQUISITE: ARCH 5109.03

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 a public architecture as an expression of material culture that mediates between the scales of artifact and landscape.

INSTRUCTOR(S): B. MacKay-Lyons

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 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 4111.03, PLAN 6111.03

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 5103.03: Residential Real Estate Development.

This seminar explores the interaction of the residential construction industry's constituent parts: real estate, finance, government policy and programs, development interests, etc., and addresses questions of housing quality and distribution, employment, industrialization, urbanization, regional and rural under-development, foreign ownership, and the role of the industry in the Canadian political economy.

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): T. Galvin

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): T. Galvin

FORMAT: Seminar

PREREQUISITE or CO-REQUISITE: ARCH 5102.03 or ARCH 5205.03

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. Bonnemaïson

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): T. Galvin

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. Bonnemaïson

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. Bonnemaïson

FORMAT: Seminar/studio

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 5111.03: Integrated Coastal and Ocean Planning.

This studio-based class introduces spatial planning of coasts and oceans. It integrates environmental design, planning, policy, and management. It emphasizes tools and processes for professional field work, analysis, and

synthesis. Students gain practical experience of theory, practice and professional aspects of coastal planning by drafting plans or proposals for action.

INSTRUCTOR(S): T. Cavanagh

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): S. Mannell

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 5198.03: 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 the manufacturing process that converts a tree into dimensional lumber. Topics include tree growth, wood structure, woodlot management, sustainable forest management and certification, sawmill operations, grading, the physical properties and moisture relations of wood, and the design of air drying sheds and kilns.

INSTRUCTOR(S): A. Parsons

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture

ARCH 5203.03: From Lumber to Structure.

This class studies how dimensional lumber is used in current North American building construction. It considers the structural and mechanical properties of wood, structural engineering principles for dealing with gravity and lateral loads, and building details that are used in platform frame and timber frame construction.

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 5205.03: 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): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

ARCH 5206.03: 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): Staff

FORMAT: Lecture/seminar

RESTRICTION: Graduate students - Architecture and Planning or permission of instructor

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 how to assess the full range of costs and environmental impacts of building materials and assemblies, from their initial raw material to the end of their useful life, including recycling. A focus on building envelope shows how life cycle analysis can influence decisions on materials and assemblies.

INSTRUCTOR(S): Staff

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): S. Mannell

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

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 5298.03: 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 and 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 four 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): N. Savage

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 course 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: 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: 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 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): Staff

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): Staff

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

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): S. Mannell

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 9007.06: MArch Thesis Preparation.

Within a seminar group, each student formulates a thesis question and pursues it through a preliminary design for a building of some kind. The student is expected to become fluent in the history and theory of the topic. 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.

Following a term of thesis preparation, each student completes an architectural design project. 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.

INSTRUCTOR(S): Staff

FORMAT: Studio

PREREQUISITE: ARCH 9008

RESTRICTION: MArch students

School of Planning

Community Design

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Cross-Appointed Faculty

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Buszard, D., Biology Department

Cote, R., School of Resource and Environmental Studies

Duinker, P., School of Resource and Environmental Studies

Wright, T. Environmental Programs Coordinator, Faculty of Science

I. Community Design

The School of Planning offers a Bachelor of Community Design (3 year program), and a Bachelor of Community Design (Honours), with Majors in either Environmental Planning or Urban Design Studies (4 year programs).

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. Courses 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, analysing, and addressing problems. Design is comprehensive, integrative, context-sensitive, and synthetic.
- **a focus on reasoned, creative, and practical outcomes.** Courses 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 courses of action to achieve desired outcomes.

The Bachelor of Community Design is a three-year general program for students interested in understanding how communities work and the principles that designers use in creating communities. (Students who meet the requirements for admission to the honours program may study an extra year to earn a major in either environmental planning or urban design studies. See below)

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. Other recommended grade 12 courses include Biology and/or Geography. A background in art or design is an asset.

All students admitted must meet the Dalhousie requirement for a full course or equivalent in courses with a significant writing requirement, usually completed in the first year of university study. Students must complete at least a full course or equivalent in a science subject, and a full course or equivalent in an arts, humanities, or social sciences to graduate.

Students must complete at least 42 credit hours (7 full course equivalents) at the 2000 level or higher for the three year (90 credit hour) degree, or at least 72 credit hours (12 full course equivalents) at the 2000 level or above for the four year honours degree (120 credit hours).

Bachelor of Community Design

The Bachelor of Community Design normally takes three years of full time study. It includes 15 full course equivalents, or 90 credit hours of course work. Core required courses for the program include PLAN 1001.03, 1002.03, 2001.03, 2002.03, 2005.03, 3001.03, 3002.03, 3005.03, 3006.03. In year one, students take PLAN 1001.03/1002.03, also select either ARCH 1000.6 or ENVS 1000.06 Environmental Studies, and take GEOG/ERTH 1030.

Program requirements are as follows:

Year 1

- PLAN 1001.03: Introduction to Community Design 1
- PLAN 1002.03: Introduction to Community Design 2
- ERTH/GEOG 1030.03: Physical Geography
- Select from among: ARCH 1000.06 or ENVS 1000.06
- Plus 2.5 more full courses (15 credit hours)

One first-year course must meet the university's writing requirement.

The School of Planning recommends that students also consider taking at least one of ERTH 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
- Select one course (3 credit hours) from among: core elective list
- Plus three courses (18 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 Through History
- PLAN 3006.03: Reading the Landscape
- Select 6 credit hours from among: core elective list
- Plus 12 more credit hours - electives of student's choice

Bachelor of Community Design (Honours)

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 course equivalents, or 120 credit hours of course work.

The Honours programs provide opportunities for students who do well in their studies to deepen their understanding through additional course 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.

Entry to the fourth (honours) year depends on a B (3.0) cumulative average coming out of year 3 in the general program. Students may apply for entry to the honours program once they have completed the first term of second year (2000-level) classes. Students in the honours program must maintain a 3.0 or better cumulative average. (Places are limited in the Major programs.)

Students have a choice of major within the honours program. During the honours year, students complete 30 credit hours, as follows.

Major in Urban Design Studies

- PLAN 4002.06: Urban Design Studio
- PLAN 4100.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- Courses selected from "urban design studies" or "electives for either option" core elective list (total 15 credit hours) at the 2000 level or above

Major in Environmental Planning

- PLAN 4001.06: Environmental Planning Studio
- PLAN 4100.03: Community Design Internship
- PLAN 4500.06: Thesis Project
- Courses selected from "environmental planning" or "electives for either option" core elective list (total 15 credit hours) at the 2000 level or above

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;
- They completed the BCD at least six months prior to application for honours conversion;
- 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 courses are completed. Students must maintain a cumulative average of not less than 3.0 in the honours year.

Conversion Year requirements for the Major in Environmental Planning:

- PLAN 4001.06 Environmental planning studio
- PLAN 4100.03 Community design internship
- PLAN 4500.06 Thesis project
- PLAN 3035.03 Application of planning law
- 12 credit hours from core elective list A (environmental planning electives) or list C (electives for either major) at the 2000 level or above.

Conversion Year requirements for the Major in Urban Design Studies:

- PLAN 4002.06 Urban design studio
- PLAN 4100.03 Community design internship
- PLAN 4500.06 Thesis project
- PLAN 3035.03 Application of planning law
- 12 credit hours from core elective list B (urban design electives) or list C (electives for either major) at the 2000 level or above.

Students who may have completed any required courses 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.

Program core electives for Bachelor of Community Design and Bachelor of Community Design (Honours)

In addition to PLAN 1001.03 and 1002.03 and EARTH/GEOG 1030.03, first year students must take either ENVS 1000.06 or ARCH 1000.06, but may take both. Other first year courses are open choice. An Earth Sciences course (ERTH 1080.03 or 1090.03, or GEOG 1035.03) is strongly recommended for all students.

Students earning the three-year Bachelor of Community Design must select from among courses in any of the three categories (environmental planning, urban design studies, or open to both) for their “core electives”. In year three, students are recommended to select courses 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 courses at the 2000 level or above in the categories “Environmental planning” (A) or “Electives for either option” (C). (Core courses for this major include PLAN 4001.06.)

In their honours year, students earning the Bachelor of Community Design Honours, Major in Urban Design Studies, must select “core electives” from among courses at the 2000 level or above in the categories “Urban design studies” (B) or “Electives for either option” (C). (Core courses for this major include PLAN 4002.06.)

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 courses may require the instructor’s or department’s consent. Not all courses are offered every year.

Environmental planning option core electives (A)

- ENVS 1000.06: Introduction to Environmental Studies
- ENVS 3200.03: Environmental Law
- ENVS 3210.03: Administrative Law for Environmental Scientists
- ENVS 3300.03: Environmental Site Investigation
- 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 2060.03: Introduction to Ecology
- BIOL 2003.03: Diversity of Plants and Animals
- BIOL 2601.03: The Flora of Nova Scotia
- BIOL 3061.03: Communities and Ecosystems
- BIOL 3066.03: Plant Ecology
- BIOL 3601.03: Nature Conservation
- BIOL 3623.03: Applied Coastal Ecology
- EARTH 1080.03: Geology I
- EARTH 1090.03: Geology II
- EARTH 2410.03: Environmental and Resource Geology
- EARTH/GEOG 2440.03: Introduction to Geomorphology
- PHIL 2480.03: Environmental Ethics
- HIST 3370.03: North American Landscapes
- HIST 4271.03: The Fisheries of Atlantic Canada
- 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
- PLAN 4108.03: History and Theory of Landscape Architecture

Urban design studies core electives (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
- PLAN 4101.03: History and Theory of Urban Design

Core electives that may count for either Major (C)

- ARCH 1200.06: Science of the Built Environment
- GEOG 1035.03: Introduction to Human Geography
- POLI 1020.03: Governments and Democracy
- POLI 1035.03: The Political Process in Canada
- POLI 1103.06: Introduction to Government and Politics [wr]
- POLI 2230.03: Local Government
- POLI 3220.03: Intergovernmental Relations
- POLI 3235.03: The Politics of Regionalism
- POLI 4228.03: Interest Groups
- 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 2251.03: An Applied Class in Economic Development and the Environment
- ECON 2252.03: An Applied Class in Economic Development of Communities and the Environment
- ECON 2334.03: Globalization and Economic Development
- ECON 3336.03: 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
- INTD 3101.03: Participatory Development: Methods and Practice
- INTD 3104.03: Community Development in Comparative Practice
- PUAD 3802.03: Public Policy
- SOSA 2100.06: Environment and Culture
- SOSA 3220.03: Coastal Communities in the North Atlantic
- 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 3010.03: Urban Ecology
- PLAN 3015.03: Site Infrastructure
- PLAN 3020.03: Landscape Design
- PLAN 3025.03: Representation in 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 3225.03: Plants in the Human Landscape
- PLAN 4105.03: Land Development Economics
- PLAN 4106.03: Transportation Planning
- PLAN 4107.03: Regional Planning
- PLAN 4111.03: Housing Theory
- PLAN 4150.03: Topics in Planning
- PLAN 4200.03: Independent Study
- ARCH and PLAN (any course for which the School and the course instructor has given permission for the BCD student to enroll)

Bachelor of Community Design 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/Major Program in the Faculty of Architecture and Planning. 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 courses in environmental studies. Approval for the program is required from the School of Planning and from the Coordinator of Environmental Programs.

Required Classes

To earn the minor, students must 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 credits hours) of classes from the following list:

- BIOL 3601.03: Nature Conservation
- CHEM 2505.03: Environmental Chemistry I
- CHEM 4203.03: Environmental Chemistry
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- ECON 3336.03: Regional Development
- ENVS 3300.03: Environmental Site Investigation
- ENVS 3400.03: Environmental Health
- ENVS 3600.03: Geographic Information Systems
- EMSP 2330.03: Nature Imagined: Literature and Science in Early Modern Europe
- ESMP 3000.06: The Study of Nature in Early Modern Europe
- EARTH 3302.03: Quaternary Sedimentary Environments
- HIST 1502.03: Origins of Modern Global Society
- HIST 3302.03: Technology and History in North America.
- HIST 3370.03: American Landscapes
- HIST 4271.03: Fisheries of Atlantic Canada
- HLTH 1010.03: Women's Health and the Environment
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- OCEA 2800.03: Climate Change
- OCEA 2850X/Y.06: Introduction to Oceanography
- OCEA 3170.03: Physics and Chemistry of the Ocean
- PHIL 2485.03: Technology & the Environment
- POLI 3585.03: Politics of the Environment
- POLI 3537.06: Management and Conservation of Marine Resources
- POLI 3589.03: Politics of the Sea I
- SOSA 2100.03: 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

At least one half credit (3 credit hours) of elective classes must be at the 3000 level or above.

Students have the option of taking ENVS 3000.03 Environmental Science Internship class, but are not required to do so.

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 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 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 course 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
- PLAN 4500.06: Thesis Project

III. Class Descriptions

Not all classes are offered every term. Please consult the university timetable for current listings.

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.

INSTRUCTOR(S): J. Grant

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

INSTRUCTOR(S): F. Palermo or S. Guppy

FORMAT: Lecture / lab 3 hours (plus tutorial)

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 analysing 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 or K. Thompson

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.

INSTRUCTOR(S): J. Zuck

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.

INSTRUCTOR(S): M. Poulton or B. Zwicker

FORMAT: Lecture / seminar 3 hours

PREREQUISITE: PLAN 1001.03 or permission of instructor

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.

INSTRUCTOR(S): Staff

FORMAT: Lecture/lab (3 or 4 hours)

PREREQUISITE: ARCH 1000.03 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.

INSTRUCTOR(S): P. Manuel

FORMAT: Lecture / lab 4 hours (plus field trips)

PREREQUISITE: PLAN 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.

INSTRUCTOR(S): S. Guppy or L. McGovern

FORMAT: Lecture / lab 3 or 4 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.

INSTRUCTOR(S): J. Grant

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.

INSTRUCTOR(S): S. Guppy

FORMAT: Lecture / lab 3 or 4 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.

INSTRUCTOR(S): S. Guppy

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.

INSTRUCTOR(S): J. Zuck

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.

INSTRUCTOR(S): J. Zuck

FORMAT: Lecture/lab 3 hours

PREREQUISITE: 3 credit hours of ENVS or PLAN

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.

INSTRUCTOR(S): A. Fillmore

FORMAT: Lecture / lab 3 hours

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.

INSTRUCTOR(S): B. Allen

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 analysing and developing community form in the suburban environment.

INSTRUCTOR(S): J. Grant

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.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PLAN 3001.03 or concurrent

PLAN 3050.03: Topics in Community Design.

This course provides opportunities to examine selected topical issues in community design.

INSTRUCTOR(S): Faculty

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 provides 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.

INSTRUCTOR(S): Lecture/seminar 3 hours

CROSS-LISTING: PLAN 5053.03

PLAN 3055.03: Computers in Community Design and Planning.

This course explores the opportunities for using computers in community design. Topics may include business applications, computer assisted design, and geographic information systems.

INSTRUCTOR(S): P. Kelly, J. Strang

FORMAT: Lecture / tutorial 3 hours

PREREQUISITE: PLAN 2001.03

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.

INSTRUCTOR(S): D. Buszard

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 analysing 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.

INSTRUCTOR(S): P. Manuel or J. Zuck

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.

INSTRUCTOR(S): F. Palermo

FORMAT: Studio 6 hours (one term)

PREREQUISITE: admission to Honours or graduate program

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.

INSTRUCTOR(S): Faculty

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.

INSTRUCTOR(S): F. Palermo

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.

INSTRUCTOR(S): M. Poulton

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 analysing 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.

INSTRUCTOR(S): Faculty

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.

INSTRUCTOR(S): M. Poulton

FORMAT: Lecture/seminar

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.

INSTRUCTOR(S): M. Poulton

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.

INSTRUCTOR(S): S. Guppy

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 4111.03: Housing Theory.

An introduction to 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, ARCH 5102.03

RESTRICTION: Honours students in the Faculty of Architecture and Planning, with 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.

INSTRUCTOR(S): Planning faculty

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.

INSTRUCTOR(S): Faculty

FORMAT: Studio 6 hours

PREREQUISITE: PLAN 4001.06 or 4002.06 (limited to students in the Honours Major)

BA and BSc degree programs with Combined Honours in an Arts and a Science subject.

Provost of the College

Binkley, M., BA, MA, PhD (Toronto)

Taylor, K., BSc (St. FX), PhD (U of Alberta)

College of Arts and Science

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 7,000 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 twenty credit degree with a Major; and the three year or fifteen 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

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 literature, comparative religion, contemporary studies, creative writing, early modern studies, English, French, gender and women's studies, German, Greek, history, history of science and technology, Italian studies, King's Foundation Year, Latin, music, philosophy, Russian, Spanish and theatre.

2. Social Sciences

Canadian studies, contemporary studies, early modern studies, economics, gender and women's studies, history, history of science and technology, international development studies, King's Foundation Year, political science, psychology and sociology and social anthropology.

3. Life Sciences and Physical Sciences

Biochemistry & molecular biology, biology, chemistry, computer science, earth sciences, economics, engineering, environmental science, mathematics, microbiology & immunology, neuroscience, oceanography, physics, psychology, science and statistics.

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:

- CHEM 1000X/Y.06;
- CLAS 1000X/Y.06; 1010X/Y.06, 1100X/Y.06;
- Dalhousie Integrated Science Program;
- ENGL 1000X/Y.06;
- ENGL 1010.03 and 1020.03 (**both** must be successfully completed in order to satisfy the Writing Requirement);
- GERM 1020X/Y.06; GERM 1080.06;
- HIST 1005X/Y.06; HIST 1867X/Y.06;
- King's Foundation Year;
- PHIL 1010X/Y.06;
- POLI 1103X/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 in the Faculty of Science only);
- SOSA 1050X/Y.06;
- THEA 1000X/Y.06, 1300X/Y.06

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

PLEASE NOTE: Classes identified as Writing Intensive are identified by the following symbol and do not satisfy the Writing Requirement.

✍ Writing Intensive

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 65.

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);
- CHIN 1030X/Y.06 (Mandarin)
- CLAS 1700X/Y.06 (Greek), 1800X/Y.06 (Latin); 1901.03 and 1902.03 (Hebrew), 2710X/Y.06 (Greek); (both CLAS 1901.03 and 1902.03 must be successfully completed in order to satisfy the Language Requirement).
- FREN (language instruction class);
- GERM 1001X/Y.06, 1010X/Y.06, 1060X/Y.06;
- ITAL 1010X/Y.06, 1012X/Y.06
- RUSN 1000X/Y.06
- SPAN 1020X/Y.06, 2000.03/2010.03 (both SPAN 2000.03 and 2010.03 must be successfully completed in order to satisfy the Language Requirement).

For students with advanced language skills, upper-level language classes may be substituted. Consult the Office of the Registrar 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, international development studies, philosophy, political science, psychology or sociology and social anthropology may substitute for a language class at least one full class in mathematics or 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 65.

E. Electives

Students may choose electives from any of the classes offered by teaching units within the College of Arts and Science 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 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 a total of six engineering classes 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 (3) full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 65)
- One credit in a **single** language/humanities subject (see 1, page 65)
- One credit in a **single** social science subject (see 2, page 65)
- One credit in a **single** life or physical science subject (see 3, page 65)
- One credit in a **single** language subject for (see page 65)
- A minimum of six (6), maximum of nine (9) credits in the major subject beyond the 1000 level, including three (3) credits beyond the 2000 level.
- Within the last fifteen (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

Bachelor of Arts major subjects: classics, English, European studies, French, German, gender and women's studies, history, international development studies, linguistics, music, philosophy, political science, religious studies, Russian studies, sociology and social anthropology, Spanish, theatre, or any of the BSc major subjects except environmental science.

1.b BSc (20-credit)

- One writing class (see page 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subjects (see 2, page 65)
- One credit in math (see page 65)
- A minimum of seven (7), maximum of ten (10) credits in the major subject beyond the 1000 level, including four (4) 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

Bachelor of Science major subjects: biochemistry & molecular biology, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, physics, psychology, or statistics.

1.c BA, BSc Major (20-credit) Science Co-operative Education

Requirements are as for the regular major program with the addition of the following:

- Four (4) 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 forty-eight to fifty-two 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, 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 422.

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

Students interested in the double major are advised to consult the departments concerned, before enrolling in the program, to determine when required classes will be offered.

2.a BA Double Major (20 credit)

- First Year
No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 65)
- One credit in a **single** language/humanities subject (see 1, page 65)
- One credit in a **single** social science subject (see 2, page 65)
- One credit in a **single** life or physical science subject (see 3, page 65)
- One credit in a **single** language (see page 65)
- Minimum of ten (10) and a maximum of thirteen (13) credits in the major subjects beyond the 1000 level are to be in the two allied subjects, with no more than nine (9) credits and no fewer than four (4) credits in either, including at least 2 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 fifteen (15) credits, complete one (1) 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 (except Environmental Science) or computer science. In addition to the BA major subjects listed above, 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 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subjects (see 2, page 65)
- One credit in math (see page 65)
- Minimum of ten (10) and a maximum of thirteen (13) credits in the major subjects beyond the 1000 level are to be in the two subjects, with no more than nine (9) credits and no fewer than four (4) credits in either, including at least 2 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

BSc double major subjects: choose both subjects from the Bachelor of Science major subjects above (except environmental science) or combine one of the B.Sc. major subjects with one of the BA major subjects or computer science, provided the larger number of major credits is in a science subject. In addition to the BA major subjects listed above, Canadian studies, creative writing and music are also available as one of the subjects in a double major or combined honours.

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 Programs section of this Calendar for details.

2.e BSc Double Major in Environmental Science and International Development Studies

Consult the Environmental Programs section of this Calendar for details.

2.f BSc Double Major (20-credit) in Science (any subject) and Computer Science

Beyond the general requirements in the University Calendar, the following classes are required:

- CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2112.03*
- CSCI 2121.03
- CSCI 2132.03
- CSCI 2140.03
- CSCI 3110.03 or 3111.03**
- CSCI 3120.03
- CSCI 3130.03
- CSCI 3171.03
- MATH 1000.03
- MATH 1010.03
- MATH 2030.03

*CSCI 2112.03 is cross-listed as MATH 2112.03

**CSCI 3111.03 is cross-listed as MATH 3170.03

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 Office of the Registrar or online at www.registrar.dal.ca/forms/. The Registrar may be consulted by those considering multidisciplinary honours.

Students should apply before registering for the 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 (3) full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 65)
- One credit in a **single** language/humanities subject (see 1, page 65)
- One credit in a **single** social science subject (see 2, page 65)
- One credit in a **single** life or physical science subject (see 3, page 65)
- One credit in a **single** language (see page 65)
- Two credits in a **single** subject outside the honours subject - not taken within first year, grade must be "C" or better
- Minimum of nine (9) credits, maximum of eleven (11) credits beyond the 1000-level in the honours subject - grade must be "C" or better, otherwise class will not count towards degree.
- Within the last fifteen credits, two (2) to four (4) - depending on the number selected in the honours subject - elective credits, at least one credit of which must be in a single subject other than the honours subject and the subject chosen for the two credits outside the honours subject.

- 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 and the **single** subject chosen for the two credits outside the honours subject.

Science subjects (see below) require a GPA of 3.00 (3.70 for first class) in the honours subject and the **single** subject chosen for the two credits outside the honours subject.

Note: If the student has a minor, classes in the honours subject and the minor are included in the GPA

Bachelor of Arts, concentrated honours subjects: classics, English, European studies, French, German, history, international development studies, linguistics, music, philosophy, political science, Russian studies, social anthropology, sociology, Spanish, and theatre or any of the BSc honours subjects except environmental science.

3.b BSc Concentrated Honours (20-credit)

- One writing class (see page 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subjects (see 2, page 65)
- One credit in a math (see page 65)
- Minimum of nine (9) credits with a grade of C or better, maximum of eleven (11) credits beyond the 1000-level in the honours subject
- Total credits required above the 1000 level - 12.
- 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:
GPA 3.00 (3.70 for first class) on classes in the honours subject.

Bachelor of Science concentrated honours subjects: biochemistry & molecular biology, biology, chemistry, earth sciences, economics, environmental science, marine biology, mathematics, microbiology & immunology, neuroscience, physics, psychology and statistics.

3.c BA Combined Honours (20-credit)

- First Year
No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 65)
- One credit in a **single** language/humanities subject (see 1, page 65)
- One credit in a **single** social science subject (see 2, page 65)
- One credit in a **single** life or physical science subject (see 3, page 65)
- One credit in a **single** language for (see page 65)
- Total credits required for degree - 20
- Minimum of eleven (11) credits beyond the 1000-level in two allied subjects, not more than seven (7) credits nor fewer than four (4) credits being in either of them. Students may, with the approval of the

departments concerned, elect a maximum of thirteen (13) credits in two allied subjects with no more than nine (9) credits and no fewer than four (4) credits being in either of them. Grade must be "C" or better, otherwise, class will not count toward degree.

- Within the last fifteen credits, two (2) to four (4) - depending on the number selected in the honours subjects - elective credits at least one credit of which must be in a single subject other than the honours subjects.
- 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.

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, economics, English, French, gender and women's studies, German, history, history of science & technology, international development studies, Italian studies, linguistics, music, philosophy, political science, Russian studies, social anthropology, sociology, Spanish, theatre and computer science, or any of the BSc honours subjects except environmental science.

3.d BSc Combined Honours (20-credit)

- One writing class (see page 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subjects (see 2, page 65)
- One credit in math (see page 65)
- Minimum of eleven (11) credits beyond the 1000-level in two subjects, not more than seven (7) credits nor fewer than four (4) credits being in either of them with a grade of C or better. Students may, with the approval of the departments concerned, elect a maximum of thirteen (13) credits in two subjects with no more than nine (9) credits and no fewer than four (4) credits being in either of them.
- 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.

Bachelor of Science combined honours subjects: biochemistry and molecular biology, biology, chemistry, earth sciences, economics, marine biology, mathematics, microbiology & immunology, neuroscience, 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 honours subjects or Canadian studies or computer science, provided the larger number of honours credits is in a science subject.

*available only in combination with one of chemistry, earth science, marine biology, mathematics, statistics, or physics.

3.e BSc Combined Honours (20-credit) with Environmental Science

The Faculty of Science offers a BSc combined honours in Environmental Science and one of the BA honours subjects. Degree requirements are the same as those listed above, with the exception that students cannot combine an honours in environmental science with any other BSc honours subject.

3.f BSc Multidisciplinary Honours (20-credit)

- One credit in a writing class (see page 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subject (see 2, page 65)
- One credit in math (see page 65)
- Twelve (12) credits beyond the 1000 level in three or more subjects. No more than five (5) credits of these may be in a single subject; no less

than six (6) credits nor more than nine (9) credits may be in two subjects. Grade must be "C" or better.

- Total credits required for degree - 20
- Three (3) 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.

Bachelor of Science multidisciplinary honours subjects - at least eight (8) 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.g Honours Programs in Science Co-operative Education

Co-operative education programs are also available for the Bachelor of Arts and Bachelor of Science honours degrees.

3.h BA, BSc Honours Science Co-op (20-credit)

Requirements are as for appropriate honours program (described above) with the addition of the following:

- Four (4) co-op work terms

3.i Joint Honours: Dalhousie-Mount Saint Vincent

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 can be given credit at Dalhousie and vice versa. In order for students to obtain a joint honours degree they must satisfy all requirements of both institutions.

4. Minor Programs

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 BA students, when a minor subject is taken in conjunction with an honours program, grades in the minor subject must be "C" or better. Some minors require higher grades even for the major program (see individual minors) for both the BA and BSc programs. Please also note that a class cannot be used to satisfy both the major or honours subject requirement and the minor requirement.

4.a 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 1010, 1501
- ECON 1101, 1102
- One credit in mathematics is required for the BSc. The mathematics credit must be other than MATH 1001/1002, 1003, 1110/1120 or 1115. For the BA one half credit in Math, MATH 1115 is required.
- COMM 2101, 2202, 2303, 2401, 3511
- 1.0 full credit above the 2000 level in commerce (not including 3511)
- 1.0 full credit above the 1000 level in commerce

Please note that at least half of the credits required for the minor must be completed at Dalhousie.

4.b Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

4.c 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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

4.d 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

4.e Minor in Environmental Studies

The minor in environmental studies 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 five of the electives being replaced by ENVS 1000 and four credits in environmental studies classes. See page 441 for further details.

4.f Minor in Film Studies

The minor in film studies is available to students registered in the BA, BSc 20-credit major and the BA honours programs. The requirements are as for the appropriate degree program with four of the electives being replaced by film studies classes. See page 114 for further details.

4.g 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 on page 136. To count towards the minor, a minimum grade of B- is required.

4.h Minor in Journalism Studies

The minor in journalism studies is available to students registered in the BA 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
- 3.5 full journalism electives above the 2000 level.

See page 170 for further details.

4.i Minor in Law & Society

The minor in law and society is available to students registered in the BA, 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 page 172 for further details. To count towards the minor, a minimum grade of B- is required.

B. BA (15-credit) Programs

1. With Concentration

- First Year
No more than three (3) full credit equivalents of the first five credits taken may be in a single subject
- One credit in a writing class (see page 65)
- One credit in a **single** language/humanities subject (see 1, page 65)
- One credit in a **single** social science subject (see 2, page 65)
- One credit in a **single** life or physical science subject (see 3, page 65)
- One credit in a **single** language for (see page 65)

- Minimum of four (4), maximum of eight (8) credits in the subject of concentration beyond the 1000 level, including two (2) credits beyond the 2000 level. Students choosing chemistry for the subject of concentration need take only one credit beyond the 2000 level.
- Within the last ten (10) credits, complete one (1) credit in each of two subjects other than the subject of concentration.
- 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, subjects of concentration: classics, English, French, gender and women's studies, German, history, international development studies, Italian studies, linguistics, philosophy, political science, religious studies, Russian studies, sociology and social anthropology, Spanish, theatre, or any of the BSc subjects of concentration.

C. BSc (15-credit) Programs

1. With Concentration

- One writing class (see page 65)
- One credit in one or more language/humanities subjects (see 1, page 65)
- One credit in one or more social science subjects (see 2, page 65)
- One credit in math (see page 65)
- Minimum of four (4), maximum of eight (8) credits in the subject of concentration beyond the 1000 level, including two (2) credits beyond the 2000 level. Students choosing chemistry for the subject of concentration need take only one credit beyond the 2000 level.
- 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, subjects of concentration: biology, chemistry, earth sciences, economics, mathematics, physics, psychology or statistics

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 certificate will be awarded which has the effect of upgrading the degree to major status.

3. Upgrading of a BA, BSc (15 or 20-credit) to a BA, BSc Honours (20-credit)

A person who holds a Dalhousie BA or BSc (15- or 20-credit) degree may apply through his/her department advisor or, for Multidisciplinary Honours (BSc only) Programs, the Registrar may be consulted, for admission 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. Coordinated Programs—College of Arts and Science

Students may in their second and third years follow a two-year integrated program, or two one-year integrated programs, of study. If two one-year programs are chosen, they may be in different departments. All such coordinated programs must be explicitly approved by the curriculum committee of the faculty. A department or group of departments offering coordinated programs may structure them as it wishes, consistent with sound academic practice and subject to the following guidelines:

1. That the equivalent of five credits constitutes a normal year,
2. That the function of each program form part of the calendar description of each program,
3. That each two-year program permits students at least one credit of their own choice in each of the second and third years,
4. That two-year programs normally not be exclusively in a single discipline,
5. That the normal prerequisite for entry into a departmental one-year or two-year program be the introductory class of the department in question, or an equivalent that the department considers acceptable, and not more than one introductory class in a related subject.

A student considering a coordinated program should consult as early as possible with the departments concerned.

E. 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.

The following chart illustrates the typical distribution of classes to be taken in the first three years of study for the BSc/BEng and the BA/BEng. Consult the specific engineering discipline in this calendar.

Term	Fall	Winter
Year 1	CHEM 1021.03 MATH 1000.03 ENGI 1100.03	CHEM 1022.03 MATH 1010.03 ENGI 1400.03
	PHYC 1100X/Y.06 Writing Class X/Y.06 (see page 262)	
Year 2	Three engineering classes Two 2000-level classes in the subject of concentration	Three engineering classes Two 2000-level classes in the subject of concentration
	Language/humanities or social science elective X/Y.06	
Year 3	Two 3000-level classes in the subject of concentration Two engineering classes Elective*	Two 3000-level classes in the subject of concentration Two engineering classes Elective*
	*should be, languages/humanities or social science elective, whichever not taken above	

Classes in the fourth and fifth years are those required to finish the Bachelor of Engineering degree.

F. 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.

G. Other Degree and Diploma Programs

1. Bachelor of Music

For the special requirements of this degree, see the entry for the Department of Music.

2. Diploma and Advanced Diploma in Costume Studies

Study for these credentials 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.

H. Certificate Programs

1. Certificate of Proficiency in French

For the requirements for this certificate, see the French Department entry, page 115.

2. Certificate of Proficiency in Spanish

For the requirements for this certificate, see the Spanish Department entry, page 228.

3. Certificate of Proficiency in Russian

For the requirements for this certificate, see the Russian Studies Department entry, page 211.

4. Certificate in Forensic Psychology

For the requirements for this certification, see the Psychology Department entry, page 498.

5. 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 entering first or second year in September 2000 majoring in chemistry, 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: chemistry, 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 spatial 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 chemistry, 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.

6. Certificate in Actuarial and Financial Mathematics

For the requirements for this certification, see the Mathematics and Statistics departmental entry.

7. Certification in Applied and Computational Mathematics

For the requirements for this certification, see the Mathematics and Statistics departmental entry.

Faculty of Arts and Social Sciences

Location: 6135 University Ave.
Third Floor
Halifax, NS B3H 4P9
Telephone: (902) 494-1440
Fax: (902) 494-1957
Website: www.dal.ca/FASS

Dean

Binkley, M.E., BA, MA, PhD (Toronto)
Telephone: (902) 494-1439

Associate Dean

Schroeder, D.P., AMus, BA, MA (Western), PhD (Cantab)
Telephone: (902) 494-1254

Assistant Dean (Students)

Dwire, A., BA, MA (Dal)
Telephone: (902) 494-6898

Assistant Dean (Research)

Ross, T., BA, MA (Carleton), PhD (Toronto)
Telephone: (902) 494-6912

Recruitment and Development Manager

Darnbrough, J., CIM (UCCB), DipMkt (SMU), MA (Royal Roads)
Telephone: (902) 494-6288

Secretary

Bingham, J., BA (UNB), MA (Toronto), PhD (York)
Telephone: (902) 494-3641

Administrator

Nielsen, S., BBA (MSVU), MBA (Dal)
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 course 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

Canadian Studies
Chinese (Mandarin)
Classics
Community Design
Contemporary Studies
Costume Studies (Theatre)
Creative Writing
Early Modern Studies
English
Environmental Studies
European Studies
Film Studies
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
Music
Philosophy
Political Science
Religious Studies
Russian Studies
Sociology and Social Anthropology
Spanish
Theatre

African Studies

Location: Room 339, Henry Hicks Building
Halifax, NS B3H 4H6
Director: Theresa Ulicki
Telephone: (902) 494-1377/3814
Fax: (902) 494-2105

Dean

Binkley, M.E., BA, MA, 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 teaching, seminars, research, community and publications 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, Law, and Sociology and Social Anthropology.

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
Halifax, Nova Scotia B3H 4P9
Telephone: (902) 494-3468
Fax: (902) 494-2467
Email: claswww@dal.ca

Classes in Arabic are administered by the Classics Department, page 79.

Please note:

Students wishing to take ARBC 1020X/Y.06 must take the Arabic Placement Test (APT). This test is administered once at the end of the regular academic session, and twice at the beginning of the regular academic session. Pre-registration is required. To find out more about the dates and times and the registration procedures, please consult with the Department of Classics. Scores from this test are normally available within a day, and are considered valid for up to one year from the date it was taken.

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 the formal and cultural 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: 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 to consolidate 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: 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.R. Firanescu

FORMAT: Lecture

PREREQUISITE: ARBC 1020.06, or permission of the instructor

EXCLUSION: ASSC 2020.06

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); cursively reading texts without vocalization, basic 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.

This course is primarily designed to develop, at a high level, the student's 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. This course may be taken by native speakers of Arabic.

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 1040.03: Culture, Society & International Students.

This course is primarily designed for incoming international students. It aims to discuss the basic elements of culture and society relative to the challenges of academic integration in a Canadian university. As a transition course, students will reflect on the cultural contexts of their countries 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 critically examine 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 3110X/Y.06: Practicum for Writing Tutors.

This class combines the theory and practice of good writing for university students. Those enrolled will address theories of composition as they apply to basic research papers and reports. In conjunction with writing theory and practice, in relation to their own writing, members of the class will also serve as tutors in another class in which formal written work is part of the curriculum. They will serve as tutors under the supervision of the Practicum instructor, and in cooperation with the instructor of the target class.

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): L. Bennett

FORMAT: Lecture/discussion

CROSS-LISTING: ENGL 3111X/Y.06

ASSC 3112.03: Writing Theory.

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.

INSTRUCTOR(S): Lyn Bennett

FORMAT: Writing Intensive, Lecture/Discussion

PREREQUISITE: ASSC 3111.03X/ENGL 3111.03X, Instructor's permission required

CROSS-LISTING: ENGL 3112.03Y

EXCLUSION: ASSC 3110.06XY/ENGL 3111.06XY

ASSC 3113.03: Writing Practice.

INSTRUCTOR(S): Lyn Bennett

CROSS-LISTING: ENGL 3113.03Y

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

PREREQUISITE: Seminar participants must have already completed 60 university credits or the equivalent of 10 full courses.

Canadian Studies

Location: Marion McCain Arts and Social Sciences Building
6135 University Avenue, Room 2101
Halifax, Nova Scotia B3H 4P9

Telephone: (902)494-2980
Fax: (902)494-1909
Email: cana@dal.ca
Website: www.dal.ca/CANA

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Coordinator

Dawson, Carrie (494-2980/3488)

Faculty

Apostle, R. (Sociology and Social Anthropology)
Bannister, J. (History)
Barker, R. (Theatre)
Bednarski, B. (French)
Blais, J. (Music)
Burns, S.A.M. (Philosophy)
Butler, P. (Sociology and Social Anthropology)
Campbell, C. (History)
Carbert, L. (Political Science)
Dawson, C. (English)
Elson, C. (French)
Finbow, R. (Political Science)
Girard, P. (Law)
Irvine, D. (English)
Lesser, B. (Economics)
MacCallum, T. (History)
Noble, B. (Sociology and Social Anthropology)
Oore, I. (French)
Overton, D. (Theatre)
Scassa, T. (Law)
Smith, J. (Political Science)
Thornhill, E. (Law)
Tillotson, S. (History)

The Canadian Studies Program

I. Introduction

Why Canadian Studies at Dalhousie? In this era of globalized economies 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 new 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 an Emphasis or a Minor, a Double Major or a Combined Honours B.A. or B.Sc., 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 taught by our cross-appointed faculty and a long list of offerings "approved with Canadian Studies" from the various contributing 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, page 65 of this calendar.

1. BA and BSc with an Emphasis in Canadian Studies

Two-and-one-half credits:

- CANA 2000X/Y.06: The Idea of Canada: An Introduction
- One-and-one-half credits from among the list of Canadian-content classes "approved with Canadian Studies" (see below). Students taking CANA 3010.03, CANA 3020.03, and/or CANA 4000.03 may count each class as fulfilling one-half credit towards this requirement.

2. BSc with a 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).

2000-4000-level

A total of four full-credits of classes above the 1000-level, two of them to be above the 2000-level:

- CANA 2000.06X/Y: The Idea of Canada: An Introduction
- CANA 3010.03: Interdisciplinary Approaches to Current Canadian Themes or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03: Canadian Studies Senior Seminar
- Two Canadian-content classes "approved with Canadian Studies"

3. BA or BSc with a 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 four full-credits of classes above the 1000-level, two of them to be above the 2000-level:

- CANA 2000X/Y.06: The Idea of Canada: An Introduction.
- CANA 3010.03: Interdisciplinary Approaches to Current Canadian Themes or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03: Canadian Studies Senior Seminar
- CANA 4001.03: Research Topics in Canadian Studies OR one half-credit Canadian-content class "approved with Canadian Studies"
- Further Canadian-content classes "approved with Canadian Studies," as required.

4. BA or BSc with a 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 four full-credit classes above the 1000-level, two of them to be above the 2000-level:

- CANA 2000X/Y.06 The Idea of Canada: An Introduction.
- CANA 3010.03 Interdisciplinary Approaches to Current Canadian Themes or CANA 3020.03: Canadian Cultural Landscapes
- CANA 4000.03 Canadian Studies Senior Seminar
- CANA 4001.03 Research Topics in Canadian Studies
- A minimum of one-and-one-half Canadian-content classes "approved with Canadian Studies," 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 2000X/Y.06: The Idea of Canada: An Introduction.

This course 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? Hence the course is centred on important texts - novels, poems, films, songs, and documentaries - that relate formative events in Canadian history and that point to new, contested, directions for the future. Themes may include, but are not restricted to: aboriginal peoples; ethnicity, race, and multiculturalism; regional identity and regional conflict; World Wars I and II; and the emergence of a globalized and urbanized Canada.

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): Team-taught by two cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.

FORMAT: Lecture

CANA 3010.03: Interdisciplinary Approaches to Canadian Themes.

Taught by one faculty member, the class will explore in depth a single Canadian issue, topic or theme, drawing on research that crosses disciplinary borders. Topics dealt with in different years might include "The Idea of North," "Multiculturalism," "National Security."

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

PREREQUISITE: CANA 2000 or other class approved with Canadian Studies, or Instructor/Coordinator approval

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

CANA 4000.03: Seminar in Canadian Studies.

This interdisciplinary seminar will be taught by a number of professors in various disciplines. In individual weekly seminars students will consider essays and other short readings in a number of the following: Economics, English, French (in translation), History, Music, Philosophy, Political Science, Sociology and Social Anthropology, Theatre and Law. The class is designed to provide students with the opportunity to consider the structure and content of Canadian society from a variety of academic viewpoints - philosophical, historical, political, sociological, geographical, legal and literary.

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): Drawn from the list of cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.

FORMAT: Seminar/Tutorial

PREREQUISITE: Students must have obtained at least ten undergraduate credits before enrolling in the seminar.

CANA 4001.03: Research Topics in Canadian Studies.

Replaces CANA 3001.03. This class will provide students with an opportunity to develop, in close consultation with a faculty member, a topic in Canadian Studies 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. The class is open to all students who have completed CANA 4000.03, and it is highly recommended for those seeking the Emphasis in Canadian Studies.

NOTE: CANA 4001.03 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): Drawn from the list of cross-appointed faculty. Please consult the Canadian Studies website for a current list of instructors.

FORMAT: Seminar/Tutorial

PREREQUISITE: CANA 4000.03

IV. Classes Approved with Canadian Studies

1. Comparative Religion Classes Approved with Canadian Studies

- COMR 3003X/Y.06: Religion in Canada

2. Earth Sciences Classes Approved with Canadian Studies

- EARTH 2410.03: Environmental and Resource Geology I

3. Economics Classes Approved with Canadian Studies

- 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 2233.03: Canadian Economic History I
- ECON 2234.03: Canadian Economic History II
- ECON 3317.03: Poverty and Inequality
- ECON 3319.03: Industrial Organization -- Market Conduct and Market Performance
- ECON 3326.03: Money and Banking
- ECON 3332.03: Resource Economics
- ECON 3336.03: Regional Development
- ECON 3344.03: Public Finance I
- ECON 3345.03: Public Finance II
- ECON 4419.03: Canadian Competition Policy
- ECON 4426.03: Monetary Policy

Other Economics classes that deal with Canadian issues are available. Students should consult with the Chair and with the Coordinator of Canadian Studies.

4. English Classes Approved with Canadian Studies

- ENGL 2207X/Y.06: Canadian Literature
- ENGL 4400-4499: Studies in National Literatures
- ENGL 3270.03: Contemporary Canadian Literature
- ENGL 3231.03: Modern Canadian Literature

5. Environmental Studies Classes Approved with Canadian Studies

- ENVS 3200.03: Introduction to Environmental Law
- ENVS 3210.03: Environmental Law II: Natural Justice and Unnatural Acts

6. French Classes Approved with Canadian Studies

- FREN 2021.03/FREN 2022.03: Langue et culture/Language and Culture (This is a multi-section class. Check with the French Department to determine which sections have Canadian content.)
- FREN 2203.03: Approches du texte littéraire/ Approaches to Literary Texts
- FREN 3025.03: Les Parlers acadiens: Introduction linguistique/ Linguistic Introduction to Acadian Dialectology

- FREN 3026.03: Le français québécois/Québec French
- FREN 3900.03/FREN 3901.03: La littérature canadienne-française/ French Canadian Literature
- FREN 3910.03: Études acadiennes/ Acadian Studies
- FREN 4902.03: Écrivains québécois contemporains/ Contemporary Quebec Writers
- FREN 4904.03: Écrivaines québécoises/Quebec Women Writers

7. Health Services Administration Classes

Approved with Canadian Studies

- HESA 4000.03: Canadian Health Care Delivery System
- HESA 4002.03: Health Human Resource Management
- HESA 4003.03: Quality Management
- HESA 4400.03: Introduction to Health Care Economics

8. History Classes Approved with Canadian Studies

- HIST 2211.03: Social History of Canada Before 1870
- HIST 2212.03: Social History of Canada Since 1870
- HIST 2221.03: Rough Justice: Order, Disorder and Canadian Popular Culture, to the 1890's
- HIST 2222.03: Rough Justice: Order Disorder and Canadian Popular Culture, 1890 to Present
- HIST 2230X/Y.06: Canada in the Twentieth Century
- HIST 2250.03: The Canadian West
- HIST 2261.03: True Believers 1914 to Present -- The Left and Right in Canadian Politics
- HIST 2271.03: Atlantic Canada to Confederation
- HIST 2272.03: Atlantic Canada since Confederation
- HIST 3220.03: Youth Culture in Canada, 1950's to 1970's
- HIST 3222.03: Topics in Canadian Social History, 19th and 20th Centuries
- HIST 3223.03: The Caring Society- Welfare in Canada Since 1900
- HIST 3226.03: Law and Justice in Canadian Society to 1890
- HIST 3227.03: Criminal Law, Crime and Punishment in Canadian Society, 1890 to the Present
- HIST 3228X/Y.06: Religion in Canada
- HIST 3245.03: French Canada
- HIST 3255.03: The Age of MacDonald and Laurier
- HIST 3273.03: Nova Scotia: Pre-Confederation
- HIST 3274.03: Nova Scotia: Post-Confederation
- HIST 3282.03: Public History
- HIST 3292.03: Wealth and Power in North America
- HIST 3302.03: Technology and History in North America
- HIST 3331.03: The United States, Canada and the World
- HIST 3370.03: North American Landscapes
- HIST 3750.03: History of Seafaring
- HIST 4222.03: Topics in Canadian Social History
- HIST 4271.03: The Fisheries of Atlantic Canada - Society and Ecology in Historical Perspective

PLEASE NOTE: 3000-level classes have prerequisites which apply to Canadian Studies students as well as History majors.

9. Journalism Classes Approved with Canadian Studies

- JOUR 3333.03: News Media and the Courts in Canada

10. Law Classes Approved with Canadian Studies

- LAWS 2123.03: Canadian Legal History (Note: This class cannot be used by non-Law students to obtain advanced standing.)

11. Music Classes Approved with Canadian Studies

- MUSC 3362.03: Music in Canada to 1950
- MUSC 3363.03: Music in Canada since 1950
- MUSC 3064.03: Women in Canadian Music

12. Political Science Classes Approved with Canadian Studies

- POLI 2210.03: Unity and Diversity: The Dynamics of Canadian Federalism
- POLI 2220.03: Political Power and Partisan Politics: Parliamentary Government in Canada

- POLI 3205.03: Canadian Political Thought
- POLI 3220.03: Intergovernmental Relationships in Canada
- POLI 3224.03: Canadian Political Parties
- POLI 3233.03: Canadian Political Economy
- POLI 3235.03: Regional Political Economy in Canada
- POLI 3251X/Y.06: Canadian Public Administration
- POLI 3570X/Y.06: Canadian Foreign Policy
- POLI 3571X/Y.06: The Politics of Contemporary Canadian Defence Policy
- POLI 4240.03: Policy Formulation in Canada
- POLI 4241.03: Introduction to Policy Analysis

13. Sociology and Social Anthropology Classes

Approved with Canadian Studies

- SOSA 2110.06: Exploring Canadian Society
- SOSA 3008.03: Canadian Society and Politics
- SOSA 3009.03: Public Opinion in Canada
- SOSA 3002.03: Native Peoples of Canada
- SOSA 3185.03: Issues in the Study of Native People

PLEASE NOTE: These classes are not offered every year. However, there are numerous Canadian content classes in the Department. Students should consult with the Chair and then with the Coordinator of Canadian Studies.

14. Theatre Classes Approved with Canadian Studies

- THEA 4500.03: Canadian Colonial Theatre
- THEA 4501.03: Canadian Post-Colonial Theatre

15. Mount Saint-Vincent Class Approved with Canadian Studies (with Letter of Permission)

- MSVU CANA 1100X/Y.06: Canadian Culture and Society

Chinese (Mandarin)

Location: Marion McCain Arts and Social Sciences Building
6135 University Avenue, Room 3021
Telephone: (902) 494-3473
Fax: (902) 494-7848

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Coordinator

Luo, Shao-Pin (494-3197), PhD (Univ of New Brunswick)

Class Descriptions

CHIN 1030X/Y.06: Introduction to Chinese (Mandarin).

This course 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

EXCLUSION: ASSC 2035.06X/Y

CHIN 2030X/Y.06: Intermediate Chinese (Mandarin).

For students with some background in Mandarin Chinese (placement test required), this course 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: 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): Luo, S-P

PREREQUISITE: CHIN 1030.06 or ASSC 1030.06 or equivalent (placement test required)

EXCLUSION: Native speakers of Chinese (any dialect)

Classics

Location: 6135 University Ave., Room 1172
Halifax, NS B3H 4P9
Telephone: (902) 494-3468
Fax: (902) 494-2467
Email: claswww@dal.ca
Website: www.dal.ca/FASS

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Hankey, W.J. (494-3468)

Undergraduate Advisor

MacLeod, L.M. (494-3468)

Professors Emeriti

Crouse, R.D., BA (Vind), STB (Harv), MTh (Trin), PhD (Harv), DD (Trin)
Friedrich, R., Dr. Phil. (Göttingen)
Starnes, C.J., BA (Bishop's), STB (Harv), MA (McGill), PhD (Dal)

Professors

Hankey, W.J., BA (Vind), MA (Toronto), DPhil (Oxon)

Associate Professor

House, D.K., MA (Dal), PhD (Liverpool)

Assistant Professors

Cohen, S.T., BA (Yale), MA (Cantab.), MA, PhD (Chicago)
Firanescu, D.R., PhD (Bucharest)
Fournier, M., BA, MA (Dal), PhD (Boston College)
MacLeod, L.M., BA (Brock) MA, PhD (Dal)
McGonagill, G.L., BA (Vind), MA (Dal), PhD (Harvard)
O'Brien, P.H., BA (Vind), MA (Dal), MA, PhD (BU)

I. Introduction

Classics is the study of origins - how the Christian-European tradition arose out of the ancient civilizations of the Mediterranean area. The fundamental ideas and beliefs of Europeans and North Americans, by which they are distinguished from Chinese, Indians, and those of other traditions, were formed in the meeting of Greek and Oriental cultures in ancient times. To understand fully contemporary Western culture, we must study its historical origins. The Department of Classics actively encourages students of all backgrounds and traditions to participate in the study of the classical heritage.

Such an understanding of the unique aspects of Western culture is most important in the contemporary world where all cultures have come into relation with one another.

To understand fully the assumptions and ideas of western civilization, we have to go back to their original formulation. Western literary forms, the shape of western political and social institutions, such disciplines as Philosophy, History, and many of the Natural Sciences all originated and took shape in the ancient cultures of Greece and Rome.

Classics is thus more than the study of ancient languages. Languages are not learned for themselves, but because they are necessary for the scientific study of ancient history, literature, religion, mythology and philosophy. The Classics Department at Dalhousie provides instruction both in these subjects and in ancient languages. While previous preparation in one or more ancient languages is desirable, it is nevertheless quite feasible for students who discover an interest in classics to begin their language studies at university.

Students of classics must learn Greek and Latin if they wish to take an honours degree or to go on to graduate studies in the field, but the Department offers a variety of classes in Greek and Roman Literature, Ancient and Medieval Philosophy, Ancient and Christian Religion, and general Classical Culture, which do not require a foreign language.

Classics is worth studying for its own sake by students who wish to obtain a better understanding of the common assumptions and beliefs of Western society. This knowledge has always been regarded as pertinent to a career in politics and the higher levels of the civil service. For those who are thinking of the clergy, Classics is the most relevant preparation. Classical studies also prepare students for a life of teaching and scholarship in several directions. Canada is responsible for its own culture, and we have great need of scholars and teachers who know about its origins. Classics is also the best preparation for the study of non-European cultures (Chinese, Indian, Islamic, etc.), and there is a growing need for specialists in these fields. For the older history of philosophy, and for the history of Christian belief until, and including, the Reformation, a knowledge of Classics is indispensable. The same may be said for Medieval Studies. Classics leads also to ancient Near Eastern Studies (Jewish, Babylonian, Egyptian, etc.) and to Archaeology.

II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. BA Honours in Classics (20 credits)

The candidate may choose between three programs: BA with Honours in Classics (Ancient Literature), BA with Honours in Classics (Ancient History), or BA with Honours in Classics (Ancient Philosophy). In each case, it is highly desirable, but not essential, that the student begin the study of at least one of the classical languages during the first year of study. 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 9-11 credits in Classics at the 2000 level or above. From these credits, students must take the following:

- 5 credits in Greek and Latin (2 in one; 3 in the other). Students may choose from: Greek: 1700/2710; 2700; 3700 or any other upper level course offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level course offered in Latin.
- 3 credits at the 3000 level or higher
- completion of the Honours Examination (Classics 0400.00)

Whether the Honours degree is awarded in Ancient Literature, History or Philosophy depends on the area of the Department's offerings in which a larger part of the work is done.

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 Combined Honours in Classics (20 credits)

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 5-7 courses in Classics at the 2000 level or higher. From these credits, students must take the following:

- 3 credits in Greek and/or Latin. Students may choose from:
- Greek: 1700/2710, 2700, 3700 or any other upper level course offered in Greek. Latin: 1800/2810; 2800; 3810 or any other upper level course offered in Latin.
- 2 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 with Major in Classics (20 credits)

Students must complete the faculty requirements for a major. These requirements include 6-9 credits in Classics at or above the 2000 level; and 3 credits at the 3000 level or higher. Students are encouraged to take two language classes in Greek and/or Latin.

D. BA with Double Major in Classics (20 credits)

Students must complete the faculty requirements for a double major. These include 10-13 credits in the Major subjects at the 2000 level or higher with no more than 9 and no fewer than 4 in either. Students must include at least 2 credits at the 3000 level or higher in each subject.

E. BA with Concentration in Classics (15 credits)

Students must complete the faculty requirement, which include 4-8 credits in Classics at or above the 2000 level, and 2 credits at the 3000 level or higher.

The Department is glad to assist students in working out programs according to their interests.

Note: The following classes satisfy the first-year writing requirements for a degree: CLAS 1000X/Y.06; CLAS 1010X/Y.06; CLAS 1100X/Y.06

The programs of all students majoring or honouring in the Department must be approved by the Undergraduate Advisor.

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 73 of the calendar.
4. Classes in Ancient Hebrew are sometimes available as electives at the discretion of the Department, only in relation to the needs of the particular students.

CLAS 0400.00: Honours Examination.

Details available from the department.

PREREQUISITE: CLAS 2710X/Y.06 or CLAS 2810X/Y.06

CLAS 1000X/Y.06: Epic, Drama and Philosophy: A Survey of Greek and Roman Literature.

An introduction to classical literature read in English translations. Authors studied are Homer, Hesiod, the Greek Tragedians, Plato, Vergil and St. Augustine. This class meets 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

CLAS 1010X/Y.06: Ancient History: An Introduction to the History of the Ancient World.

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 course 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: 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 plus tutorials

CLAS 1100X/Y.06: Classical 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): Staff

FORMAT: Writing Requirement, Lecture

CROSS-LISTING: RELS 1100X/Y.06

CLAS 1700X/Y.06: Introductory Ancient Greek.

An introduction to Ancient Greek through the study of its basic grammar. This class introduces the student in a systematic way to the most common and important elements of Classical Greek grammar. The aim of the class is to bring the student by the end of the year to read connected passages from Xenophon and other Greek prose writers. Students contemplating honours or combined honours should register in 2710X/Y.06, not 1700X/Y.06

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

CLAS 1800X/Y.06: Introductory Latin.

An introduction to Latin through the study of its basic grammar. The aim of the class is to enable students to read Latin texts with the assistance of nothing more than a Dictionary. Students contemplating honours or combined honours should register in 2810X/Y.06, not 1800X/Y.06.

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 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 2000X/Y.06: Epic, Drama and Philosophy. A Survey of Greek and Roman Literature.

An introduction to classical literature read in English translations. Authors studied are Homer, Hesiod, the Greek Tragedians, Plato, Vergil and St. Augustine. This class is the same as CLAS 1000.06 and may therefore not be taken by anyone who has taken that class.

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: Lecture

CLAS 2100X/Y.06: Classical 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: 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): Staff

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

EXCLUSION: CLAS 2210X/Y.06, HIST 2004X/Y.06

CLAS 2214.03: Greek Culture from Palace to Polis.

A history of Archaic Greek culture from the Bronze Age palaces of Crete and Mycenae through the Persian Wars. Topics to be discussed will include the development of the distinctive Greek polis, oral poetry, religion, philosophy, colonization, and cultural interrelationships between the Greek world, the Near East, and Egypt. No knowledge of Greek is expected.

INSTRUCTOR(S): G. McGonagill

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: Greece in the 5th Century B.C.

This course examines the forces that shaped and undermined Athenian culture during the period from the Persian Wars through the execution of Socrates. 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: Greek Culture from Polis to Cosmopolis.

A history of Hellenistic culture from the end of the Peloponnesian Wars through the empire of Alexander the great. Topics to be discussed include relations between and among the Greek city-states and the Persian Empire, developments in art, religion, literature, and philosophy, and the career, both in his life and after it, of Alexander the Great.

INSTRUCTOR(S): G. McGonagill

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 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 neighbors 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/COMR 2220.03

CLAS 2231.03: The Rise of Rome: 1000-31 BCE.

This course will trace the history of Rome from its origins as a minor Latin town to its dominance over the entire Mediterranean basin. We will consider the causes for this success as well as the strains this expansion placed on the political structure of the city itself, and the inevitability of both Rome's rise and the Republic's fall will be called into question. Students will become familiar with both primary materials (the art, artifacts, literature and history of the Romans themselves) and with later scholarly interpretations of this material. No knowledge of Latin is required.

INSTRUCTOR(S): S. Cohen

FORMAT: Lecture

PREREQUISITE: Prior fulfillment of the writing requirement

CROSS-LISTING: HIST 2090.03

CLAS 2232.03: The Roman Empire: Cycles of Collapse and Rebirth.

This course will cover the origins and collapse of the Roman Empire as well as its survival in the barbarian states of the west and the Byzantine Empire. We will begin with the origins of autocracy in the period of the civil wars and the creation of the Principate during the reigns of Augustus and his successors. Among the major questions considered in this course will be the validity of the "decline and fall" model for the history of the Roman Empire and the success of the Principate in limiting civil strife. We will trace the political and social changes which occurred during this period, including the growth of urban society in the Western Empire and the greater integration of the East into the Roman state and, of course, the adoption of Christianity and its effect on the empire. Students will be expected to familiarize themselves with both primary and secondary materials, but no knowledge of Latin is required.

INSTRUCTOR(S): S. Cohen

PREREQUISITE: Prior fulfillment of the writing requirement

CROSS-LISTING: HIST 2091.03

CLAS 2361.03: Ancient Philosophy from its Beginning to the Sixth Century AD.

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.

FORMAT: Lecture

CROSS-LISTING: PHIL 2361.03

CLAS 2362.03: Ancient Philosophy from its Beginning to the Sixth Century AD.

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.

FORMAT: Lecture

CROSS-LISTING: PHIL 2362.03

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: 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: Seminar

PREREQUISITE: CLAS 1700X/Y.06 or 2710X/Y.06

CLAS 2710X/Y.06: Greek Prose.

See description under CLAS 1700X/Y.06. Students contemplating honours or combined honours should register in 2710X/Y, not 1700X/Y. For additional information, please consult the Classics undergraduate advisor.

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: 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: 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: Seminar

PREREQUISITE: CLAS 1800X/Y.06 or 2810X/Y.06

CLAS 2810X/Y.06: Latin Prose.

See description under CLAS 1800X/Y.06. Students contemplating honours or combined honours should register in 2810X/Y, not 1800X/Y. For additional information, please consult the Classics undergraduate advisor.

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: 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.

ENROLMENT: Maximum of 20

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: CLAS 1901.03 and 1902.03 or equivalent

CLAS 3015X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judaeus to Dante.

The class proceeds by way of places and uses art, history, and selected philosophical, religious, and literary texts to consider the meetings of Hellenism, Judaism, Christianity, and Islam in them. Beginning in Alexandria and Palestine, the class will proceed by way of Rome, Constantinople, Hippo in North Africa, Athens, Ravenna, Pavia, Baghdad, Toledo, Aix-la-Chapelle, Cordoba and Granada, Naples, Monreale, Palermo, Paris, Burgos, and Florence. Texts from which selections may be chosen will include *Septuaginta*; Philo, *Commentary on Genesis* (Loeb); New Testament; Plotinus, *Enneads*; Augustine, *City of God* and *Confessions*; Proclus, *The Platonic Theology*; Dionysius, *The Mystical Theology*; Boethius, *The Consolation of Philosophy*; *The Liber de causis*; Averroes, *The decisive treatise*; Moses Maimonides, *The Guide of the Perplexed*; Aquinas, *On the Unity of the Intellect*; Dante, *The Divine Comedy*.

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): W.J.Hankey

FORMAT: Lecture

CROSS-LISTING: HIST 3015, RELS 2004

EXCLUSION: CLAS 2300

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. This class is open to first-year students. There is no foreign language requirement.

FORMAT: Lecture and 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 3280X/Y.06: Christian Beginnings and the Early History of the Church.

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: Seminar

CLAS 3300X/Y.06: Pagan and Christian Schools from Clement of Rome to Augustine.

The class considers the mutual effect of pagan and Christian intellectual, spiritual and institutional forms on one another in the first four centuries of the Common Era. In particular it treats the way in which the pagan schools and the Christian church mirror one another: the common elements and their opposed systematic relations. Students will ordinarily have some background in Ancient History and Philosophy.

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): W.J. Hankey

FORMAT: Lecture

CLAS 3370X/Y.06: The Augustinian Tradition.

The class considers the effect of Augustine on the philosophical and theological thought of late Antiquity and the Middle Ages.

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): W. J. Hankey

FORMAT: Lecture

CLAS 3380X/Y.06: Medieval Philosophy.

A study of texts written in the Middle Ages of Latin Europe selected to illustrate the development of philosophy in the period. Three texts will normally be read in their entirety: Boethius, *The Consolation of Philosophy*, Anselm, *Proslogion*, Bonaventure, *Itinerarium Mentis in Deum*. Selections from other works will normally include Augustine, *De Quantitate Animae*, Eriugena, *Periphyseon*, Aquinas, *Summa Theologiae*.

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): W.J. Hankey

FORMAT: Lecture

CROSS-LISTING: PHIL 2380X/Y.06

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 *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: 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: Seminar

CLAS 3410X/Y.06: St. Augustine's Confessions.

A study of the three parts of Augustine's *Confessions* with a view to understanding his dissatisfaction with the various positions he adopted prior to his conversion to Christianity (Part I), the practical consequences of this conversion (Part II), and the new theoretical understanding of time, space and motion which come out of his Trinitarian exegesis of the first chapters of Genesis (Part III). This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latin. This class is given alternately with CLAS 3420X/Y.06.

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: Seminar

CLAS 3420X/Y.06: St. Augustine's City of God.

A study of Augustine's account of the failure of the Roman Empire and of the new Christian 'city' that replaced it. The class sometimes concentrates on a definition of the new Christian state in second part (books XI to XXII) of the *City of God* and sometimes begins with a study of earlier accounts of Rome (Aeneid), and of the relations of Rome and the church in, for example, the Apostolic Fathers, the Acts of the Martyrs and Tertullian, before turning to the first ten books of the *City of God*. This class is given alternately with CLAS 3410.06.

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: Seminar

CLAS 3430X/Y.06: St. Augustine's On the Trinity.

A study of the 15 books of Augustine's *De Trinitate*. The first term will concentrate on Books 1-7 in which he establishes what is the orthodox teaching about God through Scripture and a consideration of the categories of substance, relation and act. The second term examines Books 8-15 in which he attempts to understand what has been shown in the first 7 books through the distinction of *scientia* and *sapientia*. The class presupposes some knowledge of the history of ancient philosophy (especially Aristotle & Neo-Platonism) and some of Latin.

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: Seminar

PREREQUISITE: Knowledge of the history of Ancient Philosophy and Latin

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: 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/seminar

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 course 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 course 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 humour; 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 course 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: Caliphs and Khans: Islamic Civilization in the 'Abbasid and Mongol Age (750-1400).

Please see description for HIST 3509 in the History section of this calendar.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2502 or 2503 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 in the History section of this calendar.

INSTRUCTOR(S): C. Mitchell

FORMAT: Lecture/discussion

PREREQUISITE: HIST 2502 or 2503 or CLAS 1010X/Y.06 or permission of instructor

CROSS-LISTING: HIST 3511.03

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: 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: 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: 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: 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: 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: 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: 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: Seminar

PREREQUISITE: CLAS 3700X/Y.06

CLAS 3750X/Y.06: Greek Authors.

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: Seminar

PREREQUISITE: CLAS 3700X/Y.06

CROSS-LISTING: PHIL 3750X/Y.06

CLAS 3760X/Y.06: Reading and Research of Greek Texts.

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: Seminar

PREREQUISITE: CLAS 3700X/Y.06

CLAS 3780X/Y.06: Greek Historians.

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: Seminar

PREREQUISITE: CLAS 3700X/Y.06

CLAS 3800X/Y.06: Roman Satire.

This course 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: 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: 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: 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: Seminar

PREREQUISITE: CLAS 2800X/Y.06

CROSS-LISTING: CLAS 5040X/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: 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: 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: 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): 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: 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: 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'. Given alternately with CLAS 3910X/Y.06.

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): 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: 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): W.J. Hankey

FORMAT: Seminar

CLAS 4060.03: Boethius and Prosimetrum: Poetry and Prose in the Consolation of Philosophy.

Boethius's Consolation is a strange example of Menippean satire, which is itself a strange genre. This class will consider the poetry, the prose and, most significantly, how these elements are combined in order to achieve the goal of the work, which is to offer consolation to the reader.

FORMAT: Seminar

PREREQUISITE: Three years of undergraduate Latin or the permission of the instructor

CLAS 4070.03: A Study of the Latin text of Augustine's Confessions.

Approaches the thought of St. Augustine through a study of various literary, philosophical and spiritual aspects of the Latin text of his *Confessions*.

INSTRUCTOR(S): M. Fournier

FORMAT: Seminar

PREREQUISITE: CLAS 3810 or the permission of the instructor

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: 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): 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: 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): W.J. Hankey

FORMAT: Seminar

CLAS 4500X/Y.06: Seminar on Neoplatonism.

The class considers the origin and nature of Greek Neoplatonism. Given alternately with CLAS 4450X/Y.06.

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): 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: 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: 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: 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: Seminar

CROSS-LISTING: CLAS 5530X/Y.06

CLAS 4535X/Y.06: Rome and the East.

This class will consider relations between Rome and her eastern neighbors -- the Parthians and the Sasanians -- from 53 B.C. To A.D. 628. It will examine the development of Roman policy in the region from the establishment of imperial control in the Near East to the costly wars of the early Byzantine period. Consideration will also be given to the Parthian and Persian kingdoms and to the frontier region.

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/seminar

CROSS-LISTING: HIST 4110X/Y.06, HIST 5110X/Y.06, CLAS 5535X/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

CLAS 4545.03: Roman Culture and Roman Politics in the Transition to Autocracy.

A study of the cultural and political history of Rome during the Principate of Augustus; we will focus on the reformation of Roman elite culture during this period in light of the intellectual traditions of the Late Republic and the cultural politics of the age of Principate.

INSTRUCTOR(S): S. Cohen

FORMAT: Seminar

PREREQUISITE: CLAS 2205, 2231, 2232 or permission of instructor

CROSS-LISTING: CLAS 5545

CLAS 4580X/Y.06: Reading and Research.

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.

CLAS 4680.03/4690.03: Reading and Research.**CLAS 4710.03/4720.03: Special Topics.****CLAS 4800X/Y.06: Reading and Research.**

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.

CLAS 4810.03/4820.03: Special Topics.**CLAS 4850.06: Reading and Research.****CLAS 4900X/Y.06: Departmental Seminar.**

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: Seminar

CLAS 4910X/Y.06: Departmental Seminar.

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: Seminar

Community Design

Contact Person:	Dr. Marian Binkley
Location:	Faculty of Arts and Social Sciences
Telephone:	494-1439

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.

II. Curriculum

A. Required Classes

Students must complete PLAN 1001.03 Introduction to Community Design and PLAN 1002.03 Introduction to Community Design.

And either:

PLAN 2001.03: Landscape Analysis, or PLAN 2002.03: Community Design Methods.

For course descriptions, see Faculty of Architecture and Planning, School of Planning section in this calendar.

B. Elective Requirements

Seven additional half credit classes (21 credit hours) in PLAN classes for the Community Design Minor.

Not all classes are offered every term. Please consult the university timetable for current listings.

- PLAN 2005.03: Community Design Context
- 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 Information
- PLAN 3020.03: Landscape Design
- PLAN 3025.03: Representation in Design
- PLAN 3030.03: Site Planning
- PLAN 3040.03: Reading the Suburbs
- PLAN 3045.03: Communication Design Practice
- PLAN 3050.03: Topics in Community Design
- PLAN 3055.03: Computers in Community Design and Planning
- 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 4108.03: History and theory of landscape architecture
- PLAN 4111.03: Housing theory

Contemporary Studies

Location: University of King's College
Halifax, NS B3H 2A1
Telephone: (902) 422-1271
Fax: (902) 423-3357
Website: www.dal.ca/FASS

Dean

Binkley, M.E., BA, MA, 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)
Burns, S., BA (Acadia), MA (Atla), PhD (London)
Edwards, E., BA, MA (Dal), PhD (Cantab)
Elson, C., BA (Vind), MA (Dal), DEA, Doctoral (Paris-IV)
Glowacka, D., MA (Wroclaw), MA, PhD (SUNY)
Heller, M., BA (LU and Dal), MA (Dal), PhD (UI & U)
Kierans, K., BA (McGill), DPhil (Oxon)
McQuat, G., BA, MA, PhD (Toronto)
Robertson, N., BA (Vind), MA (Dal), PhD (Cantab)
Thibodeau, M., BA, MA, PhD (Universite de Montreal)

Teaching Staff at Dalhousie University

Bingham, J., BA (UNB), MA (Toronto), PhD (York)
Haslam, J., BA, MA (McGill), PhD (Waterloo)121

I. The Contemporary Studies Program

Our assumptions about the contemporary world are not only changing but becoming increasingly diverse and complex. One way in which we can reasonably try to make sense of our period as a whole is to combine into a single course of study several different disciplines and traditions of enquiry. To this end, Dalhousie University and the University of King's College jointly offer an interdisciplinary program in Contemporary Studies (CSP). This combined-honours BA program brings together departmental offerings in arts and social sciences at Dalhousie and joins them with Contemporary 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 the contemporary world.

The interdisciplinary offerings within the Contemporary Studies Program at King's count as one of two honours subjects. Contemporary Studies classes are designed so that important writers and artists of the twentieth century may be considered both on their own terms and in relation to some of the fundamental themes of our time. This often involves a consideration of the differences between these writers and artists and those of the nineteenth century. 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 diverse aspects of these often contradictory contemporary phenomena.

Aside from preparing undergraduates for more specialized future training at the graduate or professional level, the Contemporary Studies Program is intended to provide them with a broad overview of twentieth-century culture, especially the European and North American manifestations of it. Students are encouraged to relate the various aspects of contemporary thought to one another and to develop independent insights into the

nature of the world in which they live. It is also hoped that Contemporary Studies Program students will take an active role in organizing certain events each year, including lectures, debates, and exhibitions.

II. Degree Programs

The departmental offerings at Dalhousie, within the Contemporary Studies Program, 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: Classics, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Russian, Sociology and Social Anthropology, Spanish, Theatre or any of the BSc Honours subjects. Electives may be taken in any of the above-mentioned departments and programs as well as Canadian Studies, Comparative Religion, Early Modern Studies, History of Science and Technology and Linguistics. 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.

Combined Honours

All students must meet the distribution 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 in it is higher than that required in a 15-credit concentration 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 (beyond the “Degree Requirements” above) 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 1000X/Y.06, CLAS 1010X/Y.06, CLAS 1021.03 and CLAS 1022.03, CLAS 1100X/Y.06;
 - Comparative Religion: COMR 1000X/Y.06, 2000X/Y.06;
 - English: ENGL 1000X/Y.06;
 - History: HIST 1004X/Y.06, HIST 1501.03, HIST 1502.03, HIST 1862X/Y.06, HIST 1867X/Y.06
 - 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;
 - 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 normal requirement of eleven full classes beyond the 1000-level in the two honours subjects, but not more than seven full classes being in either of them. Students may, with the approval of both the Dalhousie department concerned and the Contemporary Studies teaching staff, elect a maximum of thirteen full classes in the two principal subjects, not more than nine full classes being in either of them. In this case, the requirement in (3) below is reduced to two or three full classes.
3. Four full elective classes in subjects other than the two offered to satisfy the general requirement that students complete fifteen full classes beyond the first year of study.
4. The three “core” classes in Contemporary Studies: CTMP 2000.06, CTMP 3000.06, CTMP 4000.06.

5. An honours qualifying examination. 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.

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 the course of study. 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.

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 5 full credits) prior to enrolment.

NOTE: Many of these classes are not offered every year. Please consult the current timetable to determine whether classes are offered.

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, application to graduate school and scholarships..

PREREQUISITE: Approval of Director required.

CTMP 2000X/Y.06: Modern Social and Political Thought.

This class will examine some of the most important debates in modern social and political thought. The twentieth-century context of these debates will be explored, but the class will also highlight ideas and developments in the nineteenth century. Particular attention will be paid to changes in music and painting during this period. Writers to be considered include Kant, Marx, Nietzsche, Heidegger, Derrida, Foucault, and Habermas. Movements to be discussed include German Idealism, Romanticism, Marxism, Existentialism, Phenomenology, Structuralism, and Post-Structuralism.

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 2010X/Y.06/CTMP 3010X/Y.06/CTMP 4010X/Y.06: The Lecture Series.

Each year 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 thirteen bi-weekly evening lectures given by specialists from Atlantic Canada and beyond. The lecturers will offer students reflections on a number of contemporary issues and themes. Each year a different theme will be explored.

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): Staff

FORMAT: Seminar/evening lectures

CROSS-LISTING: EMSP 2010/3010/4010, HSTC 2010/3010/4010 - for the 2003/2004 academic year only

CTMP 2100.03: Revolution, Politics, History I.

The French Revolution transformed the whole range of political institutions as well as the whole vocabulary of political relations in the

West. This class explores some of the most important themes of moral and political life in the period of the French Revolution, with emphasis not only on the origin of revolutionary thought, but on its continuing influence in our own time. The class considers a number of writers including Rousseau, Kant, Fichte, and Constant. We examine these writers both on their own terms and in relation to present-day debates about the tendency and result of revolutionary political thought. Literary and artistic works are studied to supplement lectures and class discussions.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

CTMP 2101.03: Revolution, Politics, History II.

This class studies the revolutionary nature of political and cultural change in the nineteenth century. We begin with an examination of Hegel's philosophy and its relation to politics and religion in the modern world. We then discuss how Feuerbach and others of his generation rejected - or reworked - Hegel's concept of modernity, and continue with an assessment of Marx and Kierkegaard. The class considers the ways in which these and other nineteenth-century writers have shaped present-day debates about the nature of revolutionary change in the modern world. Literary and artistic works are used to supplement lectures and class discussions.

INSTRUCTOR(S): K. Kierans

FORMAT: Lecture/tutorial

CTMP 2121.03: Structuralism and Poststructuralism I.

Broadly speaking, structuralism represents a method of investigating how language produces meaning. What we now call "poststructuralism" refers to an influential strain of critical theory that rejects certain totalizing aspects of classical structuralism while extending and radicalizing the structuralist account of language. Through the study of texts by de Saussure, Levi-Strauss, Barthes, Lacan, Althusser, and the early Foucault, this course will focus mainly on aspects of the structuralist framework. Derrida's poststructuralism, however, will also be introduced.

INSTRUCTOR(S): M. Thibodeau

CTMP 2122.03: Structuralism and Poststructuralism II.

Designed as a continuation of Structuralism and Poststructuralism I, this course will focus primarily on developments in poststructuralism, especially in the work of Derrida, Kristeva, Iragaray, Lyotard, Deleuze, and the later Foucault.

INSTRUCTOR(S): M. Thibodeau

CTMP 2140.03: Culture & Politics in the Weimar Republic , 1919-1933.

The history of the Weimar Republic has assumed mythic proportions in the last sixty years. Founded in defeat and revolution after the unprecedented barbarity of the First World War, Weimar brought a brief flowering of the arts, of democracy, and of modernity before being snuffed out in the darkness that became the Third Reich. Much of German thought and art produced in the republic remains fundamental to understanding the contemporary West; Weimar's turbulent end is often evoked as a salient warning against mass complacency and the dangers of antidemocratic politics. This course delves beneath the surface of the myths to explore the daily experiences of Germans after the Great War: their ultimately futile hopes of a return to prewar prosperity, their fears of national decline; their uneasy fascination with their great cities and the transformations wrought by modernity; and their analyses of their culture and time that remain penetrating and poignant to this day.

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/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): P. Heller
FORMAT: Lecture/tutorial

CTMP 2190.03: The Thought of Ludwig Wittgenstein.

Ludwig Wittgenstein (1889-1951) is one of the most influential 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 2111.03

CTMP 2200X/Y.06: History of Modern Science.

This class will be an introduction to the history of modern science, from its beginnings in the Scientific Revolution up to the institutions and professions of twentieth-century "Big Science". Going beyond a straight history of scientific "ideas", we shall examine the social and cultural place of science and its claim to overarching truths in each historical period. Students will be required to research an historical paper and participate in small tutorials.

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): G. McOuat
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 and Ian Hacking to Chomsky and Steven Pinker, this course will examine the recent political, moral and existential issues raised by attempts to answer that question. Topics will include feral children, evolutionary psychology, the construction of human kinds, hypnosis, the placebo effect, genetic screening, bio-engineering, animal minds, the commodification of life, and the spectre of determinism.

INSTRUCTOR(S): Staff
FORMAT: Lectures and student workshops
CROSS-LISTING: HSTC 2206.03

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 Célan 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, Milosz, Célan, 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 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 2310.03: From the Postmodern to the Extreme Contemporary: 25 years of French Culture in the World.

This class considers the negotiation with post-modernity occurring in 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 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 2321.03: The Question of the Other I.

The dominant politics of representing otherness have been recently re-evaluated by philosophers, cultural critics, and writers of fiction. This class traces the development of that re-evaluation, beginning with Hegel's famous "Master and Slave" dialectic through existentialist and psychoanalytic theorists. Particular attention will be paid to articulations of alterity by women and black writers.

INSTRUCTOR(S): P. Heller
FORMAT: Seminar

CTMP 2322.03: The Question of the Other II.

"The Question of the Other I" is not required.

This class examines some of the contemporary theories that have addressed the issue of alterity and focuses on non-appropriative ways of approaching the other in discourse. We will raise questions such as what it means to live with others and to act responsibly in relations with others. The readings include theoretical material (Heidegger, Levinas, Benhabib,

Trinh T. Minh-ha, Kristeva) as well as literature (Gloria Anzaldua, Tomson Highway, G.E. Clarke and Canadian multicultural fictions, and others).
INSTRUCTOR(S): D. Glowacka
FORMAT: Seminar

CTMP 2330.03: 'Memento mori': 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 comprehended as imparting meaning and structure on life. The focus will be on contemporary confrontations with "pure negativity" and different thinkers' attempts to articulate death as an ontological condition. We will also trace the changing conceptions of death in the face of the dissolution of unified theological and moral systems in the 20th century. In addition, we will hold three seminars on representations of death in contemporary poetry, art, and film.

INSTRUCTOR(S): D. Glowacka

FORMAT: Lecture/Seminar

EXCLUSION: CTMP 3411.03 for the 2004/2005 academic year only

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 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 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 explode 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: 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): G. McOuat

FORMAT: Lecture/tutorial

PREREQUISITE: CTMP 2000.06 or permission of instructor

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 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 3120.03: 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 2010.03/3010.03/4010X/Y.06; The Lecture Series for 1997/1998 only

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. Thibodeau

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): M. Thibodeau

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 endeavor 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 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. McOuat

FORMAT: Seminar

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

EXCLUSION: Former CTMP 2110.03

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: HSTC 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

RESTRICTION: Second year and above

CTMP 3220.03: The Aesthetics of Nature.

In the 18th century, aesthetics was considered to have two branches, the aesthetics of nature and the aesthetics of art. Following its peak at the end of the 18th century, the aesthetics of nature went into a gradual decline and, by the middle of the 20th century, was almost totally eclipsed by the aesthetics of art. With the emergence of environmental philosophy during the latter decades of the 20th century, natural aesthetics revived as the central focus of environmental aesthetics. Environmental aesthetics extends beyond the narrow confines of the art world and beyond the appreciation of works of art to the aesthetic appreciation of the world at large. The world at large not only includes individual objects but landscapes, environments (both natural and human constructed) and ecosystems. In this course, we will focus on the part of environmental aesthetics that considers the aesthetic appreciation of the natural world. The renewed interest in the aesthetics of nature is, in part, a response to the need for a new paradigm of aesthetic appreciation that is no longer limited to the old paradigm of detached contemplation of sensuous and formal properties. We will consider the two most important approaches towards a new aesthetics of nature: the cognitive and the engagement. The cognitive approach stresses the importance of science in the aesthetic

appreciation of nature. The aesthetics of engagement, on the other hand, advocates an open, engaging, and creative appreciation of nature. We will also consider several other approaches that grant a significant role to qualities and considerations like emotion, imagination and ethics in the aesthetic appreciation of natural environments.

INSTRUCTOR(S): S. Boos

FORMAT: Lecture/seminar

EXCLUSION: CTMP 3415.03 for the 2005/06 academic year only

CTMP 3321.03: Representations of the Holocaust I: Bearing Witness.

At the time when the Holocaust recedes into history, the imperative to "never forget" acquires new urgency. In this class, we will focus on various, often disparate, modes of talking about the unspeakable and explore the ethical implications of the writer's effort to convert it into a story. Can horror be accommodated in discourse? 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 and excerpts from Holocaust diaries written in the ghetto. In addition, we will consider the attempts of prominent contemporary thinkers to account for the genesis of the Holocaust and to prompt philosophy to confront the Holocaust. 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 II: Remembrance.

"Representations of the Holocaust I" is not required.

Basic knowledge of Holocaust facts and some familiarity with Holocaust literature is required.

This class focuses on the stories recounted significantly later than the well-known classics of Holocaust literature. Of special interest are accounts of child survivors of the Holocaust and the struggle of survivors' children to reckon with the burden of their parents' past. We will evaluate the ideal of individual moral responsibility postulated by these texts as well as assess the recent commercialization of the Holocaust in literature and film.

Finally, we will look at the current phenomenon of Holocaust denial, with emphasis on anti-Semitism and white supremacy movements in Canada. The class includes excerpts from films (such as Lanzmann's *Shoah*), documentaries, and other video-taped material, and illustrated lectures on Holocaust art. Guest speakers will be invited for lectures, recollection, and discussion.

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

EXCLUSION: CTMP 3415.03 for the 2004/2005 academic year only

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: Postmodern Strategies in Literature by Women.

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 women's subjectivity has always been constructed through male-oriented processes of signification. The works of fiction covered in this class, by Angela Carter, Daphne Marlatt, Dionne Brand, Ntozake Shange, 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 Judith Butler, Drucilla Cornell, bell hooks and Gayatri Spivak. The class includes video-taped material and slide-shows of postmodern feminist art.

INSTRUCTOR(S): D. Glowacka

FORMAT: Seminar

CROSS-LISTING: GWST 3350.03

CTMP 3410.03: Studies in Contemporary Social and Political Thought in the 20th Century.

Topics vary each year. Some of the topics are "Liberalism and Multiculturalism."

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 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. Some of the topics are "Environmentalism," "Time," and "Feminism and Nature."

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. Some of the topics are "Contemporary Theory and Mass Media", and "The Aesthetics of Death."

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 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 in the Twentieth Century.

This class focuses on twentieth-century thinkers and writers who have questioned the fundamental concepts of Western philosophy such as identity, subject, representation, truth, or origin. What they all have in common is abandoning dialectical, totalizing models of thinking in favour of pluralistic discourses that can accommodate radical heterogeneity. The recurrent themes of the class are: relations between philosophy and literature, intersections between the philosophical notions of ethics and aesthetics, and viability of deconstruction for political and cultural praxis. The readings include theoretical texts (Benjamin, Heidegger, Derrida, Irigaray, bell hooks, Lyotard, Levinas, Agamben, Nancy) and some works of fiction (Kafka, Borges, Camus). The class provides students with excellent opportunities to study challenging texts and strengthen their skills in independent, critical thinking.

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. 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 4115X/Y.06: Language and Politics: The Linguistic Turn in Contemporary Political Thought.

The dominance of an individualistic liberalism in Anglo-American political thought has recently come to be challenged by a number of communitarian political thinkers (e.g. Charles Taylor, Alisdair MacIntyre and Michael Sandel). This class seeks to elucidate the sources and development of communitarian political thought by considering its grounding in twentieth-century philosophy of language and its relation to developments in continental political philosophy.

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): N. Robertson

FORMAT: Seminar

CTMP 4120X/Y.06: The Critique of Culture in Twentieth-century French Thought.

This class explores some of the key figures and movements in French intellectual life in this century. The class traces the evolution of French thought from the revolutionary humanism of the 1930s to the nihilism and scepticism dominant since the 1960s. The class deals in turn with the philosophy of the early French Hegelians, Sartre, Merleau-Ponty, the structuralists, Foucault, Derrida, Deleuze and Lyotard. Certain literary and artistic works are also considered. The effort throughout is to relate

the philosophical history of the period to political and cultural developments which have helped to shape French intellectual life.

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 4130.03: The Frankfurt School: Critical Theory from Horkheimer to Habermas.

The Frankfurt School refers to the work of the members of the Institut für Sozialforschung, which was founded in Frankfurt, Germany, in 1923, as the first Marxist-oriented research centre affiliated with a major German university. Following Hitler's rise to power, and the emigration of most of its prominent members to the U.S.A., the Institute for Social Research became associated with Columbia University from 1931 until 1949, when key members, like Max Horkheimer and Theodor Adorno, returned to Germany. From 1936, the Institute referred to its task as the "critical theory of society." 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 Jürgen 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 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 polarising 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): G. McOuat

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): G. McOuat

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 attack 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): P. Heller

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): P. Heller

FORMAT: Seminar

CTMP 4330.03: Ethics after the Holocaust.

Shortly after World War II ended, thinkers such as Hannah Arendt, Theodor Adorno, and Martin Buber reflected on the causes of the Jewish genocide and its impact on humanity. It has taken decades, however, for others (such as Emil Fackenheim, Jurgen Habermas or Jacques Derrida) to confront "Auschwitz." Philosopher and theologian Emil Fackenheim once wrote that Auschwitz is a "rock on which throughout eternity all rational explanation will crash and break apart." In this course, we will inquire into the challenges the Holocaust has posed to philosophy, ethics in particular, and into the causes of this silence. The thinkers discussed in this course reflect on the collapse of traditional ethical systems in the death camps. 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. Topics vary each year. Some of the topics are "Habermas", "Hannah Arendt", "Contemporary Marxism", and "Adorno."

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. 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. Some of the topics are "Actor-Network Theory", "Technological Determinism", "Bruno Latour", and "Cyborgs".

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. 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. Some of the topics are "Roland Barthes", "Michel Foucault."

NOTE: No more than two special topics classes (one full credit) can be taken for credit towards the Contemporary Studies Program. 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 course of study.

Costume Studies

Website: www.dal.ca/FASS

See Theatre, page 233

Early Modern Studies Program

Location: University of King's College
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I. Early Modern Studies Program

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 a Combined Honours BA program 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 16th to the early 19th century.

The interdisciplinary offerings within the EMSP at King's count as one of two honours subjects. 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 Program

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, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Russian Studies, Sociology and Social Anthropology, Spanish, 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: Comparative Religion, 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.

A. Combined Honours

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 65. Because it is an honours Program, the quality of work required in it is higher than that required in a 15-credit concentration 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-19th century ideas or institutions (that is, Classics, CLAS 1000X/Y.06, CLAS 1010X/Y.06, CLAS 1021.03 and CLAS 1022.03, CLAS 1100X/Y.06; English, ENGL 1000X/Y.06; History, HIST 1004X/Y.06, HIST 1501.03, HIST 1502.03, HIST 1862.X/Y.06, HIST 1867X/Y.06; 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, RELS 2002.03/2002.03; 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 normal requirement of eleven (11) full credits beyond the 1000 level in the two honours subjects, but not more than seven (7) full credits being in either of them.
Students may, with the approval of both the Dalhousie department concerned and the Early Modern Studies teaching staff, elect a maximum of thirteen (13) full credits in the two principal subjects, not more than nine (9) full credits being in either of them. In this case, the requirement in (4) below is reduced to two or three full credits.

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. Four full elective credits in subjects other than the two offered to satisfy the general requirement that students complete fifteen full credits beyond the first year of study.
5. The three 'core' classes in Early Modern Studies: EMSP 2000.06, EMSP 3000.06, EMSP 4000.06.
6. 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 the course 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.

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).

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 5 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 Renaissance scepticism. 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: 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): N. Robertson

FORMAT: Lectures and tutorials

PREREQUISITE: Either King's Foundation Year Program or two first-year credits at Dalhousie which involve the study of pre-19th century ideas or institutions

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): R. Huebert

FORMAT: Seminar

EMSP 2240.03: Themes in Early Modern Science, Metaphysics and Epistemology.

This course covers the period 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 skepticism (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 favorable 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: 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 16th to the early 19th century, developments that still shape today's world.

INSTRUCTOR(S): J. Curran

FORMAT: Seminar

EMSP 2260.03: *Les Philosophes* and the *Encyclopédie*: Voltaire, Diderot, Rousseau, D'Alembert et al.

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 Métiers*, 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): E. Liddell

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 Darthur* 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 Dramas.

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

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

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

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 2410.03: Imagining the Other: The Portrayal of the Non-European World in Early Modern Culture.

Europeans' encounter with non-European cultures became a crucial part of their culture in the early modern period. This encounter shaped national economies, political power, and European self-understanding. Texts and visual images portrayed non-European realms both positively, as either more enlightened or more natural, and negatively, as unenlightened and unnatural. Confrontation with non-European societies in the cultural works of the period reinforced reflective and critical aspects in European culture. The class will consider 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 the Far East, India, Africa, North and South America, Polynesia, and purely imaginary settings.

INSTRUCTOR(S): E. Liddell

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 three key 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/tutorial

EMSP 2430.03: The Pursuit of Happiness in Early Modern Culture.

A central preoccupation in early modern European culture, particularly in the 18th 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/tutorial

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): P. Heller

EMSP 2450.03: The East is Read: Early Modern Conceptions of Asian Thought.

This class will consider 18th and early 19th century 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

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 16th to late 18th 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 Luther (2003), A Man for All Seasons (1966), The Chimes at Midnight (1965), Elizabeth (1998), The 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 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 16th, 17th and 18th 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: 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. Morris

FORMAT: Lectures and tutorials

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 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 color 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 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 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): S. Snobelen

FORMAT: Seminar

CROSS-LISTING: HSTC 3200.03, HIST 3075.03

EMSP 3340.03: Natural Knowledge, Human Nature, and Power: Francis Bacon and the Renaissance.

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. Kow

FORMAT: Seminar

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 period called 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 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): M. Thibodeau

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 14th Century, the 17th 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: 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: Individual instruction

PREREQUISITE: Honours registration in Early Modern Studies, permission of the instructor and the Director of the Program. 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 Program.

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 Program.

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 Program.

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 Program.

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 16th to early 19th 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. In addition, a history of early modern Europe will be assigned in order to provide historical context to the primary texts.

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): S. Kow.

FORMAT: Seminar

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.

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 Program above). Students are also welcome to take this course as an elective with the permission of the instructor.

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): 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: 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: 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

Location: 6135 University Avenue, Room 1186
Halifax, NS B3H 4P9
Telephone: (902) 494-3384
Fax: (902) 494-2176
Website: www.dal.ca/english

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Acting Chair

Furrow, M. (494-6873)

Undergraduate Advisor

Consult Department

Professors Emeriti

Fraser, J., MA (Oxon), PhD (Minn), FRSC
Gray, J., MA (Abed), MA (Oxon), PhD (Montreal), FRSC, FRSA
Sprott, S.E., MA, BD (Melburne), PhD (Columbia)

Professors

Barker, W.AB. (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 (Dal), MA, MPhil, PhD (Yale)
Huebert, R., BA (Sask), MA, PhD (Pitt)
Luckyj, C., BA, MA, PhD (Toronto)
Stone, M.I., BA (Guelph), MA, MPhil (Waterloo), PhD (Toronto)
Tetreault, R.R., BA (UBC), MA, PhD (Cornell)
Wainwright, J.A., BA (Toronto), MA, PhD (Dal) (McCulloch Professor in English)

Associate Professors

Dawson, C., BA (UBC), MA (Sussex), PhD (Queensland)
Evans, D., BA (Toronto), MA, PhD (Rutgers)
Greenfield, B., BA (York), MA (McGill), PhD (Columbia)
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)
Stewart, A.F., BA (Guelph), MA, PhD (Queen's)
Thompson, J.A., BA (Western), MA, PhD (Toronto)
Wright, J., BA, MA, PhD (Western) (Canada Research Chair in European Studies)

Assistant Professors

Bennett, E., BA (Dal), MA (Dal), MA (Carleton), PhD (Dal)
Brittan, A., BA, MA (Toronto), PhD (Pennsylvania)
Cawsey, K., BA (Wilfrid Laurier), MPhil (Oxford), PhD (University of Toronto)
Enns, A. BA (University of North Carolina), MA (Hollin University), MA (University of Iowa), PhD (University of Iowa)
Haslam, J., BA, MA (McGill), PhD (Waterloo)

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.

In the first year, ENGL 1000X/Y.06 (alternatively ENGL 1010.03 together with ENGL 1020.03) is required of all students who wish to take further English classes. There are about fifteen sections, each with different texts. To enable students to choose the one most suited to their inclinations and needs, the English Department has a description for each section on its website. Classes numbered from 2000 to 3999 are especially suited for those concentrating in English, studying it as a complement to their main area, or taking an elective. Seminars at the 4000 level are mainly intended for students in their third and fourth years of an English Major or Honours program. One of English 3000.03, 3001.03, or 3002.03 is required of all English 15-credit concentration, 20-credit Major, and 20-credit Honours students. Upper-year classes are described in detail on the English Department. Website located 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 65 of this calendar.

Please note that the following requirements apply to students entering the respective program during the 2007-2008 academic year: Students who declared their English program before 2007-2008 can choose to meet the requirements as they were (consult an earlier Calendar or contact the English Department) or as they are listed below.

A. BA with Honours in English

Students must meet the faculty requirements for honours, which include 9-11 credits (1 credit = 6 credit hours) in English above the 1000 level; within these 9-11 credits, students must take the following:

- at least one of 3000.03, 3001.03 or 3002.03
- 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, 3007.03, 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, 3061.03, 3062.03)
- 0451.00 Introduction to Literary Research (non-credit class)
- six half credits at the 4000 level

B. BA with Combined Honours

Students must meet the faculty requirements for combined honours degrees, which include at least 4 and no more than 7 credits (or 9 with approval of the Department) in English above the 1000-level (at least 11 in both subjects, or 13 with departmental approval). Among the English classes, students must take:

- at least one of 3000.01, 3001.03 or 3002.03
- 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, 3007.03, 3008.03, 3010.03, 3011.03, 3015.03)

- b) 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, 3061.03, 3062.03)
- 3. 0451.00 Introduction to Literary Research (for students weighting their programs towards English)
- 4. twelve credit hours (or 4 half credits) at the 4000 level

C. 20-Credit BA with Major in English

Students must meet the faculty requirements, which include 6-9 credits in English above the 1000-level, including 3 credits above the 2000-level; within these 6-9 credits, they must take the following:

1. at least one of 3000.03, 3001.03 or 3002.03
2. at least one full credit in each of the following two groups:
 - a) Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.03, 3008.03, 3010.03, 3011.03, 3015.03)
 - b) 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, 3061.03, 3062.03)
3. two half credits at the 4000 level

D. Double Major

Students must meet the requirements for the double major, which include 10-13 credits in the Major subjects above the 1000-level (no more than 9 and no fewer than 4 in either). Students must take at least 2 credits above the 2000-level in each subject. Among their English classes, students must take:

1. at least one of 3000.01, 3001.03 or 3002.03
2. at least three credit hours (or one half credit) in each of the following two groups
 - a) Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.03, 3008.03, 3010.03, 3011.03, 3015.03)
 - b) 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, 3061.03, 3062.03)
3. six credit hours (or two half credits) at the 4000 level

E. 15-Credit BA with Concentration in English

Students must meet the faculty requirements, which include 4-8 credits in English above the 1000-level, including 2 credits above the 2000-level; within these 4 to 8 credits, they must take the following:

1. one of 3000.03, 3001.03 or 3002.03
2. three credit hours (or one half credit) in each of the following two groups
 - a) Old English, Middle English, Renaissance (ENGL 2018.03, 2020.03, 2214.06, 3005.03, 3007.03, 3008.03, 3010.03, 3011.03, 3015.03)
 - b) 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, 3061.03, 3062.03)

Students who began a 15-credit concentration program prior to the 2007-2008 academic year have the choice of doing ENGL 2205.06 rather than number 2 above; however, they must also take at least 1 credit in literature before 1800 (not including 2205.06).

Emphasis in Canadian Studies

English students interested in obtaining an emphasis in Canadian Studies along with their major or minor in English should consult the Canadian Studies calendar entry for information on requirements and for a list of English classes approved with Canadian Studies.

Creative Writing Program

The new 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 their 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)
 - 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)

Note: The prerequisites for the 3rd-year seminars that are included in the class descriptions (for example: English 3098.03 is a required prerequisite for CRWR 3000.03, and English 3099.03 is a required prerequisite for CRWR 3001.03 if you are taking the program).

Writing portfolios are required for consideration of entry into English 3098 and 3099. Submission date is July 15 preceding the beginning of the academic year.

Students interested in Creative Writing but not completing the program may enter individual 3rd-year CRWR seminars with the instructor's permission.

I. 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, the sciences, and advertising.

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): Wainwright, A.

CRWR 3000.03: Creative Writing: Poetry.

Building on the work done in English 3098, 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: Seminar

PREREQUISITE: ENGL 3098.03

CRWR 3001.03: Creative Writing: Fiction.

Following the emphasis on short story writing in English 3099, 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: Seminar

PREREQUISITE: ENGL 3099.03

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 then revised, critiqued, and given a public presentation.

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 hours

PREREQUISITE: THEA 2900X/Y.06 and permission of the instructor

II. English Class Descriptions

ENGL 0451.00, 1000X/Y.06, 3000.03, 3001.03 and 3002.03 are offered every year. Other classes may not be offered every year. Please consult the department's supplement and/or the department's website to determine this year's class offerings.

ENGL 0451.00: Introduction to Literary Research.

A departmental (i.e. non-university and non-credit) technical class in bibliography and research methods for honours and graduate students. This course is designed to introduce students to the research tools that are most frequently used by students of English. These will include printed materials such as bibliographies, indices, and journals as well as electronic resources such as online catalogues, databases, listservs, and the World Wide Web.

FORMAT: Lecture, first term only

ENGL 1000X/Y.06: Introduction to Literature.

Since ENGL 1000.06 consists of sections taught by many different instructors, statements about its objectives and approach must be confined to generalizations. All instructors of ENGL 1000.06 have these two broad objectives in common-(a) to involve students in the serious study of literature; (b) to involve them in the discipline of words so that they will be more critical and responsive readers and more exact and imaginative writers. The subject matter varies from section to section. Detailed syllabi of all sections are available on the department's Web site. Practice in writing is carried on throughout the year in regular essays. Each section meets three hours per week. In addition, the tutors attached to each section conduct small discussion groups and personal interviews with students.

Successful completion of ENGL 1000.06, or both ENGL 1010.03 and ENGL 1020.03, or THEA 1000.06 is the prerequisite for entry into Upper-Year classes. For a more complete description of classes and of texts, students should consult the Departmental Supplement for Upper Year 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: ✍ Writing Requirement, lecture / discussion

EXCLUSION: ENGL 1010.03, ENGL 1020.03

ENGL 1010.03: Introduction to Prose and Fiction.

This class shares with ENGL 1000.06 two broad objectives: (a) to involve students in the serious study of literature; (b) to involve them in the discipline of words so that they will be more critical and responsive readers and more exact and imaginative writers. The subject matter is confined to examples of prose (such as essays and autobiography) and of fiction (such as short stories and novels). A detailed syllabus is available on the department's Web site.

NOTE: Students must obtain credit for BOTH ENGL 1010.03 and ENGL 1020.03 in order to take further classes in English. The classes need not be taken sequentially.

These classes, when taken together, satisfy the writing requirement.

FORMAT: Lecture/discussion. ✍ Writing Requirement (1010 and 1020 together)

EXCLUSION: ENGL 1000X/Y.06

ENGL 1020.03: Introduction to Poetry and Drama.

This class shares with ENGL 1000.06 two broad objectives: (a) to involve students in the serious study of literature; (b) to involve them in the discipline of words so that they will be more critical and responsive readers and more exact and imaginative writers. The subject matter is

confined to examples of poetry and of drama. A detailed syllabus is available on the department's Web site.

NOTE: Students must obtain credit for BOTH ENGL 1010.03 and ENGL 1020.03 to take further classes in English. The classes need not be taken sequentially.

These classes, when taken together, satisfy the writing requirement.

FORMAT: Lecture/discussion. ✍ Writing Requirement (1010 and 1020 together)

EXCLUSION: ENGL 1000X/Y.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 Darthur*; earlier texts will be read in translation.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 hokku, lyric as song, spoken poetry, poetry in print, concrete poetry, and possibly other topics to suit the class.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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.

INSTRUCTOR(S): M. Stone

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2034.03: The Short Story.

This class will examine the form and evolution of the short story.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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.

INSTRUCTOR(S): T. Ross

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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.

INSTRUCTOR(S): D. McNeil

FORMAT: Lecture/Discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2100.03: Communication Skills: Oral and Written.

This class is designed to help students become more successful communicators by examining the communications process from both the theoretical and practical viewpoint. Students learn to formulate communications 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.

FORMAT: Writing Intensive, Lecture

CROSS-LISTING: CSCI 2100.03

EXCLUSION: COMM 2701.03

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: Writing Intensive, Lecture/discussion

PREREQUISITE: Any faculty-approved Writing Class

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2205X/Y.06: Literary Landmarks.

This class studies many of the most influential texts from the beginnings of English literature to the present. These landmarks provide some historical orientation in the literary landscape and help to make students aware of the diversity available in literary 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: Writing Intensive, lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2207X/Y.06: Canadian Literature.

This class offers an introduction to Canadian poetry and prose written in English. The aim will be to trace the development of Canadian fiction and poetry from the nineteenth century to the present through discussion of selected texts. Approved with Canadian 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2212.03: World Literature.

This class introduces students to works of literature from around the world, with particular attention to writing from the former British colonies. Although the thematic focus will depend on the instructor, the class will explore the challenges and imperatives of writing in the wake of colonial history and in the face of what is often called globalization. Students are encouraged to consult the English Department website for a more specific course description.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program
EXCLUSION: ENGL 2211.06, ENGL 3075.03

ENGL 2213.03: World Literature in English: Poetry.

This class studies poems in English from a wide variety of countries. These poems explore the social and political nature of poetic expression in familiar and often surprising ways that cross borders between language and experience, the individual and the group, the writer and the reader. The class addresses race, ethnicity and gender, as well as how a poem says what it says.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program
EXCLUSION: ENGL 2211.06, ENGL 3076.03

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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, monk encomium, travesty, parody, lampoon) and satire's many uses within various national contexts (e.g., Roman, English, American, Canadian).

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 2227.06

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 2240X/Y.06: Popular Culture and Modernity.

In this course we follow the emergence and transformation of what has been called "popular" culture and consider the main arguments that have swirled around it. Does popular culture emerge from the creativity of and in response to the desires of ordinary people, or is it designed to co-opt those desires into narrow, formulaic patterns that encourage a life of working and shopping? How does popular culture circulate globally in a contemporary media environment that does not require intensive capitalization for access? How does the production and dissemination of contemporary cultural material affect the way people in the world as a whole imagine their own lives?

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/discussion

PREREQUISITE: ENGL 1000.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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. This class is designed further to meet Writing Across the Curriculum guidelines for Writing Intensive classes.

FORMAT: Writing Intensive, lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 3219.06

ENGL 3007X/Y.06: Old English.

An introduction to the Old English language and literature in Old English from 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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 3016.03

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 3225X/Y.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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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, including amatory fiction, the fictional memoir, the roman à clef, the epistolary novel, and various comic and sentimental works.

FORMAT: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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: 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/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1830s and 1900. Authors studied will include Tennyson, Robert and Elizabeth Barrett Browning, Matthew Arnold, Emily Brontë, 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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 3031.03: The 19th-Century British Novel from Austen to Dickens.

In this course we will study British novels from the first half of the 19th 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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 2208.06

ENGL 3032.03: The 19th Century British Novel from Dickens to Hardy.

In this course we will study British novels of the second half of the 19th 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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 2208.06

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 3085.06

ENGL 3098.03: Creative Writing: Poetry.

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: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or CRWR 2000 or King's Foundation Year program and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.

ENGL 3099.03: Creative Writing: Fiction.

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: Lecture/discussion

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or CRWR 2000 or King's Foundation Year program and by permission of the instructor, on the basis of submission and assessment of a portfolio of work.

ENGL 3111X/Y.06: Practicum for Writing Tutors.

This class combines the theory and practice of good writing for university students. Those enrolled will address theories of composition as they apply to basic research papers and reports. In conjunction with writing theory and practice, in relation to their own writing, members of the class will also serve as tutors in another class in which formal written work is part of the curriculum. They will serve as tutors under the supervision of the Practicum instructor, and in cooperation with the instructor of the target class.

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 Intensive, Lecture/discussion

CROSS-LISTING: ASSC 3110X/Y.06

ENGL 3112.03: Writing Theory.

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.

INSTRUCTOR(S): Lyn Bennett

FORMAT: Writing Intensive, Lecture/Discussion

PREREQUISITE: ASSC 3111.03X/ENGL 3111.03X, Instructor's permission required

CROSS-LISTING: ASSC 3112.03

EXCLUSION: ASSC 3110.06XY/ENGL 3111.06XY

ENGL 3113.03: Writing Practice.

INSTRUCTOR(S): Lyn Bennett

CROSS-LISTING: ASSC 3113.03

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program
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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

EXCLUSION: ENGL 3209.06

ENGL 3240.03: Modern Drama.

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 ENGL 1010.03 & ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

ENGL 3241.03: Contemporary Drama.

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 ENGL 1010.03 & ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

CROSS-LISTING: GWST 3050.03

EXCLUSION: ENGL 3050.06

ENGL 3270.03: Contemporary Canadian Literature.

In this class, a variety of late 20th-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. Approved with Canadian Studies.

PREREQUISITE: ENGL 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

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 1000X/Y.06, or both ENGL 1010.03 and ENGL 1020.03 or THEA 1000X/Y.06 or the King's Foundation Year Program.

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.

INSTRUCTOR(S): L. Bennett

FORMAT: Writing Intensive, Lecture/Discussion

PREREQUISITE: ENGL 2100 or ENGL 2110 recommended

4000-level 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

Students should consult the department supplement or website for a complete list of seminar offerings.

Environmental Studies

Contact Person: Dr. David Black
 Location: Department of International Development Studies
 Faculty of Arts and Social Sciences
 Telephone: 494-3814

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 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: Environmental Site Investigation
- 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 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 3001.03: Seminar in Development III
- INTD 3002.03: Seminar in Development IV
- INTD 3304.03: Sustainable Development in Cuba
- 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 3589.03: Politics of the Sea I
- POLI 3590.03: Politics of the Sea II
- POLI 4228.03: Interest Groups
- 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 when the content warrants. See the program director for information.

European Studies

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Coordinator

Robert Boardman, Political Science

Advisors

Julia Wright, English (julia.wright@dal.ca, 494-6902)

Robert Boardman, Political Science (robert.boardman@dal.ca, 494-6602)

Faculty

John Barnstead, Russian Studies

Betty Bednarski, French

Anne Belanger, French

John Bingham, History

Robert Boardman, Political Science

Steven Burns, Philosophy

Francesco Ciabattini, Italian

Katherine Fierlbeck, Political Science

Vittorio Frigerio, French

Dorota Glowacka, Contemporary Studies

Finn Laursen, Political Science

Peter O'Brien, Classics

Jolanta Pekacz, History

David Schroeder, Music

Judith Sidler, German

Marjorie Stone, English

Karolyn Waterson, French

Julia Wright, English

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 2nd 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.
- 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, Comparative Religion, English, French, German, Italian, Philosophy, 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 4th 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 2nd 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 2100X/Y.06: Europe: Ideas, Culture and Society.

A multidisciplinary introduction to European studies. Classes look at the interconnections among literature, the arts, philosophy and society in Europe. The fall term emphasizes the period to 1900, and 20th Century and contemporary European register in consecutive terms, credit will be given only if both are completed consecutively.

FORMAT: Lecture and Discussion

PREREQUISITE: Advised: completion of at least 2 first-year classes from FASS departments, or the King's Foundation Year Program

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 and 4th year European Studies Advanced Majors and Honours studies

EURO 4510.06: European Studies Seminar.

Discussion of readings and presentation 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.

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 2002.03 Christianity
- RELS 3008.03 Medieval Church

Contemporary Studies

- CTMP 2190.03: Wittgenstein
- CTMP 2301.03: Narrative and Meta-Narrative
- CTMP 3120.03: Wagner
- CTMP 3190.03: Weil
- CTMP 3321.03/3322.03: The Holocaust
- CTMP 4000.03: Deconstruction
- CTMP 4120.03: French Feminist Theory
- CTMP 4410.03: Contemporary Social and Political Thought
- CTMP 4301.03: Freud, Lacan and the Critique of Psychoanalysis

Early Modern Studies

All classes.

Economics

- ECON 2219.03: Euros and Cents: From Common Market to European Union
- ECON 2238.03: Industrial Revolution in Europe
- ECON 2239.03: European Economy in Historical Perspective

English

- ENGL 2018.03: Arthur
 - ENGL 2020.03: Sampling Medieval Literature
 - ENGL 2028.03: Short Poems in English
 - ENGL 2029.03: Frame Narratives
 - 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 2205.06: Literary Landmarks
 - ENGL 2214.06: Shakespeare
 - ENGL 2218.03: Gothic fiction
 - ENGL 2221.06: Fictions of Development
 - ENGL 2229.03: Tragedy
 - ENGL 2230.03: Satire
 - ENGL 2240.06: Popular Culture and Modernity
 - ENGL 3001.03: History of Literary Criticism
 - ENGL 3002.03: Contemporary Critical Theory
 - ENGL 3005.03: Canterbury Tales
 - 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 3230.03: Modern Drama
 - ENGL 3234.03: British Literature of the Earlier Twentieth Century
 - ENGL 3235.03: British Literature of the Later Twentieth Century
- Note: 4th-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 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

GERM 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 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 1020.03: Listening to Classical Music
- MUSC 1021.03: Listening Beyond the Classics
- MUSC 1350.03: History of Music I (to 1600)
- MUSC 1351.03: History of Music II (Baroque)
- MUSC 2350.03: History of Music III (1750-1830)
- MUSC 2351.03: History of Music IV (1830-1950)
- MUSC 3066.03: Women, Gender and Music
- MUSC 3314.03: History of Opera
- MUSC 3351.03: Music Since 1945
- MUSC 3353.03: Chamber Music Literature
- MUSC 3355.03: Piano Literature

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 4190/4191/4192: 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

All classes

Theatre

- THEA 2011.03: Classical Theatres
- THEA 2012.03: Early Modern Theatres

Approved Classes with some European content (please consult European Studies Coordinator)

Commerce

- COMM 3701.03: The Firm in the International Environment

Economics

- ECON 3336.03: Regional Development
- ECON 3347.03: Classical Political Economy
- ECON 3348.03: Modern Economic Thought

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 2520.03: Introduction to World Politics
- POLI 2530.03: Introduction to Foreign Policy
- POLI 3401.03: Contemporary Political Thought
- POLI 3475.03: Democratic Theory
- POLI 3431.03: Politics through Film and Literature
- POLI 3587.03: International Political Economy

Sociology and Social Anthropology

- SOSA 2200.06: Family in Comparative Perspective
- SOSA 3005.03: Does Industrial Society Have a Future?
- 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

Chair of Film Studies Committee

Varga, D., NSCAD, 494-8187 (dvarga@nscad.ca)

Dalhousie Contact Person

Jimenes, Maria M.

Department of Spanish, 494-6357, Room 3019

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, Mount Saint Vincent University, and St Mary's University - 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 2311.03: Film Analysis 0.5 credits or MSVU CULS 2293 Introduction to Film Language 0.5 credits
 - DAL THEA 2312.03: Issues of Film Aesthetics 0.5 credits or MSVU CULS 2295 Film Aesthetics 0.5 credits
- Plus either 1 or 2 below:
- DAL THEA 2300X/Y.06: Film Studies 1.0 Credit*
 - NSCAD AHIS 2800 Film History and Criticism 1890-1940 0.5 Credits and NSCAD AHIS 2810 Film History and Criticism 1940-Present 0.5 Credits

*Students taking this course as a core class towards the Minor must register in the class tutorials.

B. Elective Requirements

Students must complete two full credits from the following list of classes, including at least one full credit at the 3000-level or above:

- DAL ENGL 2095.03: Narrative and Cinema 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 THEA 2310X/Y.06: Film Genres
- DAL RUSN 2036.03: Russian Film I 0.5 credits
- DAL RUSN 2037.03: Russian Film II 0.5 credits
- DAL FREN 2800.03: Cinema, the French Phenomenon I
- DAL FREN 2801.03: Cinema: The French Phenomenon II
- DAL SPAN 3800.03: Seminar in Spanish Film (taught in Spanish) 0.5 credits
- DAL SPAN 3805.03: Survey in Spanish Film (taught in English) 0.5 credits

- DAL SPAN 3810.03: Seminar in Latin American Film (taught in Spanish) 0.5 credits
- DAL SPAN 3815.03: Survey in Hispanic American Film (taught in English) 0.5 credits
- DAL ITAL 3500.03: Italian Neorealist Cinema 0.5 credits
- MSVU ENG 2213: Contemporary Film 0.5 credits
- NSCAD AHIS 3831 Topics in Film History
- NSCAD AHIS 3850: History and Criticism of Documentary Film 0.5 credits
- NSCAD AHIS 4800: Independent Studies in Film History, Theory and Criticism 0.5 credits
- SMU ACS: Moving Images of Atlantic Canada 3305.1
- SMU ENGL: Narrative in Fiction and Film 3313.0
- SMU HIS: Film and History 3450

Students are strongly advised to take the Film Survey courses (DAL THEA 2300X/Y or NSCAD AHIS 2800 and 2810) as soon as they declare their film minor and prior to taking the two core compulsory courses (DAL THEA 2311 and 2312).

Please note: For a full list of classes, with descriptions and instructors, please request a Film Studies brochure from the Dalhousie contact person, or the Chair of the Film Studies Committee.

For a full list of classes offered in a given year, visit our website at <http://hfxfilm.textstyle.ca/>

French

Location: 6135 University Avenue, Room 1114
Halifax, NS B3H 4P9
Telephone: (902) 494-2430
Fax: (902) 494-1626
Email: French@dal.ca
Website: www.dal.ca/french

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Bednarski, B., (494-6803)

Undergraduate Advisor

Frigerio, V. (494-6805), Honours and Majors Advisor

Professors Emeriti

Bishop, M., BA, BEd (Manchester), MA (Manitoba), PhD (Kent, Canterbury), McCulloch Professor in French
Gordon, W.T., BA, MA, PhD (Toronto)
Kocourek, R., State Examination, PhD, CSc (Charles U., Prague), Knight of the Order of Academic Palms

Professors

Bednarski, B., BA (London), MA (Dal), PhD (Laval)
De Méo, P., BA, MA, PhD (UCLA)
Oore, I.Z., BA (Tel-Aviv), MA (Waterloo), PhD (Western)
Runte, H.R., MA, MPH, PhD (Kansas)
Waterson, K., BA (Long Island), MA (NYU), PhD (CUNY)

Associate Professors

Elson, C., BA (Vind's), MA (Dal), Dr de 3e cycle (Sorbonne)
Frigerio, V. Beaux Arts (Geneva), BA (York), MA, PhD (Toronto)
Hamel, M.-J., BA, MA (Montreal), PhD (UMIST)
Mopoho, R., BA (Yaounde, Cameroon), MA, PhD (Montreal)

Assistant Professors

Aissaoui, D., DEA (Metz), PhD (Ottawa)
Bélanger, A., BA, MA, PhD (UQAM)
Kasende, J.-C., MA, PhD (Ottawa)
Milicevic, J., BA (Belgrade), MA, PhD (Montreal)

Instructors

Black, I., BA, MA (Toronto), PhD (Edinburgh)
Lee Men Chin, P., BA (Concordia), MA (Carleton)

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. Exchanges with Québec 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 Linguistics or 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 an area of concentration 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. 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 3 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.

Administration

Please consult the French Department for details.

III. 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.

Upon arrival at the CIEF, students are placed in the appropriate proficiency level, which correspond to first, second or third-year credits at Dalhousie. Five full credits are awarded for the program, with an optional sixth credit available at higher levels.

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 music may be eligible for transfer credits in the other subject areas.

Students receive a bursary, the amount of which varies, but which is typically around \$850. In addition, Study Work International Fund (SWIF) funding up to \$2000 is available through International Student and Exchange Services.

An initial information session is held in November of each year, with applications due early in the new year. For information, consult the website at <http://www.dal.ca/dijon> or contact Natalie Wood, Administrative Secretary at njwood@dal.ca or 494-2430.

B. Winter Semester Program in Dakar, Senegal

Students at all levels of French proficiency have the opportunity of spending the winter semester at the Université Cheikh Anta Diop in Dakar, Sénégal. This specially designed program, at an institute for non-native French speakers, includes language and translation classes at all levels, along with classes in francophone African literature and culture.

Students receive 2.5 French credits for the semester abroad; the level depends upon the level at which students are placed following a placement test given after arrival in Dakar.

An initial information session is held in March of each year, with applications due in May.

For more information, consult the departmental website at, www.dal.ca/senegal or contact Natalie Wood, Administrative Secretary at njwood@dal.ca or 494-2430.

C. Chicoutimi, Quebec (see Department for details)

IV. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 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 Majors/Honours Advisor.

Students particularly interested in LINGUISTICS should also consult the list of classes in the Linguistics section of this calendar.

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 more traditional learning experience by spending at least one term in a French-speaking area. Please consult the department for information on our Dijon and Senegal programs.

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 11-13 credits in French and another subject (including Linguistics, see Linguistics section in calendar, page 173); not fewer than 5 nor more than 9 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 Honours 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 15-credit BA concentration program in French 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. 20-credit BA with 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 4000 level full credit in French

PLEASE NOTE: Students with proper standing wishing to change to an Honours Program may do so. Those who might wish to do so should also

take FREN 2020.03 and FREN 3021.03 or FREN 3022.03 (required for Honours), and consult the Chair or the Honours Advisor.

C. 20-credit BA with Double Major in French

Students must take, as a minimum, FREN 2045.06, 2201.03, 2202.03, 3045.06 plus one full credit at the 3000-level.

D. 15-credit BA with Concentration 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 4-year degree (20-credit Major or 20-credit Honours) if a high level of proficiency in French is sought.

Departmental Requirements

2000 level

- FREN 2045.06
- FREN 2201.03
- FREN 2202.03

3000 level

- FREN 3045.06
- One other 3000 level full credit in French

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. Those wishing to do so, or to continue in Graduate Studies after obtaining a 15-credit BA with concentration in French, should consult the Chair or the Honours Advisor.

V. Class Descriptions

PLACEMENT TEST: All students taking their first French course 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 courses 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.

3000 and 4000 level French classes range over the literature of all periods, civilization and culture, and include several classes in linguistics, which may be taken as part of the Halifax Interuniversity Linguistics Program. (See Linguistics Calendar entry.)

NOTE: Not all classes are offered every year. Please consult the current timetable to determine this year's class offerings.

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). 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).

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: Online Placement Test required: 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), or follows FREN 1005 (for students who have achieved a final grade of B or above). All four language skills: speaking & writing, and listening & reading comprehension are further developed, with a focus on more advanced grammatical structures. Aspects of the Francophone world are also further explored. Successful completion of this class (final grade of B or above) leads to all second-year French 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/tutorial

PREREQUISITE: FREN 1005X/Y.06 (final grade of B or above), FREN 1010X/Y.06, or equivalent (online Placement Test required: www.dal.ca/frenchtest).

EXCLUSION: FREN 1050X/Y.06

FREN 1050X/Y.06: Français pour Anciens Etudiants 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). All four language skills: speaking & writing, and listening & reading comprehension are further developed with a focus on more advanced grammatical structures. The analysis of selected texts leads to the application of the structures being studied and to enrichment of vocabulary. This class will enable immersion graduates to build on their strengths while becoming aware of and remedying ingrained errors. Successful completion of this class (final grade of B or above) leads to all second-year French 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.

INSTRUCTOR(S): Staff

FORMAT: Lecture

PREREQUISITE: Online Placement Test required: www.dal.ca/frenchtest

EXCLUSION: FREN 1005X/Y.06, FREN 1045X/Y.06

FREN 1060X/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. Students are encouraged to become familiar with the best French-English dictionaries and to use them judiciously, to learn large blocks of vocabulary by recognizing word families, and to grasp the meaning of unknown words from context wherever possible. 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 1060.06 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: 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. Waterson, V. Frigerio, Staff

FORMAT: Lecture

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 Language requirement):

FREN 2002.03: Le français oral/Spoken French.

In this class, students will develop, primarily, 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. It will also offer an introduction to non-verbal

communication. The use of various audio-visual materials (videos, tapes, CDs, DVDs) and interactive technology will be integrated into the class.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1045X/Y.06, or 1050X/Y.06 or 2000-level

Placement Test result, or instructor's consent

FREN 2003.03: La Comprehension auditive/French for Listening Comprehension.

In this class, students will develop, primarily, their ability to understand spoken French. Using a variety of listening materials and technologies, they will have an opportunity to expand their recognition vocabulary and become familiar with the features of oral French which facilitate listening comprehension. They will learn to listen for specific information as well as grasp the overall gist of oral communication. This class will include an introduction to regional variation and non-verbal communication.

INSTRUCTOR(S): K. Waterson

FORMAT: Lecture/participatory activities

PREREQUISITE: FREN 1060X/Y.06 or FREN 1045X/Y.06, or 1050X/Y.06, or 2000-level Placement Test result, 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. The focus is 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. Approved with Linguistics

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level

Placement Test result, or instructor's consent

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 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).

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: K. Waterson

Topic 07: Québécois et Québécoises célèbres: B. Bednarski

Topic 08: Contes et légendes

Topic 09: Nature et culture: C. Elson

Topic 10: L'Art en France depuis la Révolution: M. Bishop

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

Topic 15: La civilisation francophone de l'Afrique occidentale et des Antilles: J-C. Kasende

INSTRUCTOR(S): As above

FORMAT: Lecture

PREREQUISITE: FREN 1045X/Y.06 or 1050X/Y.06, or 2000-level

Placement Test result, or instructor's permission

FREN 2032.03: La 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. Honours and majors students, especially those whose first language is not French, should seriously consider including FREN 2032.03 in their program.

INSTRUCTOR(S): K. Waterson

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.

For students with 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. Numerous grammar, writing and translation exercises will aim at developing the ability to communicate in clear, accurate written French.

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/ tutorial (in computer lab)

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: Advanced Readings in French/ Pratique de la lecture, niveau superieur.

This class will continue the work of French 1060. 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.

INSTRUCTOR(S): K. Waterson

FORMAT: Lecture/discussion

PREREQUISITE: FREN 1045X/Y.06 or FREN 1050X/Y.06 or FREN 1060X/Y.06 or 2000-level Placement Test result; or instructor's permission

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.

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

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: This class may be taken without prerequisite or any capacity in the French language: 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. The language of the class will be English.

INSTRUCTOR(S): M. Bishop, 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: This class may be taken without prerequisite or any capacity in the French language: 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. The language of the class will be English.

INSTRUCTOR(S): M. Bishop, C. Elson

FORMAT: Lecture/discussion/movie-viewing

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.

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2002.03 or instructor’s permission

FREN 3020X/Y.06: Linguistique/Linguistics.

This class will interest future linguists, literary specialists and language teachers, as well as translators and public servants concerned with bilingualism. Its main objective is to improve and refine the students’ understanding of the French language and to explain the major areas of its study. Culturally interesting literary excerpts will be used to observe and to analyze linguistic problems in texts. Each student will prepare two reports on linguistic topics. Assignments based on practical problems of pronunciation, spelling, grammar, vocabulary and meaning will complement the syllabus. Approved with Linguistics.

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): J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: 2000-level French class

EXCLUSION: FREN 3020X/Y.06

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): M. Hamel, J. Milicevic, R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2020.03

EXCLUSION: FREN 3020.06

FREN 3022.03: Semantics / Semantique.

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.

FORMAT: Lecture

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. Approved with Canadian Studies and Linguistics.

INSTRUCTOR(S): R. Mopoho

FORMAT: Lecture

PREREQUISITE: FREN 2045X/Y.06 or instructor’s permission

FREN 3030X/Y.06: Le français des affaires/French for Business.

This class aims at providing students with a sound knowledge of the French language as used in business. The course will focus on the development skills in the following areas: commercial correspondence

and writing; management, banking, financial and economic terminologies; specificities of business word processing in French. Classes will meet for two hours per week.

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): R. Mopoh, Staff

FORMAT: Lecture

PREREQUISITE: 6 credit hours at the 2000 level in French, or instructor's permission

FREN 3045X/Y.06: Expression écrite I/Written Expression I.

This class focuses on text grammar. It introduces the students to different types of texts and their communicative function/s. Students learn how to analyze these 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 to support their text analysis. 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.

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): M.-J. Hamel, staff

FORMAT: Lecture/computer lab

PREREQUISITE: FREN 2045X/Y.06 or equivalent (permission of instructor required)

FREN 3101.03: Civilisation de la France/Civilization of France.

This class aims, through talks, readings, discussions and slide presentations, to understand and to suggest fruitful ways of studying, from an English-speaking Canadian point of view, what is essential in French culture and outlook.

INSTRUCTOR(S): A. Bélanger, staff

FORMAT: Lecture/discussion

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. 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.

INSTRUCTOR(S): R. Mopoh

FORMAT: Lecture

CROSS-LISTING: INTD 3125.03

FREN 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. Mopoh

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. Mopoh, 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: Ecrivaines 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 organised around a theme or a particular time period. Students taking the 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 time 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 name 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): P. De Méo, 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 provide a convenient introduction to critical approaches to literary texts.

INSTRUCTOR(S): H. Runte, staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

FREN 3400.03: La littérature du seizième siècle/16th Century French Literature.

Reliving the awakening, bloom 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 century's concern with the French language provides a convenient introduction to the study of the development of modern French.

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): K. Waterson, 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): Staff

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 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

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.

Poetry and Theatre, 1900-1990. 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): M. Bishop, 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): M. Bishop, C. Elson

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

FREN 3811.03: Introduction to African and Caribbean Francophone Literature/ Introduction a la literature francophone de l'afrique subsaharienne et des caribes.

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): J.-C. Kasende

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03 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): B. Bednarski, I. Oore

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

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 2201.03/2202.03). Approved with Canadian Studies.

INSTRUCTOR(S): H. Runte, staff

FORMAT: Lecture/discussion

PREREQUISITE: FREN 2201.03/2202.03

FREN 4001.03: Histoire du français - Moyen Age/ 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.

Approved with Linguistics.

INSTRUCTOR(S): R. Mopoho, H. Runte, 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. Approved with Linguistics.

INSTRUCTOR(S): R. Mopoho, H. Runte, staff

FORMAT: Seminar

PREREQUISITE: 3000-level French class

FREN 4011.03: La 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. Approved with Linguistics.

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): R. Mopoho, J. Milicevic

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 multi-lingual situations. Principal theoretical tendencies. Practical applications. Approved with Linguistics.

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.

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 will be taught in English, and 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. Approved with Linguistics.

NOTE: All students enrolled in the class must arrange for some kind of practicum component, ranging from peer tutoring to teaching.

INSTRUCTOR(S): M.-J. Hamel

FORMAT: Lecture

CROSS-LISTING: ENGL 3916.06

FREN 4017.03: Traduction générale/General Translation.

Students taking this class will be familiarised 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): 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. Using simulation, 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

synthesisers/recognizers. Resources presented will consist of on-line terminology banks, dictionaries, thesauri and grammars, etc.

INSTRUCTOR(S): M.-J. Hamel

FORMAT: Lecture/lab

PREREQUISITE: FREN 3045X/Y.06 or equivalent or instructor's permission

FREN 4046.03: Composition avancée/Advanced Composition.

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. Students will learn the conventions that characterize good academic writing in French. Students 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): H. Runte, 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): H. Runte, 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.

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 may vary frequently, please consult the professor for detailed information on the topic and format.

INSTRUCTOR(S): K. Waterson

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): K. Waterson

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): Staff

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; students are required to do a great deal of personal research, to prepare exposés and to participate in class discussions. 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. The class involves a considerable amount of reading, regular reports, and exposés.

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): M. Bishop, 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): M. Bishop, 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): M. Bishop, C. Elson, staff

FORMAT: Seminar

PREREQUISITE: 3000-level French literature class

FREN 4902.03: FREN 4903.03: Écrivains québécois contemporain/Contemporary Quebec Writers.

In depth study of one or more contemporary Québec writers. Approved with Canadian Studies.

INSTRUCTOR(S): B. Bednarski, 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): B. Bednarski, I. Oore

FORMAT: Lectures/discussion

PREREQUISITE: RECOMMENDED - FREN 2201.03/2202.03 and at least one third-year literature class, preferably French Canadian
CROSS-LISTING: GWST 4250.03

FREN 4933.00: Séminaire "Honours"/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): Staff

FORMAT: Seminar

PREREQUISITE: Only open to students in graduating year of French Honours program.

FREN 4994.03: FREN 4995.03B, FREN 4996.03/FREN 4997.03B, FREN 4998.03/FREN 4999.03: Recherches indépendantes/Independent Research.

May only be taken with the approval of the Chair or the Undergraduate Coordinator.

FORMAT: Independent study/seminar

PREREQUISITE: 3000-level French literature or linguistics class

FREN 9997.15: Senegal.

FREN 9998.15: France Semester Abroad.

FREN 9999X/Y.30: France Year Abroad.

Gender and Women's Studies

Location: 1376 LeMarchant Street,
Multidisciplinary Centre
Halifax, NS B3H 4P9
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Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Coordinator

Warwick, J. (494-2980/1926)

Professor Emeritus

Sherwin, S.B., BA (York), PhD (Stanford), FRSC

Faculty

Bain, J. (Music)
Barker, R. (Theatre)
Baur, S. (Music)
Bednarski, B. (French/Canadian Studies)
Binkley, M. (Sociology & Social Anthropology)
Brown, C. (School of Social Work)
Campbell, S. (Philosophy)
Carbert, L. (Political Science)
Cassin, M. (Public Administration)
Gahagan, J. (Health & Human Performance)
Gardiner Barber, J.P. (Sociology & Social Anthropology)
Ginn, D. (Law)
Glazebrook, P. (Philosophy)
Glowacka, D. (Contemporary Studies)
Heller, P. (Contemporary Studies)
Irvine, D. (English)
Jackson, L. (Health & Human Performance)
Kesselring, K. (History)
Luckyj, C. (English)
McCallum, T. (History)
Meynell, L. (Philosophy)
Mitchell, M. (Comparative Religion)
Morris, K. (Early Modern Studies)
Oore, I. (French)
Richard, B. (School of Social Work)
Sherwin, S. (Philosophy)
Stone, M. (English)
Thomas Bernard, W. (School of Social Work)
Thornhill, E. (Law)
Tillotson, S. (History)
Ulicki, T. (International Development Studies)
Warwick, J. (Music)
Whalen, Emma (Sociology & Social Anthropology)

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 Concentration, a Major, a Double Major, or a Combined Honours program. These programs include classes in the disciplines of English, French, 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 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, or Canadian Studies or Contemporary Studies; and a 15-credit BA with Concentration 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 65 of this calendar.

A. 15-credit BA with Concentration in Gender and Women's Studies

3-year, 15-credit program

This degree is a general liberal arts degree with a concentration in Gender and Women's Studies. It 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.

Departmental Requirements

- At least four and no more than eight credits beyond the 1000 level in Gender and Women's Studies of which two 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

B. 20-credit BA with Major in Gender and Women's Studies

4-year, 20-credit program

This program provides a more comprehensive grounding in Gender and Women's Studies than the 15-credit BA with concentration 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. 20-credit BA with Double Major

4-year, 20-credit program

Students can combine a concentration of 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 ten and no more than thirteen credits beyond the 1000 level in two allied subjects, one of which is Gender and Women's Studies, with no more than nine and no fewer than four 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

4-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, French, History, International Development Studies, Philosophy, Political Science, Psychology, Sociology, Social Anthropology, 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 B.A. with Combined Honours Program in the Degree Requirements section of this calendar. After meeting the first year requirements, students have two options from which to choose. The First Option, a maximum of seven (7) full credits in the major subject with a minimum of four (4) full credits in the allied subject. In addition, four (4) full elective credits which are not from the major or allied subject group. The Second Option, with departmental approval, a maximum of nine (9) full credits in the major subject with a minimum of four (4) full credits in the allied subject. This particular option can be broken down further into a combination of eight (8) full credits in the major subject and five (5) full credits in the allied subject or seven (7) full credits in the major subject and six (6) full credits in the allied subject. In addition, two full elective credits which are not from the major or allied subject group.

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 (i.e., 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.

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, 2301.03, 2500.03, 2800.06 (Normally this requirement should be met in the second year of the program.)
 - b) At least one half credit from the following: GWST 3006.03, 3500.03, 3600.03, 3650.03, 3800.03, 3911.03, 3912.03.
 - c) 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.)
 - d) 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.

E. Bachelor of Computer Science with a Minor in GWST

Dalhousie University has approved a set of minors for the Bachelor of Computer Science (with/without Honours, with/without co-op). The basic format is that you require 4 full credits at or above the second year level in the minor area that include at least 2 full credits at or above the third year level. You must also take any first year courses that are needed as pre-requisites.

- 2 full credits of GWST electives at or above the 2000 level
- 2 additional full credits of GWST electives at or above the 3000 level
- At least three different disciplines shall be represented in a student's selection of cross-listed Gender and Women's Studies classes.

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): J. Warwick
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.

FORMAT: Variable
PREREQUISITE: Variable

GWST 2053.03: Women and Islam.

An introduction to the various attitudes within the Islamic world concerning women. Topics to be covered include: the status of women in the Koran and the classical commentary traditions, images of the "ideal woman" in literary and popular tradition, and recent debates over the application and modern interpretation of Islamic law as it pertains to women. Regional and cultural variation within the Islamic world as to understandings of gender, sexuality, and purity will be discussed, as will contemporary points of debate surrounding the meaning of visible markers of Muslim identity like the hijab (veil).

FORMAT: Lecture/seminar
PREREQUISITE: Second year or above
CROSS-LISTING: RELS 2053.03

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 2200X/Y.06: Fictions of Development.

This course is a study of a variety of literary works (chiefly novels) written in English which portray the crises and the conflicts involved in growing up, finding a vocation, and finding oneself. Special attention is given to the connections between art and autobiography, and between literature and psychology, as well as to the influence of gender and cross-cultural differences in patterns of human development, and ways of writing about them.

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/discussion
PREREQUISITE: ENGL 1000X/Y.06 or permission of the instructor
CROSS-LISTING: ENGL 2221.06

RESTRICTION: Preference is given to majors in Gender and Women's Studies and English

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
CROSS-LISTING: ECON 2217.03

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

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

GWST 2400X/Y.06: Work and Occupations in a Changing World.

This class explores the consequences of several major upheavals in the world of work that are currently underway. These include the relocation of manufacturing from Northern countries to Southern countries, and the expansion of the presence of women in labour forces as workers over much of their adult life cycle. Topics may include: the international division of labour; home based labour; the impact of work on family life and family life on work; work in contemporary film; managerial and union strategies; and the relationship between education and employment. It is a sound basis for further study in the areas of management, labour relations, gender studies or development studies.

CROSS-LISTING: SOSA 2161X/Y.06

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, 1050X/Y.06, 1100X/Y.06 OR 1200X/Y.06

EXCLUSION: SOSA 2160.03

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): S. Campbell

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.

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): Kesselring, K. J.

FORMAT: Seminar

PREREQUISITE: One previous history class

CROSS-LISTING: HIST 3013.03

GWST 3016.03: Women and Religion.

This course will study the roles and the understanding of women in both ancient and modern religious traditions, including an investigation of the attitudes towards women in the authoritative writings and practices of various traditions. Special attention will be given to the differing and competing views and interpretations of received doctrines and texts. The specific religious traditions and texts to be studied will vary from year to year.

FORMAT: Seminar

PREREQUISITE: See RELS 3016.03

CROSS-LISTING: RELS 3016.03

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 3050.03

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 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 3250.03: French Women Writers through the Centuries/ Les femmes écrivains: du temps des cathédrales à celui.

A chronological survey based on the study of literary texts by French Women Writers, this class will attempt to analyze the society of the time, the way it portrayed women and their role, and the overall condition of women. Emphasis will be given each time to a special period/authors within the context of the survey. Students taking the class as a Gender and Women's Studies credit may write their essays and exams in English.

RECOMMENDED: FREN 2201.03 or FREN 2202.03

FORMAT: Lecture/discussion

CROSS-LISTING: FREN 3250.03

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

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: HIST 3350.03

GWST 3310.03: Gender and Development in Africa.

This class examines the economic, political and social roles of women and men in Africa from precolonial to modern times. It analyzes the way women and men construct their lives participate in political and economic processes and contest and reinforce the definitions of womanhood and manliness in various African societies. The class will examine development and feminist/gender theory in light of recent debates over gender and development issues.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: Any 2000-level African History class or permission of the instructor

CROSS-LISTING: HIST 3461.03/5461.03

GWST 3350.03: Postmodern Strategies in Literature by Women.

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 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 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.

INSTRUCTOR(S): S. Campbell

FORMAT: Seminar

PREREQUISITE: 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: PHIL 3170.03, PHIL 5170.03, GWST 5170.03

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 health care. 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 health care define and enforce the very categories of 'women' and 'men'?; (2) how does gender, thus defined and enforced, affect the health, health care, 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 History.

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, Africa 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: Seminar

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 (for example, Buffy the Vampire Slayer, Queer as Folk, The Lord of the Rings, and the music videos of Madonna) to the oppositional (for instance, the theatre of Split Britches and Sky Gilbert, the performance art of Diamanda Galás and Cindy Sherman). Through this intertextual exploration of theory and performance, we will aim to expand our understanding of the ways in which gender roles are created, maintained, questioned and changed in contemporary culture(s).

INSTRUCTOR(S): R. Barker

FORMAT: Seminar

PREREQUISITE: None, although a background in Gender and Women's Studies, Theatre or Dramatic Literature will be an asset.

CROSS-LISTING: THEA 3912.03

GWST 4000.03: 4100.03/4200X/Y.06: Topics 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.

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 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 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 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 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: Approval from Coordinator - Gender & Women's Studies

CROSS-LISTING: INTD 4211

GWST 4250.03: Québec Women Writers/Écrivaines québécoises.

This class will explore the condition of women as revealed in texts by Quebec women writers. In any given year different writers and time periods will be covered, and a variety of genres may be included.

RECOMMENDED: FREN 2201.03/2202.03 and at least one third-year literature class, preferably French Canadian

INSTRUCTOR(S): B. Bednarski, I. Oore

FORMAT: Lecture/discussion

CROSS-LISTING: FREN 4904.03

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 or J. Bankier

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 4320.03: Empowerment, Gender and Development.

Feminist scholarship and activism has spawned a number of theoretical explanations for gender inequalities. In the last decade, poststructuralist and postmodernist critiques have influenced feminist theories in important ways. Grand theories of the past have been called into question; universals have been overtaken by particularities and difference(s).

Feminists have reacted to these critiques in a number of ways. Some reject it outright, while others call for a synthesis. Scholars and activists concerned with international development have frequently rejected these debates as irrelevant to the practical concerns of development. However, some scholars have responded more favorably to these ideas. This class will explore the various feminist theories, particularly postmodernist influences, and assess their importance for both the theory and practice of development, especially the development of women.

INSTRUCTOR(S): Staff

FORMAT: Seminar

CROSS-LISTING: HIST 4320.03, HIST 5320, INTD 4320.03

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

CROSS-LISTING: HIST 4330.03, HIST 5330.03

GWST 4350.03: Human Rights Law and Protection in Canada.

This seminar offers students an in-depth exposure to the jurisdictional network of human rights legislation, policies, and mechanisms set up under both the common law and civil law regimes to ensure the protection of human rights in Canada. Students will critically examine relevant reports, doctrinal writings and jurisprudence generated by Collective Agreement Labour Arbitrations, by human rights Tribunal and Board of inquiry Hearings, and by Supreme Court of Canada decisions, so as to identify the evolutionary trends of Canadian legislation and Case Law. The seminar will focus both on those substantive deficiencies and procedural limitations that inhere in the current systems, and on the public response to Canadian domestic implementation and delivery of human rights protection. This course offers Gender and Women's Studies students the opportunity to learn about Canadian policy and law regarding diverse grounds of discrimination, and to increase their understanding of the intersection of gender with other areas of discrimination, specifically race, disability, class, sexual orientation, and age.

INSTRUCTOR(S): E. Thornhill

FORMAT: Lecture/seminar

PREREQUISITE: Permission of the instructor

CROSS-LISTING: Laws 2195.03

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 this century: 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 focussed area of feminist philosophy. Previous topics have included feminist ethics, feminist epistemology, postmodern feminism, the feminist sexuality debates, and ecofeminism.

INSTRUCTOR(S): S. Campbell, P. Glazebrook

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 4550.03: 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 Lanclos, 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): K. Waterson

FORMAT: Lecture/discussion/group activities

PREREQUISITE: 3000-level French literature class or instructor's consent

CROSS-LISTING: FREN 4550.03

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).

German

Location: 6135 University Ave., Room 3054
Halifax, NS B3H 4P9
Telephone: (902) 494-2161
Fax: (902) 494-2719
Website: german.dal.ca

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Curran, J.V. (494-1091)

Undergraduate Advisor

Garvey, B.V. (494-1095)

Honorary Professor

Michelsen, P., PhD (Göttingen), Professor of German, Heidelberg University

Professor Emeritus

Gaede, F.W., PhD (Freiburg), FRSC

Professors

Curran, J.V., BA (Hons), MA (Dal), PhD (Newcastle upon Tyne)
Schwarz, H.-G., MA (Munich), PhD (McGill), McCulloch Chair in German; also appointed to the at University of Heidelberg

Associate Professor

Sidler, J. MA (Freiburg), MA (Dal), PhD (Queen's)

Assistant Professor

McGonagill, D. MA (Dal), PhD (Harvard)

Adjunct Professors

Aurnhammer, A., Dr. phil.habil, Univ of Freiburg
Curran, T.H. BA (Hons) (Toronto), MA (Dal), PhD (Durham)
Grüning, H.-G., Dott., Univ. of Macerata
Heuer, F., Dr. phil., Univ. of Heidelberg
Kanzog, K., Dr. phil., (Berlin), Dr. habil. (Munich)
Strack, F., Dr. phil. habil., Univ. of Heidelberg

Visiting Professors

Heuer, F., Dr. phil., Univ. of Heidelberg
Wassermann, F., Prof. Univ. of Heidelberg

Instructor

Garvey, B.V., BA (Hons), MA (Dal)

Lecturers

2 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 course 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 (5 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 without fees to one of the most prestigious MBA-programs in International Industrial Management in Germany at the FH-Esslingen in co-operation with Daimler-Chrysler 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 courses, 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 3 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 course 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 65 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

1000 level: German 1001.06 or 1010.06 or 1060X/Y.06
2000 level: Seven credits at or above the 2000 level
3000 level: Two credits at the 3000 level or higher, in addition to those listed above

Please note that Honours students must have at least two classes in Literature or Thought above the 2000 level.

B. Combined Honours

It is possible for a student to take an honours degree combining German with another subject. Any student intending to take such a combined honours degree should consult with the two respective departments to arrange the details of such a program.

C. 20-credit BA with Major in German

1000 level: German 1001.06 or 1010.06 or 1060X/Y.06

2000 level: Three credits at or above the 2000 level

3000 level: Three credits at the 3000 level or higher, in addition to those listed above

D. 15-credit BA with Concentration in German

1000 level: German 1001.06 or 1010.06 or 1060X/Y.06

2000 level: Two credits at or above the 2000 level

3000 level: Two credits at the 3000 level or higher, in addition to those listed above

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.

All students with previous knowledge of German should see the Undergraduate Advisor.

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: 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: 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: 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: 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: 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, 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.

EXCLUSION: GERM 1020X/Y.06

GERM 1060X/Y.06: German Reading Class for Beginners.

Students acquire a knowledge of basic vocabulary and grammatical structures sufficient to understand newspapers and 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.

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): J. Sidler

FORMAT: Seminar

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: 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: ✍ Writing Requirement, Seminar

EXCLUSION: GERM 2010.03, GERM 2011.03

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 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 2010.03: Germanic Myths and Tales I.

The class will begin with the great Germanic epic of the Nibelungen, rediscovered in the eighteenth century. In the nineteenth century, the composer Wagner adopted the stories for his Ring cycle, which will be discussed with musical examples. Finally the case against Wagner, put forward by the philosopher Nietzsche, will complete the readings. The readings will be in German but the language of instruction will be English.

INSTRUCTOR(S): J. Curran

FORMAT: Seminar

PREREQUISITE: GERM 1010X/Y.06 or 1060X/Y.06 or equivalent

EXCLUSION: GERM 1080X/Y.06

GERM 2011.03: Germanic Myths and Tales II.

In this class, we will read the famous collection of fairy tales compiled by the Grimm Brothers in the first quarter of the nineteenth century. The class asks why they were so popular at the time and looks at the reason for their seemingly endless appeal since. We will consult and evaluate a wide variety of critical approaches to the material. The reworkings of the tales in other genres will also be discussed. The texts will be read in German but the language of instruction will be English.

INSTRUCTOR(S): J. Curran

FORMAT: Seminar

PREREQUISITE: GERM 1010X/Y.06 or 1060X/Y.06 or equivalent

EXCLUSION: GERM 1080X/Y.06

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: 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 equivalent

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 2080.06: German Folk and Fairy Tales.

See description under German 1080X/Y.06. This seminar is held with GERM 1080X/Y.06 and shares the same aims, but GERM 2080 students will read most texts in German, and complete some assignments in German. The language of instruction in the seminar is English, but the tutorial is only for GERM 2080 students and is held primarily in German.

INSTRUCTOR(S): B. Garvey

FORMAT: Seminar

PREREQUISITE: GERM 1001X/Y.06 or GERM 1010X/Y.06 or GERM 1060X/Y.06

EXCLUSION: GERM 2010.03 and GERM 2011.03

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: 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): 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: 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): J. Curran

FORMAT: Seminar/tutorial

PREREQUISITE: GERM 2000X/Y.06 or equivalent or a reading knowledge of German

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: 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): 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: 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: Seminar

PREREQUISITE: GERM 2000X/Y.06 or GERM 2200X/Y.06 or King's Foundation Year

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 and ("Zufall"), counter man's perceived freedom, as is shown in the works of Henrich 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 3000X/Y.06: Advanced German.

Translations, readings, essays and discussions will promote fluency in the language on the advanced level.

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: 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).

INSTRUCTOR(S): J. Sidler

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).

INSTRUCTOR(S): J. Sidler

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.

INSTRUCTOR(S): Staff

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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: 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: 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 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: 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): J. Curran

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: 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): J. Curran

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: 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): 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: 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): 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 Reformation; we shall end with Nietzsche and his post-modern pupils of the 20th century.

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: 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 begins with the reception of Shakespeare and Milton in the mid 18th century. The Sturm und 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 and became the basis for 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: 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): H.-G. Schwarz

FORMAT: Seminar

PREREQUISITE: GERM 2200X/Y.06, 2400X/Y.06 or other German literature class at the 2000 level

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: 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: Seminar. Held together with GERM 5660X/Y.06

PREREQUISITE: GERM 2200X/Y.06 or GERM 2400X/Y.06 and another literature class

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: 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: 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: 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: 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

Health Studies

Contact Person: Dr. Katherine Fierlbeck
 Location: Department of Political Sciences
 Faculty of Arts and Social Sciences
 Telephone: 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 4 classes (24 credit hours) above the 1000 level. A minimum of B- in the approved classes earn 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
- 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
- PHYSL 2030.06: Human Physiology.
- 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 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
- 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
- *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 3300.06: History of Biology

Faculty of Engineering

- FOSC 4090.03: Food Hygiene and Public Health

Faculty of Health Professions

- HAHF 1000.03: Introduction to Health Promotion
- HAHF 1200.03: Communication
- HAHF 2000.03: Human Growth and Development
- HAHF 3000.03: Community Development
- 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
- 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

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Fax: (902) 494-3349
Website: www.dal.ca/FASS

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Tillotson, S. (494-3364)

Undergraduate Coordinator

Kynoch, G. (494-3667)

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
Neville, C.J., BA, MA (Carleton), PhD (Aberdeen) FRHistS
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)
Kesselring, K., BA, MA (Dal), PhD (Queen's)
Kynoch, G., BA, BEd (Queen's), MA, PhD (Dal)
Pekacz, J., MA (Jagiellonian), PhD Musicology (Polish Academy of Sciences), PhD History (Alberta) (Canada Research Chair in European Studies)
Tillotson, S.M., BIS (Waterloo), MA, PhD (Queen's)
Zachernuk, P., BA, MA (Dal), PhD (Toronto)

Assistant Professors

Bingham, J., BA (UNB), MA (Toronto), PhD (York)
Bleasdale, R., BA, MA, PhD (Western)
Campbell, C., BA (King's/Dal), MA, PhD (Western)
Corke, S.J., BA, MA (Guelph), PhD (UNB)
Ghazal, A., BA (Beirut), MA, PhD (Alberta)
Heilman, J., BA (Alberta), MA, PhD (Wisconsin-Madison)
McCallum, T., BA (Queen's), MA (Simon Fraser), PhD (Queen's)
Mitchell, C., BA (Regina), MA (McGill), PhD (Toronto)

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, Women, 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, 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 consider acquiring 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 with Honours in History (20-credit)

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 (9) but not more than eleven (11) 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 9 full History credits
- A grade of B- or better is required on the honours paper

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 with Combined Honours including History (20-credit)

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for Combined Honours (20-Credit). Students must take 11-13 credits in two subjects beyond the 1000-level, with at least seven (7) in one of them and no more than nine (9) nor fewer than four (4) credits in either of them. Within the last fifteen credits students must take at least one (1) credit in a single subject other than the two honours subjects. Students must complete two (2) full credits at the 3000/4000 level in both Honours subjects.

C. BA with Major in History (20-credit)

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 (6) but not more than nine (9) History credits beyond the 1000-level.

- At least three of these History credits must be above the 2000-level.
- Within the last fifteen (15) 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 with Double Major including History (20-credit)

Besides the general requirements for all BA programs, students must meet the Faculty degree requirements for the BA with Double Major, which include 10-13 credits in the major subjects beyond the 1000-level, with no more than 9 nor fewer than 4 in either subject. Students must complete at least 2 credits above the 2000-level in each major subject. Within the last 15 credits, students must complete one (1) 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 with Concentration in History (15-credit)

The three year program is a general liberal arts degree with concentration in History. It permits a wide range of choice in the selection of classes. Besides the general degree requirements for all BA degrees, students are required to take:

- At least four (preferably five) and not more than eight full credits in History, beyond the 1000 level.
- At least two of these credits must be above the 2000-level.
- Within the last ten (10) credits, one (1) credit in each of two subjects other than History.

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 level, 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; 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: 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: 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: 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): J. Bingham, K. Kesselring

FORMAT: Writing requirement. Lecture/discussion

EXCLUSION: HIST 1004.06X/Y

HIST 1501.03: 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 lie, 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 help reveal the ties which bind us together.

FORMAT: Lecture/tutorial 3 hours

EXCLUSION: HIST 1500.06

HIST 1862X/Y.06: North American Experiences.

Canada and the United States are neighbours with a history which, for hundreds of years, has both brought them together and kept them apart. The ebb and flow of integration and separation continues to be a source of fascination and debate among both peoples. In an effort to understand why, over time, Canadians and Americans have become both similar and different, this class tours major episodes in their respective national experiences. Themes discussed include the Civil War and Confederation,

settlement of the West and encounters between Natives and Newcomers, urban life, paths to war and empire, the invention of popular culture, nationalism and federalism.

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): C. Campbell/Staff

FORMAT: Lecture

EXCLUSION: HIST 1200X/Y.06, HIST 1300X/Y.06, HIST 1867X/Y.06

HIST 1867X/Y.06: North Americans in Transition.

This class explores central features of Canadian and American history since the 1860s. By looking at a series of episodes, ranging from the U.S. Civil War and Canadian Confederation, to the Cold War and youth culture, students will participate in an exploration of those forces which have given shape to the similar but still distinctive identities of Canada and the United States.

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): Staff

FORMAT: Writing Requirement, lecture /discussion

EXCLUSION: HIST 1862.06

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 familiarize 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. These include church-state relations, heresy, peasant life and peasant rebellions, 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

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, HIST 2006.03

INSTRUCTOR(S): J. Bannister

FORMAT: Lecture/discussion

HIST 2012.03: Absolutism and Revolutionary Europe.

The course will focus on the major political, social, intellectual and artistic developments of eighteenth-century continental Europe. Topic 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/tutorial

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: Greece in the Fifth Century B.C.

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: 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): G. Hanlon

FORMAT: Lecture/tutorial

HIST 2020X/Y.06: Imperial and Soviet Russia.

A survey of Russian history from the time of Peter the Great to the present. Emphasis is on themes of continuity in the process of modernization, as well as upon elements of discontinuity such as the Great Reforms of Alexander II, the Revolutions of 1917, the collectivization of the peasantry under Stalin, through to the end of the Gorbachev era.

RECOMMENDED: HIST 1001.03 or 1002.03 or 1050.06 or 1400.06

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/tutorial

CROSS-LISTING: RUSN 2021X/Y.06

EXCLUSION: HIST 2021.03, RUSN 2023.03

RESTRICTION: Restricted to students in their second year or higher (first year students, with permission of instructor)

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.

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

CROSS-LISTING: RUSN 2022.03

EXCLUSION: HIST 2020X/Y.06, RUSN 2021X/Y.06

HIST 2030X/Y.06: Germany in the Nineteenth and Twentieth Centuries.

Since unification in 1871, Germans have undergone an extraordinary variety of conditions and experiences, often in dizzying succession. The spectres of Nazism and genocide, in particular, remain matters of fundamental concern even to young Germans today. Less obviously, the tensions and divisions that preceded unification both in 1871 and 1990 did not disappear afterwards. German society continued to show all manner of divisions and fractures of gender, class, region, politics and religion. This class therefore emphasizes not so much the history of a single Germany as it does those of the many Germanies that have coexisted during the last two centuries. In their own work, students will be encouraged to explore the many facets of German social, cultural and political experience.

NOTE: Students must register in, and pass, both PHYL 2030X and PHYL 2030Y. Credit will only be given upon the successful completion of both halves.

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/tutorial

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/tutorial

EXCLUSION: HIST 2030.06X/Y

HIST 2041.03: France from the Revolution to the Great War.

This class surveys French history starting with the tumult of the Revolution of 1789 and its Napoleonic aftermath. Special emphasis is laid on the revolutionary legacy, and the impact of French politics on Europe until the First world War. The class also examines the salient aspects of French culture in the brilliant 19th century, and France's transformation from an agricultural land to an industrial and financial power. Open to first-year students. No French required.

RECOMMENDED: HIST 1004X/Y.06

INSTRUCTOR(S): G. Hanlon

FORMAT: Lecture/tutorial

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): Bell, C.

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: 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): 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

EXCLUSION: HIST 2060.06

HIST 2074X/Y.06: Introduction of the History of Science.

See class description for HSTC 1200X/Y.06 in the History of Science section of this calendar.

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: 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): J. Bingham

FORMAT: Lecture/tutorial (audio-visual facilities as needed)

EXCLUSION: HIST 2082.03

RESTRICTION: Restricted to students in their second year or higher.

HIST 2082.03: Twentieth-Century Europe in Literature, Art and Film.

A survey of contemporary European history that employs representative works of literature, arts, 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 1004.06

INSTRUCTOR(S): J. Bingham

FORMAT: Lecture/tutorial

EXCLUSION: HIST 2081X/Y.06

RESTRICTION: Restricted to students in their second year or higher

HIST 2088.03: Greek Culture from Palace to Polis.

See class description for CLAS 2214.03 in the Classics section of this calendar.

HIST 2089.03: Greek Culture from Polis to Cosmopolis.

See class description for CLAS 2216.03 in the Classics section of this calendar.

HIST 2090.03: The Rise of Rome: 1000-31 BCE.

See class description for CLAS 2231.03 in the Classics section of this calendar.

HIST 2091.03: The Roman Empire: Cycles of Collapse and Rebirth.

See class description for CLAS 2232.03 in the Classics section of this calendar.

HIST 2100X/Y.06: England, 1066-1960.

A survey of English history from the Norman Conquest in 1066 to decolonisation in the twentieth century. Topics include the growing authority of the central government, the role of religion and reformation in politics, the expansion overseas, industrialisation, and the growth of parliamentary democracy. While the focus is political history, special attention will be given to the themes of protest and the peripheries.

NOTE: Students taking this class must register in both X and Y in the same academic year; credit will be given only if both are completed consecutively.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Lecture

EXCLUSION: HIST 2101.03, HIST 2102.03, HIST 2104.03, HIST 2105.03, HIST 2106.03, HIST 2111.03, HIST 2112.03, HIST 2113.03

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 the departure of the Romans to the sixteenth-century Reformation. After a brief introduction to the historical geography of Scotland the lectures examine a series of themes arranged in roughly chronological fashion, including the early peoples of "dark age" Scotland, 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 civilisation 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 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. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

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. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial (evening)

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, the diversions, recreations and forms of community control engaged in by Canadians, and the attempts by authorities and the law to bring order to the culture. Topics range widely over the broad scope of popular culture, from sports, drinking and prostitution to religious organization. Study of the mechanisms and institutions for imposing order includes the criminal law, industrial discipline, and more respectable forms of cultural activity. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

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 study of Canadian popular culture described in HIST 2221.03, from the turn of the century to the present. Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

EXCLUSION: HIST 3241.03, 3242.03, 3280.03, 3281.03

HIST 2230X/Y.06: Canada in the Twentieth Century.

A survey of the roots of contemporary Canada, which studies the origins of our current issues and problems by focusing on Canadian political developments, as well as on economic and social structures, in particular, against the backdrop of socio-economic change. French-English relations, federal-provincial relations, and regional disparities are key to this presentation of the development of contemporary Canada. Approved with Canadian Studies.

RECOMMENDED: An introductory class in Canadian history

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): Staff

FORMAT: Lecture/tutorial

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.
INSTRUCTOR(S): R. Bleasdale
FORMAT: Lecture/discussion
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 and discussion

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? Approved with Canadian Studies.
INSTRUCTOR(S): C. Campbell
FORMAT: Lecture/tutorial

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. Approved with Canadian Studies.
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. Approved with Canadian Studies.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture/discussion
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. Approved with Canadian Studies.
INSTRUCTOR(S): J. Bannister
FORMAT: Lecture/discussion
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): Staff
FORMAT: Lecture
EXCLUSION: HIST 2330X/Y.06

HIST 2332.03: The American Republic from 1865 to 1990.

The United States has been the world's most powerful nation for much of the 20th-century. This class traces American pre-eminence from the sectional divides of the mid-19th century through the end of the Cold War in the late 20th-century. Key themes include: a) continuities of migration and ethnic pluralism; conquest, expansion, and technological change; social and economic values and political culture; discontinuities b) the Civil War; the rise of big business; World War II; the Great Depression; communism and totalitarianism abroad; the civil rights movement; and the current crisis of New Deal liberalism.

INSTRUCTOR(S): S.J. Corke
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 mass culture has become familiar to billions throughout the world in this century. One would be hard pressed to discover in Germany, Japan, Brazil or Canada, college students unfamiliar with Elvis, Hollywood, adolescence, IQ, McDonald's, the Blues, Superbowl, or the Pill. In this class the concern is with the historical development of these cultural phenomena rather than with their export to the rest of the world. Lectures and readings focus on such matters as changing moral standards for young Americans, fashion and gender roles, food and film. Recordings and movies supplement the lectures.

RECOMMENDED: HIST 1300X/Y.06
INSTRUCTOR(S): Staff
FORMAT: Lecture/tutorial
RESTRICTION: Restricted to students in their second year or higher

HIST 2336.03: The American Century: American Foreign Relations in the Twentieth Century.

More than six decades ago Henry Luce the editor of Time Magazine argued that the 20th Century was "the American Century," and he urged the American people to shoulder the burdens that such a destiny required. This course is designed to assess the record of US foreign policy over the last one hundred years. Its goal is to address the question of whether the Americans were successful in meeting Luce's challenge. In order to get at this question this course examines American foreign policy from the turn of the century to the Gulf War. We will discuss US imperialism and the birth of the American empire in South America, World War One, World War Two, the Cold War, the Korean War, the Cuban Missile Crisis, the Vietnam War, Détente, and the end of the American-Soviet rivalry.

INSTRUCTOR(S): S.J. Corke
FORMAT: Lecture

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): J. Heilman

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. The course pays particular attention to issues of race, gender, class, and faith.

INSTRUCTOR(S): J. Heilman

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): J. Heilman

FORMAT: Lecture

EXCLUSION: HIST 2381.03

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, 1750-1923.

This class will examine the beginning of the Ottoman decline in the 18th century, and its attempts to maintain territorial and economic integrity against the competing forces of European imperialism, nationalism, and capitalism in the 19th century. The class will end with World War One and the dissolution of the Ottoman sultanate.

INSTRUCTOR(S): A. Ghazal

FORMAT: Lecture/discussion

HIST 2503.03: From Cordoba to Jakarta: Islamic Civilizations in a Global Perspective (Seventh-Eighteenth Centuries).

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: History of the Modern Middle East in the 20th Century.

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: pan-Arabism, the Arab League, the rise of Ba'ath parties, and the ongoing Palestinian-Israeli conflict.

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 in her Near Eastern Context.

See class description for CLAS 2220.03 in the Classics section of this calendar.

HIST 2614.03: Making Gender - Male and Female from Antiquity to Mary Wollstonecraft.

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 exposed in this class through topics such as: the origins myths of western civilization, the Galenic one-sex model of physiology, patristic theology, the cult of courtly love, eighteenth-century salons, and the rights of man.

INSTRUCTOR(S): S.M. Tillotson

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 2995.03: History of Modern Medicine, 1800-1950.

This class examines the state of medicine in 1800, 1850, 1900 and 1950, and the transition of American and Canadian medicine from a low status, ineffective, poorly trained group of competing sects to what it is today. For each of the four periods the emphasis is on medical training, the diagnostic and therapeutic capabilities of physicians, their views on disease etiology, their attempts to control the size and quality of the profession and to prohibit the entry of women, and the scientific background to their views.

FORMAT: Lecture/discussion

CROSS-LISTING: BIOL 3404.03

EXCLUSION: HIST 2295.03

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 does not attempt to provide a chronological survey of the development of the Western church, but deals rather with topics that 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 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: England and the Celtic Realms. 1000-1603.

This class examines the social, political and cultural history of the Gaelic speaking peoples of the British Isles from c. 1000 to the union of the crown in 1603, with particular emphasis on relations between the peoples of Wales, Scotland, and Ireland on the one hand, and the culture of the English kingdom on the other. The class begins with a comparative study of such fundamental Celtic institutions as the family, kinship, the law, and the church at the end of the first millenium, and on the various sources that inform the early history of the three realms. It then examines in considerable depth the penetration and influence of European ideas into all three in the aftermath of the Norman Conquest of England 1066, and in the centuries that followed. 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 civilisation of the period, the reading of contemporary works (in translation) constitutes an integral part of the class.

INSTRUCTOR(S): C.J. Neville

FORMAT: Lecture/discussion

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 3020.03: Fall of the Roman Republic.

See class description for CLAS 3205.03 in the Classics section of this calendar.

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: 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): G. Hanlon

FORMAT: Lecture/discussion

PREREQUISITE: FYP or some background in early modern or medieval history

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 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, class 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

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 fascinating 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: 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): J. Bingham

FORMAT: Lecture/discussion

PREREQUISITE: One European history class or permission of instructor

HIST 3053.03: Facist and National Socialist Movements in Europe, 1900-1945.

Between the World Wars, virtually every European country had one or more groups that considered themselves or were considered fascist: in Germany and Italy, of course, but also in France, Spain, Hungary, Romania, and elsewhere. The seminar will explore the ideals, experiences, aspirations and political realities of the simultaneously threatening and fascinating historical problem.

CROSS-LISTING: HIST 5056.03

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 in 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, and finally the creation of the state of Israel in relation to the Holocaust.

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 or modern British History

EXCLUSION: HIST 1990.06, HIST 3055.06

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 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): Staff

FORMAT: Seminar

PREREQUISITE: Reading knowledge of Russian (at least two years of language study) and some Russian history

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): Staff

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 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 practise 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 practises 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 practises change, and the effects of such changes on the larger society.

INSTRUCTOR(S): K.J. Kesselring

FORMAT: Seminar

PREREQUISITE: One previous history class

HIST 3112.03: England, 1867-1914.

This class concentrates upon the late Victorian and Edwardian Period in British History, from 1867 to the outbreak of the first World War. It will touch upon such subjects as urbanization, class politics, and culture, the transformation of the monarchy, the problem of poverty, women's emancipation, and the Irish Question.

FORMAT: Lecture/discussion

PREREQUISITE: One of the following: HIST 2111.03; 2112.03; 3113.03;

3114.03; 3116.03; 2030X/Y.06; 2331.03; 2332.03; or instructor's consent.

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 3116.03: Advanced Seminar in British History - Culture, Class, and Society in Twentieth-Century Britain.

How does culture reflect social and political change? This class sets out to explore this question in the context of modern British society. Using a variety of texts, such as films like *My Beautiful Launderette*, the photographs of Bill Brandt and Humphrey Spender, the plays of John Osborne, Howard Brenton, and Caryl Churchill, art, architecture, and popular forms of culture, this seminar will examine how issues such as class tension, social change, the decline of empire and the beginning of a multi-racial society, changes in women's status, and other political and social developments were represented in twentieth-century Britain, from the First World War to the present day.

FORMAT: Seminar

PREREQUISITE: As this is an advanced seminar in British history, the instructor's permission is required for registration.

CROSS-LISTING: HIST 5116.03

HIST 3210.03: Canadian Cultural Landscape.

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

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. Approved with Canadian Studies.

RECOMMENDED: HIST 2222.03

INSTRUCTOR(S): Staff

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: 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. Approved with Canadian Studies.

INSTRUCTOR(S): S. Tillotson

FORMAT: Lecture/tutorial or seminar

PREREQUISITE: HIST 1862X/Y.06, HIST 1867X/Y.06 or HIST 2212.03 or

HIST 2230X/Y.06 or HIST 2231.03

CROSS-LISTING: 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 3228X/Y.06: Religion in Canada.

See class description for RELS 3003X/Y.06 in the Comparative Religion section of this calendar.

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. Approved with Canadian Studies.

INSTRUCTOR(S): S.M. Tillotson

FORMAT: Lecture/discussion

PREREQUISITE: One class in Canadian history, or instructor's consent

EXCLUSION: HIST 2240.03

HIST 3255.03: The Age of Macdonald and Laurier.

A seminar comprehending the society and politics of Canada from Confederation to the First World War. Themes of particular importance are imperialism, nationalism, and racism; the clash of nationalisms; the opening of new frontiers; politics and ideology. Approved with Canadian Studies.

FORMAT: Lecture/discussion

PREREQUISITE: A survey of Canadian history or HIST 1862.06 or HIST 1867.06

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

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 3292.03: Wealth and Power in North America.

Business enterprises have played a major role in shaping the social and political as well as economic development of the United States and Canada over the past two hundred years - perhaps more so than in most other modern nations. This class explores the growth and significance of business in the history of these two countries. Among the topics covered are: entrepreneurship, technical innovation and economic growth; the rise of big business and management organization; the convoluted and controversial linkages of business and government; and the emergence of multinational enterprises and their impact on Canadian-American relations. Approved with Canadian Studies.

RECOMMENDED: A survey class in United States or Canadian history

FORMAT: Seminar

PREREQUISITE: One class in Canadian or United States history, or an appropriate class in a related discipline.

EXCLUSION: HIST 3291.03

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: 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: 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 3302.03: Technology and History in North America.

The effects of technology on our lives are ever-present, from debates over the ethical uses of biogenetics to promises of a glowing future through “high-tech” enterprises and computer networking. The continuing impact of technological change has been a central feature of the history of the United States and Canada since the Industrial Revolution in the nineteenth century. This class examines aspects of this history, including the origins of technological, innovation and the impact of technological change on the household, the workplace, the environment as well as broader economic and political events. Approved with Canadian Studies.

RECOMMENDED: One class in Canadian or United States History

FORMAT: Lecture/Discussion

HIST 3331.03: The United States, Canada and the World.

At the end of the Second World War the United States was the world's foremost military and economic nation, and Canada had gained a sense of autonomy as an emerging “middle power”. This class focuses on the foreign relations of these two countries through the Cold War and post-Cold War eras, examining the impact of economic and technological as well as political and military developments, and places the United States-Canadian relationship in the context of global changes. Approved with Canadian Studies.

RECOMMENDED: One class in Canadian or United States History or an appropriate class in a related discipline

FORMAT: Lecture/Discussion

HIST 3335.03: The Cold War, 1945-1989.

This course is designed to introduce students to the history of the Cold War. The Cold War – or a period of intense conflict between the United States and the Union of Soviet Socialist Republics – manifested in the post World War era and continued until George Bush and Mikhail Gorbachev proclaimed its end in 1989. In order to explore this topic in this course we will examine a number of issues including: the origins of the crises; the Korean War; the Cuban Missile Crisis; the Nuclear Arms Race; détente and the end of the Cold War. Rather than concentrating 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 period under question and to some of the theories historians have used to think about and/or interpret the Cold War experience.

CROSS-LIST: HIST 5335.03

INSTRUCTOR(S): S.J. Corke

FORMAT: Lecture/discussion

PREREQUISITE: Any 1000 or 2000 level North American history course

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 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): Staff

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): Staff

FORMAT: Seminar

PREREQUISITE: HIST 1300X/Y.06 or second-year United States history class

HIST 3365.03: The Vietnam War.

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, the seminars 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

PREREQUISITE: One general twentieth-century history class

HIST 3368.03: America in the 1950s.

This course is designed to introduce students to the domestic side of the Cold War. It will explore American political-culture during the years 1945 through 1950. We will begin the course by examining the socio-political repression that came to embody American society in the 1950s. Topics such as McCarthyism, consensus, ideology, and the limits of intellectual and political freedom will be discussed in order to get at the wider ramifications of the culture of conformity that came to characterize American life in the 1950s. While conformity was an important aspect of American political culture, during this period there were also certain

groups who emerged to challenge the existing societal structures. In order to understand their motivation, in the second part of the course we will also examine the new youth culture and the birth of Rock and Roll, the emergence of the Beatniks and the role of art in the Cold War. All three of these developments helped undermine the culture of conformity that characterized the 1950s. 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: Any 1000 or 2000 level North American history course

HIST 3369.03: America in the 1960s.

The "long-sixties" – a period of time 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: Any 1000 or 2000 level North American history course

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): Campbell, C.

FORMAT: Lecture/seminar

CROSS-LISTING: HIST 5370.03

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, Mexico and Peru, we will explore the making and unmaking of revolutionary political projects, paying particular attention to matters of race, class, and gender.

FORMAT: Seminar

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): J. Heilman

FORMAT: Lecture/discussion

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 labor 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: Labor, 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 labor 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 labor 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 labor 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

PREREQUISITE: Any 2000-level African history class or permission of the instructor

EXCLUSION: HIST 3450X/Y.06

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, 2131.03, 2132.03

INSTRUCTOR(S): G. Kynoch

FORMAT: Lecture/discussion

PREREQUISITE: Any 2000-level African history class or permission of the instructor

CROSS-LISTING: HIST 5452.03

EXCLUSION: HIST 3450X/Y.06

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 which comprise a multi-regional, global theme 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 3509.03: Caliphs and Khans: Islamic Civilization in the àbbasid and Mongol Age (750-1400).

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 (shī'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 (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: CLAS 3510.03, HIST 5503.03

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

CROSS-LISTING: CLAS 2602.03

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 lenses 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: HIST 2019.06 or HIST 2015.03 or HIST 2040.06 or HIST 2041.03 or 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 labor; 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 3985.03: The Human Record: A Short History of History from Antiquity to the Nineteenth Century.

How did we come to study history? In what ways does our understanding of the past differ from that of our ancestors? Do different cultures throughout the world approach the reading and writing of history in different ways? When did history become a "discipline" and how have its relations with literature, philosophy, and science evolved over three millennia? How have the social and political contexts of historical thought, as well as the information media through which such thought can be expressed, influenced what is known or written about? These are some of the questions explored in this survey of the history of history from earliest times to the late nineteenth century. Instruction by means of lecture will be supplemented by readings from select "classic" historians from Thucydides and Sima Qian in antiquity to Leopold von Ranke in the nineteenth century. Attention will also be paid to the development of alternative or subversive historiographical traditions within different societies, to the problem of historical dissent, and to the historiographical cultures of non-western societies, especially Chinese and Islamic. (Recommended for History Majors and Honours students.)

FORMAT: Lecture/seminar

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 expected to contribute to such discussions and to write one or two well-argued and documented papers. Some prior knowledge of medieval European history is essential.

INSTRUCTOR(S): C.J. Neville

FORMAT: Seminar

PREREQUISITE: HIST 2001.03 or 2002.03 or 2101.03 or 3002.03

CROSS-LISTING: HIST 5701.03

EXCLUSION: HIST 3000.06, HIST 3001.03

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 by the instructor 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.

INSTRUCTOR(S): C.J. Neville

FORMAT: Seminar

PREREQUISITE: HIST 2100.06 or 2101.03 or HIST 3003.03

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 4104.15: 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

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.

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

HIST 4160.03: Advanced Seminar in Baroque Culture.

This experimental class will offer a small group of Honours and graduate students in Theatre, History, and other related disciplines a first-hand view of some of the most important aspects of baroque material culture. It will be taught as a Summer course by Dalhousie University faculty and local experts in the UNESCO-heritage town of Cesky Krumlov in the Czech Republic. For a complete class description see THEA 4733.03 in the Theatre section of this calendar.

FORMAT: Lecture/lab

PREREQUISITE: Permission of the Departments of Theatre and History

CROSS-LISTING: THEA 4733.03

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.

INSTRUCTOR(S): G. Hanlon, R. Barker

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

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

CROSS-LISTING: HIST 5250.03

EXCLUSION: HIST 4222 (Fall 2004 and Fall 2005)

HIST 4260.03: Cowboys in North American History and Culture.

The cowboy is one of North America's most influential icons. This class examine 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: On full credit in Canadian or American history.

EXCLUSION: HIST 4222 in 2007-08

HIST 4271.03: The Fisheries of Atlantic Canada - Society and Ecology in Historical Perspective.

The marine animals of Atlantic Canada have supported people for millennia. Popular explanations of recent collapses in many species assume that fish, as common-property, open-access resources, have been exploited by people without regard for conservation. This seminar considers such "tragedy of the commons" approaches from two perspectives: social and ecological history. It examines how gender, class and ethnic relationships have shaped fishing communities, and how such communities interact with material changes in marine environments.

Topics to be covered will include First Nations' use of marine resources, European settler fishing communities, customary regulation of marine resources, possible previous ecological crises affecting fisheries, changes in harvesting technology, state-defined marine property rights, and fisheries' "professionalization." This seminar is intended for senior History undergraduates. Its interdisciplinary nature opens the class to senior undergraduates from Biology, Economics, Environmental Science, Oceanography, Sociology and Social Anthropology, and Gender and Gender and Women's Studies. Approved with Canadian Studies.

FORMAT: Seminar

PREREQUISITE: HIST 2211.03, HIST 2212.03 or HIST 2270X/Y.06; or by consultation with instructor

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): Heilman, J.

FORMAT: Seminar

PREREQUISITE: Any Latin American history class

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 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 specifically intended 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: Instructor's permission

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 2, 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.

FORMAT: Seminar

PREREQUISITE: Instructor's permission

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 - Marx, Derrida, Foucault, Chakrabarty, Saïd - 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: Instructor's permission

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, labor/labor 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 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): T. McCallum

FORMAT: Seminar

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 to 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: 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): 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. That said, rather than concentrating solely on the events as they unfolded, 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 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: One of HIST 3367, HIST 3368, HIST 3369, HIST 3365, or HIST 3335; or HIST 5335 or HIST 5365

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: 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: Honours Essay

PREREQUISITE: Admission to History Honours Program

History of Science & Technology

Location: University of King's College
Halifax, NS B3H 2A1
Telephone: (902) 422-1271
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Interim Director

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I. History of Science and Technology Program

The history of science and technology cuts across traditional disciplines of the sciences and humanities, treating science and technology, including mathematics and medicine, as historically and philosophically significant in themselves and as integral components of the general development of knowledge, culture and society. Using the combined resources of philosophical, historical and sociological methods, the program develops an interdisciplinary understanding of the character and development of science and technology, tracing the roots and trajectories of primary conceptions of nature and of our place within it. The history of science examines the evolution and role of the "scientific method" in Western thought from Ancient times to the contemporary world, and provides a meeting place for the so-called "two cultures" in our attempt to determine what it is to be Modern.

The History of Science and Technology Program is a Combined Honours BA or BSc program offered jointly by Dalhousie University and the University of King's College. This program brings together established departmental offerings in the arts, social sciences and science at Dalhousie and joins these with History of Science and Technology classes — including a core class for each upper year of study — at King's. The King's portion of this intercampus degree program consists of interdisciplinary classes designed for an integrated study of the history of science from Ancient to Modern times. These classes are taught by specialists from a number of disciplines, involve team-teaching throughout, and are supported by a tutorial system. The intention is to provide students with a many-sided yet unified introduction to the study of the history of science.

The interdisciplinary offerings within History of Science & Technology at King's count as one of two honours subjects. History of Science & Technology classes are designed so that important figures and developments in the history of science may be considered on their own terms and in relation to other important aspects of the periods. This will involve familiarity with primary texts in the field as well as the philosophical, cultural and social contexts within which these texts appear. The non-required classes focus on related issues within the history of science. Many of them pursue in greater depth questions introduced in the core classes.

Aside from preparing undergraduates for future specialized training at the graduate level in the expanding fields of Science and Technology Studies and the History and Philosophy of Science and Technology, History of Science & Technology is intended to provide a broad view of the growth of science and technology, their conceptual foundations and cultural ramifications. Similarly, History of Science & Technology provides science students with an examination of the roots and assumptions of their fields of study.

II. Degree Program

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, English, French, Gender and Women's Studies, German, History, International Development Studies, Music, Philosophy, Political Science, Russian Studies, Sociology, Social Anthropology, Spanish, 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, Comparative Religion, Contemporary Studies, Early Modern Studies, Music, and Oceanography.

A. Combined Honours

Students who are eligible to take an honours degree should apply to the History of Science & 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 65. 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 & Technology teaching staff.

All History of Science & 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 normal requirement of eleven full credits beyond the 1000-level in the two honours subjects, but not more than seven full credits being in either of them. Students may, with the approval of both the Dalhousie department concerned and the History of Science and Technology teaching staff, elect a maximum of thirteen full credits in the two principal subjects, not more than nine full credits being in either of them. In this case the requirement in (2) below is reduced to two or three full credits.

For the BSc, the larger number of honours credits must be in the science subject.

In the case of a Combined Honours B.A. degree, a normal requirement of twelve full credits beyond the 1000-level in the two honours subjects, split evenly between the History of Science & Technology and the other department. Students may, with the approval of both the Dalhousie department concerned and the History of Science and Technology teaching staff, elect a maximum of thirteen full credits in the two principal subjects, not more than seven full credits being in either of them. In this case the requirement in (2) below is reduced to two full credits.

2. Two (2) to four (4) - depending on the number selected in the Honours subject - elective credits, at least one of which must be in a single subject other than the Honours subject and the subject chosen for the two credits outside the Honours subject.
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 65 in the Degree Requirements section of this calendar).
5. One credit in a **single** language/humanities subject (Degree Requirements section 1, page 65).
6. One credit in a **single** social science subject (See Degree Requirements section 2, page 65).
7. One credit in a **single** life or physical science subject (See Degree Requirements section 3, page 65).
8. One credit in a **single** language for Bachelor of Arts (see Degree Requirements, page 65).
9. One credit in math for a Bachelor of Science (See Degree Requirements, page 65).
10. No more than three (3) 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 & 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.

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 5 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, M. Frappier

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 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 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Students who are registered as combined honours with History of Science and Technology are not permitted to take this course.

INSTRUCTOR(S): I. Stewart, M. Frappier

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): Staff

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): Staff

FORMAT: Lecture/seminar

HSTC 2205.03: Natural Knowledge and Authority — Science and the State.

The central place of modern science and technology in Western economies has made it glaringly obvious to the contemporary world that the question of who has authority over the funding, direction and priorities of modern science is a central political concern. In fact, however, the mutual relation of political power to power of the natural world has been a feature of the history of science since at least the 16th century, as it has also been a feature of the rise of the modern state and of its current redefinition under the demands of the global economy. This class considers the history of changes and continuities in that mutual relation from the Renaissance to the present.

INSTRUCTOR(S): Staff

FORMAT: Lecture/tutorial

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 Coucault and La Hacking to Chomsky and 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): Staff

FORMAT: Lecture

CROSS-LISTING: CTMP 2203.03

HSTC 2207.03: Ghosts in the Machine: Topics in the History of Science, Technology and Mind.

On of the most radical enduring outcomes of the scientific revolution is the idea that nature, including living organisms and sentient beings, can be understood as a kind of machine. The course examines selected topics in the development of this mechanical conception of the world from the 17th century of the present, paying particular attention to issues surrounding the nature of life and consciousness. Topic will include the "mechanical philosophy" of the 17th and 18th centuries, the vitalist-mechanist debates of the 18th and 19th centuries, animal magnetism, the God as watchmaker analogy, mechanistic aspects of Darwinism, behaviourism, cybernetics, artificial intelligence, and recent developments in neuroscience.

INSTRUCTOR(S): Staff

FORMAT: Seminar

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 colour 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): Staff

FORMAT: Lecture/seminar

HSTC 2602.03: Astronomy Before the Telescope.

We examine the history of astronomy from the earliest Neolithic sites through to Copernicus. We begin with a look at the phenomena of naked-eye astronomy: the observed motions of the sun, the moon, the stars, and the planets. From this we will turn to the earliest evidence for astronomy in stone-age structures, and then see how a sophisticated astronomy and astrology developed among the Babylonians. We will see how the Ptolemaic system combined Babylonian numerical data with Greek geometrical models, and how astrology migrated from Babylon to Egypt and Greece. This will help us to understand the Greek world-views that persevered into the Middle Ages and beyond.

The transition of Greek astronomy and astrology to India and later to the Arab world allows us to look at the different traditions that arise in these different cultures. Finally, the assimilation of Greek and Arabic astronomy in the Latin west, beginning in the twelfth century, will pave the way for a contextual examination of the work of Copernicus. The supposed novelty, believability, and superiority of the heliocentric hypothesis will be examined.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

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: 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): S. Snobelen

FORMAT: Lecture/seminar

HSTC 3100.03: Aristotle's *Physics*.

The *Physics* defines nature and its study both for Aristotle and for much of the development of science and philosophy of nature in the west. The class will treat the dialectic which Aristotle finds in earlier thinkers on nature, the definition of nature, the causes, chance and necessity, time, the void, infinity and limit in nature and place. Finally, it will consider the understanding of change which is at the heart of the work as a whole. Problems in earlier considerations of nature in the ancients generally and especially in the Pre-Socratics and Plato will be treated, as well as the relation of Aristotelian arguments to the social and technological context of his time.

INSTRUCTOR(S): K. Fraser

FORMAT: Lecture/tutorial

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 transmutations was a cultural synthesis of Greek natural philosophy, late pagan mysticism, and New 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

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 *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.

INSTRUCTOR(S): Staff

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): Staff

FORMAT: Lecture/seminar

CROSS-LISTING: CTMP 3201.03, RELS 3201.03

HSTC 3205.03: Natural Knowledge, Human Nature and Power: Francis Bacon and the Renaissance.

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 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 3320.03: Omens, Science and Prediction in the Ancient World.

This course will examine the history of astrology, astral magic, and divination in Mesopotamia, Egypt, Greece, and Rome, and look at their interactions and overlap with the sciences of astronomy, physics, and medicine. Indeed, early science developed in a close relationship with divination. For example, astronomy and astrology were conceptually indistinguishable throughout much of western history. Together, they reveal how people saw their place in the Cosmos, and they reflect the perceived relationship of humanity to nature and to the gods. For this reason, the history of early science cannot be understood without the history of divination. In this class we will take a multidisciplinary approach to the historical material, combining approaches from history, philosophy, classics, religious studies, and cultural anthropology.

INSTRUCTOR(S): Staff

FORMAT: Lecture /seminar

EXCLUSION: HSTC 2300.03

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): E. Mills

FORMAT: Lecture 3 hours

CROSS-LISTING: HIST 3073.03, BIOL 4664.03, MARI 4664.03, OCEA 4331.03/5331.03, SCIE 4001.03

HSTC 3402.03: History of Mathematics I, Greek Geometry.

Greek geometry is the most important of the foundations from which modern mathematics sprang. The idea of a 'proof', first developed by the Greeks, became the very standard of rigor to which other sciences aspired. This class will explore the methods and achievements of ancient Greek geometry through a close reading of selected texts from Euclid, Archimedes and Apollonius of Perga. Beginning with the basics of Greek geometry as outlined in Euclid's Elements, we will move on to explore Archimedes' quadrature of plane curves, which forms the foundation for later work in calculus. From here we will look at Apollonius' work on the conic sections. No prior knowledge of geometry is required, but a willingness to learn some is essential.

INSTRUCTOR(S): Staff

FORMAT: Seminar

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 3501.03: The Nature of Time I.

This class will consider time as it is viewed in periods of the west 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): A. Johnston

FORMAT: Seminar

EXCLUSION: HSTC 3500.03

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): A. Johnston

FORMAT: Seminar

EXCLUSION: HSTC 3500.03

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 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 Program.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

HSTC 3611.03: Studies in Early Modern Science (1500-1800).

Topics vary each year. Some of the topics are "Science and Society", "Popularisation 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 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 Program.

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 Program.

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: 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): 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 4200.03: Histories and Practices 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: History and Practices 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): Staff

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 5004.03

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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 Program, 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 Program, 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.

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.

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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Dean

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Undergraduate Advisors

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Administrator

MacKinnon, M. (494-3814) Email: marian.mackinnon@dal.ca

Professors Emeriti

Parpart, J.L., BA (Brown), MA, PhD (Boston)
Sinclair, A. (Economics)
Thiessen, V. (Sociology & Social Anthropology)
Winham, G.R. (Political Science)

Assistant Professors

Cameron, J., BA (Dal), MA (SFU), PhD (York)
Mannathukkaren, N., BA (Bangalore, India), MA (Jawaharlar Nehru, India) PhD (Queens)
Tiessen, R., BA (WLU), MA, PhD (Guelph) (on leave 2008/09)
Ulicki, T., BA (McGill), MA (SMU), PhD (Sussex)

Cross-Appointed Faculty

Adl, S. (Biology)
Arthur, P. (Political Science)
Barkow, J.H. (Sociology & Social Anthropology)
Benoit, J. (Henson College)
Binkley, M.E. (Sociology & Social Anthropology)
Black, D. (Political Science)
Boardman, R. (Political Science)
Chatt, A. (Chemistry)
Chircop, A. (Law/Marine Affairs)
Corke, S.J. (History)
Cohen, F. (Resource & Environmental Studies)
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)
Glazebrook, P. (Philosophy)
Harvey, F. (Political Science)
Jackson, L. (Health & Human Performance)
Karabanow, J. (Social Work)
Kirk, J. (Spanish)
Kynoch, G. (History)
Lane, P. (Biology)

Lesser, B. (Economics)
McQuat, G. (History of Science & Technology)
Mopoho, R. (French)
Noble, B. (Sociology & Social Anthropology)
Oakley, R. (Sociology & Social Anthropology)
Patriquin, D. (Biology)
Patton, D. (Business Administration)
Poulton, M. (Planning)
Ramos, H. (Sociology)
Sagebien, J. (Business Administration)
Saunders, P. (Law)
Sullivan, K. (Public Administration)
Tirone, S. (Health & Human Performance)
Vander Zwagg, D. (Law)
Wainwright, J.A. (English)
Wheeler, D. (Management)
Willison, M. (Biology and Resource and Environmental Studies)
Wright, T. (Environmental Programs)
Zachernuk, P. (History)

Adjunct Professors

Barber, B. (NSCAD)
Dwire, A. (Sociology and Social Anthropology)
Franceshet, S. (Calgary)
Harker, J. (CBU)
Kamra, O.P. (Dal)
McAllister, R.I. (Economics)
O'Malley, A. (SMU)
Shaw, T.M. (UWI)
Tharamangalam, J. (MSVU)
Veltmeyer, H. (SMU)
Zurbrigg, S. (Dal)

I. Introduction

International Development Studies is an interdisciplinary program involving the study of inequality, social change and justice in a global world. 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, participatory development and global citizenship. However, additional areas of expertise are drawn from over 50 cross-appointed and adjunct faculty members who teach courses cross-listed with IDS and/or supervise our honours thesis and graduate students.

We take a broad view of development - including development issues within Canada as well as the developing world. 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 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, Uganda, 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 number of study abroad options including a term abroad in Cuba (Fall or Winter) with FLACSO (Facultad Latino Americana de Ciencias Sociales Program Cuba) and the University of Havana as well as summer programs in Cuba and Uganda.

As an interdisciplinary program, IDS recommends students consider combined degree programs. Students are therefore encouraged to enter the combined honours or double major 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 approved IDS courses in other units. 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-course offerings including regular seminar series called the Global Development Seminar Series and the African Studies Seminar Series. Other events and activities will be advertised on the IDS website or information can be obtained from the IDS office.

The IDS program offers a core course in the second year, "Introduction to Development Studies I and II," in which students can apply their knowledge from first year courses in the context of development theory, history and practice. Several other core courses are offered in third and fourth year as are a number of elective course options. Students are encouraged to acquire competence in a relevant language in addition to English (e.g., Arabic, French, Spanish, or Russian). Research design and basic statistics courses (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 section, page 65 of this calendar.

A. BA with Honours in International Development Studies

Honours programs in IDS are designed for students with a demonstrated aptitude for advanced study in the field. The Honours degree is intended for students who plan to proceed to graduate work and for others who want the experience of an intensive research project, the Honours essay. Students are encouraged to apply for either the Honours or Combined Honours programs. In the case of a Combined Honours, the thesis course will be determined by the area of study with the highest number of credits. Students must complete the requirements for the BA with major in International Development Studies and fulfill the following additional requirements:

- Admission to programs is based on academic performance. Applicants normally should have achieved an overall Grade Point Average (GPA) of at least 3.30 (B+) or better and B+/A- in IDS courses and, in the case of a combined degree, the second major subject, to be considered for admission.
- Honours students must take INTD 4021 or 4012: Honours Thesis Course.
- Honours students must also take INTD 4022 or 4011: Advanced Seminar.
- Deadline for Honours Applications is April 30th of the year the student will begin the Honours Program. Application forms for the Honours Program are available at the Registrar's Office and can be submitted to the Honours Advisor/Departmental Chair in IDS.

B. BA with Combined Honours

After meeting the first-year requirements, students have two options from which to choose. The First Option is a maximum of seven (7) full credits in the major subject with a minimum of four (4) full credits in the allied subject. In addition, students must take four (4) full elective credits which are not from the major or allied subject group. The Second Option, with departmental approval, is a maximum of nine (9) full credits in the major subject with a minimum of four (4) full credits in the allied subject. This particular option can be broken down further into a combination of eight (8) full credits in the major subject and five (5) full credits in the allied

subject or seven (7) full credits in the major subject and six (6) full credits in the allied subject. In addition, two (2) full elective credits which are not from the major or allied subject group are required.

Several of the more common combined honours programs with International Development Studies are: Biology, Economics, Earth Sciences, Gender and Women's Studies, History, Journalism, Philosophy, Political Science, Sociology, Social Anthropology, Spanish, and Theatre. Students interested in taking any of these combined honours programs or in discussing other possible programs should consult initially with the Honours Advisors of the selected departments.

To obtain a BA with Combined Honours, with an emphasis upon International Development Studies, students must have:

1. The two core IDS credits: INTD 2001.03/2002.03 and INTD 3001.03/3002.03
2. Three full credits at the 2000-level or above from two IDS disciplines with at least one full credit per discipline (see list in section IV, page 166).
3. Three full credits at the 3000-level or above from the IDS list of classes. Students may count INTD 3001.03/3002.03 within this group as well as an Honours Thesis course (INTD 4021 or 4012) and an Advanced Seminar Course (INTD 4011 or 4022).
4. INTD 4011.03 or 4022.03: Advanced Seminar
5. INTD 4021.03 or 4012.03: Honours Thesis Course

Students who take a combined honours, with an emphasis on a subject other than International Development Studies, must take a minimum of:

1. INTD 2001.03/2002.03
2. INTD 3001.03/3002.03
3. One full credit at the 2000-level or above from one of the IDS disciplines (see list in section IV, page 166)
4. an additional full credit at the third year level or above from the IDS offerings in another discipline (see list in section IV, page 166).

C. Honours Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15-credit Concentration to a 20-credit Honours Bachelor degree may enter this program if they meet the usual conditions for admission to the Honours program. Students must complete the full set of Honours requirements usually by taking five (5) additional full credits. Students interested in this program should consult the Undergraduate Advisor.

D. 20-credit BA with Major in International Development Studies

Departmental requirements

Normally, completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (2.0 full credits):

- COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; ERTH 1030.03/1060.03; ERTH 1040.03, 1050.03; GEOG 1030.03/1060.03; HIST 1004X/Y.06, 1501.03, 1502.03, 1862X/Y.06; PHIL 1000X/Y; POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06; RUSN 1020.03, 1070.03; ENVS 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06.
- or completion of King's Foundation Year Program

Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- The equivalent of one full credit in each of two IDS disciplines at or above the 2000 level (see list in section IV, page 166).
- The equivalent of two additional credits from IDS offerings (including approved classes from other disciplines) at or above the 3000 level, other than INTD 3001.03/3002.03.

In total, a minimum of six (6) and a maximum of nine (9) full IDS credits are required.

NOTE: A minimum of the equivalent of three (3) full-credit classes must be at the 3000-level or above.

E. 20-credit BA with Double Major

Departmental Requirements

Normally, completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (2.0 full credits):

- COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; EARTH 1030.03/1060.03; EARTH 1040.03, 1050.03; GEOG 1030.03/1060.03; HIST 1004X/Y.06, 1862X/Y.06, 1501.03/1502.03; PHIL 1000X/Y.06; POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06; RUSN 1020.03/1070.03, ENVS 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06
- or completion of King's Foundation Year Program

Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- At least one full credit at or above the 3000 level from the IDS list below (including list in section IV, page 166)
- At least one full credit at or above the 2000 level in each of two IDS disciplines for a total of 2 full credits (see list in section IV, page 166)
- In total at least ten (10) and no more than thirteen (13) credits at 2000 level or above in the two major fields, with no fewer than four (4) and no more than nine (9) in either and at least two (2) full credits in each above the 2000 level.

NOTE: A double major is available in Environmental Science and International Development Studies. See page 67 for details.

F. 20-credit Major Conversion in International Development Studies

Dalhousie graduates who wish to upgrade their qualifications from a 15-credit Concentration to a 20-credit Major degree may enter this program. Students must complete the full set of 20-credit Major requirements, usually by taking (5) additional full credits.

G. 15-credit BA with Concentration in International Development Studies

Departmental Requirements

Normally, completion of appropriate first-year classes in at least two of the major participating social science or humanities disciplines (2.0 full credits):

- COMR 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; EARTH 1040.03, 1050.03; HIST 1004X/Y.06, 1501.03/1502.03, 1862X/Y.06; PHIL 1000X/Y.06; POLI 1010.03, 1015.03, 1020.05, 1030.03, 1035.03, 1100X/Y.06, 1103.06; RUSN 1020.03, 1070.03; ENVS 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06
- or completion of King's Foundation Year Program

Advanced Classes Required

- INTD 2001.03/2002.03
- INTD 3001.03/3002.03
- The equivalent of one full credit at or above the 2000-level in each of two IDS disciplines for a total of 2 full credits (see list in section IV, page 166)
- The equivalent of one full credit at or above the 3000-level from the IDS list in addition to INTD 3001.03 and INTD 3002.03 (see list in section IV, page 166).

In total, a minimum of five (5) and a maximum of eight (8) IDS credits are required.

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: Strongly advised: completion of at least two of the following first year classes or equivalents: RELS 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; EARTH 1040.03/1050.03; HIST 1004X/Y.06, 1501.03/1502.03, 1862X/Y.06, 1; PHIL 1000X/Y.06; POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06; RUSN 1020.03/1070.03; ENVS 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06. Alternatively, completion of King's Foundation Year Program.

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 at least two of the following first year classes or equivalents: RELS 1000X/Y.06, 1070.03/1300.03; ECON 1101.03/1102.03; EARTH 1040.03/1050.03; HIST 1004X/Y.06, 1501.03/1502.03, 1862X/Y.06; PHIL 1000X/Y.06; POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06; RUSN 1020.03/1070.03; ENVI 1000X/Y.06; SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06. Alternatively, completion of King's Foundation Year Program.

INTD 3001.03: Seminar in Development III: Development Theory.

The mutual constitutiveness of theory and practice makes it imperative that we develop a sound understanding of the way the development experience has been theorized.

This course seeks to provide a foundation of the major theoretical frameworks that have sought to understand the field that constitutes development. This is undertaken by examining some of the 'classic' texts and writings, which needless to say, have had an impact on the practice of development.

FORMAT: Lecture/seminar

PREREQUISITE: 2nd year Arts and/or science class

INTD 3002.03: Seminar in Development IV: 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.

INSTRUCTOR: Seminar

INTD 4011.03: Advanced Seminar in Development Theory A.

This course is a continuation and extension of the debates in development theory offered in 3001 at a senior, fourth year level. This class is compulsory for honours IDS students but is open to all upper level IDS

student who have completed INTD 3001. INTD 4022 can also be taken to meet this requirement for honours students in IDS.

FORMAT: Seminar

PREREQUISITE: INTD 3001.03

INTD 4012.03: Honours Thesis Course B.

The honours thesis class is open to only those students who have been accepted into 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. INTD 4021 can also be taken to meet this requirement for honours students in IDS.

FORMAT: Seminar

PREREQUISITE: INTD 3001.03 and INTD 3002.03

INTD 4021.03: Honours Thesis Course A.

The honours thesis class is open to only those students who have been accepted into 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. INTD 4012 can also be taken to meet this requirement for honours students in IDS.

FORMAT: Seminar

PREREQUISITE: INTD 3001.03 and INTD 3002.03

INTD 4022.03: Advanced Seminar in Development Theory B.

This course is a continuation and extension of the debates in development theory offered in 3001 at a senior, fourth year level. This class is compulsory for honours IDS students but is open to all upper level IDS students who have completed INTD 3001. INTD 4011 can also be taken to meet this requirement for honours students in IDS.

FORMAT: Seminar

PREREQUISITE: INTD 3001.03

B. Additional IDS Courses

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 guidance 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: 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: Consult the Department for more information

RESTRICTION: Can only be taken once in a student's program

INTD 3045.03: 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.

FORMAT: Lecture/discussion

PREREQUISITE: 2nd year Arts and/or science class

CROSS-LISTING: SOSA 3310.03

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 2001.03/2002.03

INTD 3103.03: Participatory Development: Methods and Practice.

In this course, students will learn about the ethics of cross-cultural work, as well as how information is collected (research methods) and distributed (development education). Several qualitative research skills such as interviewing, participant observation, focus groups and participatory rural appraisal (PRA) will be covered and there will be opportunities to try some of these research methods over the course of the semester.

Development education techniques such as theatre for development, radio for development and documentaries will also be examined.

FORMAT: Lecture and seminar

INTD 3108.03: Experiential learning: Canada.

Experiential learning is an opportunity for you to begin to reflect on the global/local and theory/practice dynamics of the world around us. 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. You are required to volunteer for a minimum of 35 hours for the term, or approximately 3 hours/week. In addition to this work, you 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).

FORMAT: Seminar

INTD 3109.03: Experiential Learning: Abroad.

The experiential learning abroad course is open to International Development Studies students who wish to obtain academic credit in conjunction with 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 (see the IDS Department website for applications). 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

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: Seminar

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

INTD 3112.03: Development and Democracy in India.

The largest democracy in the world is in the throes of an economic "revolution," experiencing one of the fastest growth rates. In sixty years since independence, India has traveled from being a "socialist" state to one that has pinned its hopes on capitalism. Simultaneously, the secular and democratic edifice of the state itself has taken a beating with the emergence of violent religious nationalism. This course will be an in-depth look into the complex dynamics that shape the relationship between development and democracy in one of the most ethnically diverse societies in the world.

FORMAT: Lecture/ seminar

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 3203.06: Field School in Africa.

This course involves a combination of lecture, discussion and field placement with NGO's in Africa. The program is 4 weeks in duration in Africa. Currently, the program is conducted in collaboration with Mbarara University of Science & Technology in Uganda. The course is preceded by pre-departure briefings in Halifax.

FORMAT: Lecture, Discussion, Field placement with NGO's in Africa

PREREQUISITE: INTD 2001.03, INTD 2002.03, INTD 3001.03, INTD 3002.03 or permission of course instructor

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 six weeks of field research under the supervision of a Cuban professor, culminating in the production of a major research paper. Field work 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, conduct an interview with a Cuban citizen, 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: Beginning Spanish or equivalent, INTD 2001.03/2002.03

CROSS-LISTING: SPAN 3310.06

INTD 4001.03/ 4002.03/ 4003.06/4100.06: Special Topics in International Development Studies.

See class description for INTD 3101.03, above.

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.

PREREQUISITE: INTD 3001.03/3002.03/3302.06

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 Programs, 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 permission of the instructor

CROSS-LISTING: SPAN 4004.03

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.

CROSS-LISTING: GWST 4211.03

INTD 4320.03: Empowerment, Gender and Development.

Feminist scholarship and activism has spawned a number of theoretical explanations for gender inequalities. In the last decade, poststructuralist and postmodernist critiques have influenced feminist theories in important ways. Grand theories of the past have been called into question; universals have been overtaken by particularities and difference(s).

Feminists have reacted to these critiques in a number of ways. Some reject it outright, while others call for a synthesis. Scholars and activists concerned with international development have frequently rejected these debates as irrelevant to the practical concerns of development. However, some scholars have responded more favorably to these ideas. This class will explore the various feminist theories, particularly postmodernist influences, and assess their importance for both the theory and practice of development, especially the development of women.

CROSS-LISTING: GWST 4320.03, HIST 4320.03, HIST 5320.03, INTD 5320.03

IV. IDS Approved Classes from Other Units

A list of Classes routinely accepted within International Development Studies at Dalhousie University follows. It is possible to take a number of other classes, but only after approval by the Undergraduate Advisor. Some of these other classes are taught at Dalhousie, some at Saint Mary's. For a full listing of Saint Mary's University faculty and classes in IDS, please consult the current Saint Mary's University academic calendar, which is available in the Dalhousie IDS Office or online.

NOTE: Classes marked * are not offered every year so please consult the current timetable, in addition to the calendars, when registering.

1. Biology

The importance of an understanding of biology for informed contribution to sustainable development cannot be over-emphasized.

- BIOL 3060.03: Environmental Ecology
- BIOL 3061.03: Communities and Ecosystems
- BIOL 3068.03: Agroecosystems
- BIOL 3220.03: 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 2239.03: European Economy- History
- ECON 2334.03: Globalization and Economic Development: Current Debates
- ECON 2336.03: Regional Development
- *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 2212.03: World Literature in English: Fiction
- *ENGL 2213.03: World Literature in English: Poetry
- ENGL 2221X/Y.06: Fictions of Development
- ENGL 3085X/Y.06: Post Colonial Literature
- 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 courses 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: La Civilización de Hispanoamérica
- *SPAN 2230.03: Contemporary Latin American Prose, Part I
- *SPAN 2240.03: Contemporary Latin American Prose, Part II
- *SPAN 3050X/Y.06: Culture and Society of the Dominican Republic
- *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
- SPAN 3420.06: Art/Folklore Dominican Republic
- SPAN 3440.03: Latin American
- SPAN 3460.03: Dominican History
- SPAN 3480.03: Dominican Culture
- SPAN 3810.03: Seminario de cine latinoamericano.
- SPAN 3815.03: Survey of Hispanic American Film

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 courses 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 3210.03: Environmental Law II: Natural Justice and Unnatural Acts
- ENVS 3400.03: Environmental and Ecosystem Health
- 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 2200X/Y.06: Fictions of Development
- 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 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 2271.03: Atlantic Canada to Confederation
- HIST 2272.03: Atlantic Canada since Confederation
- 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 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: From Cordoba to Jakarta: Islamic Civilization in a Global perspective (seventeenth - eighteenth centuries)
- HIST 2504.03: Modern History of Turkey, Iran, Israel, and the Arab-Speaking lands (nineteenth-twentieth centuries)
- HIST 2510.03: Modern History of South Asia
- 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 Life 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 3461.03: Gender and Development in Africa
- HIST 3462.03: Distortion or Development - African Economic History.
- 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: Caliphs and Khans: Islamic Civilization in the Abbasid and Mongol Age (750-1400)
- HIST 3510.03: Sultans and Shahs: Politics and Religion in the Islamic Gunpowder Age (1500-1800)
- 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 4271.03: The Fisheries of Atlantic Canada's Society and Ecology in Historical Perspective
- HIST 4300.03: Topics in Latin American History
- *HIST 4320.03: Empowerment, Gender, and Development
- HIST 4400.03: Topics in African History

- HIST 4475.03: African Intellectuals and the Modern Experience
- HIST 4510.03: Topics in Islamic and Middle East History.

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 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

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 3317.03: Politics in Southern Africa
- POLI 3350.03: Governance and Globalization
- *POLI 3360.03: Politics in Latin America
- POLI 3403.03: Human Rights: Philosophical Issues
- *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 3550.03: Japanese Foreign Policy
- POLI 3560.03: Human Development/Security at the Start of the Twenty-first Century
- 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 4636.03: Nationalism and Statecraft
- POLI 4656.03: Oil, Natural Gas and Government: The Political Economy of Regulation
- 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 2001.03: Judaism
- *RELS 2002.03: Christianity
- *RELS 2003.03: Islam
- *RELS 2011.03: Hinduism
- *RELS 2012.03: Chinese and Japanese Religions
- *RELS 2013.03: Buddhism
- *RELS 2053.03: Women and Islam
- *RELS 3004.03: Religion and International Development
- *RELS 3014.03: Comparative Mysticism
- *RELS 3015.03: Myths, Symbols and Rites

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 2021X/Y.06: Imperial and Soviet Russia
- RUSN 2022.03: Imperial Russia

- RUSN 2023.03: Soviet Russia
- RUSN 2061.03: Russian Modernism
- RUSN 2062.03: Literature of Revolution - The 1920's in Russian Literature
- RUSN 2070.03: Russian Literature and Culture since Stalin's Death
- RUSN 3090.03: Russian Society Today
- RUSN 3092.03: Russian Topics
- RUSN 3096.03: The History of Ideas in Russia - From Official Nationality to Solzhenitsyn's Neo-Slavophilism

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 2040X/Y.06: Social Inequality
- SOSA 2100X/Y.06: Environment and Culture
- SOSA 2161X/Y.06: Work and Occupations in a Changing World
- *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
- SOSA 3149.03: Childhood/Cross-Cultural Perspectives
- SOSA 3165.03: Peoples and Cultures of the World: Selected Area Studies
- SOSA 3168.03: Issues/Latin American Society
- SOSA 3169.03: Southern Africa: Comparative Societies and Institutions
- SOSA 3185.03: Issues in the Study of Native 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: The Anthropology of Globalization
- SOSA 3215.03: Migration and Identity
- SOSA 3225.03: Culture, Rights & Power
- SOSA 3228.03: Belief Systems: Symbols, Myth and Meaning
- *SOSA 3231.03: Psychological Anthropology
- SOSA 3310.03: Indian Society: Change and Continuity
- SOSA 4003.03: Contemporary Perspectives in Ethnography
- SOSA 4004.03: Issues in Work, Industry and Development
- SOSA 4005.03: Issues in Social Injustice and Social Inequality
- SOSA 4210.03: Tourism and Development

13. Spanish

- SPAN 3815.03: Survey of Hispanic American Film
- SPAN 3810.03: Seminario de cine latinoamericano

14. Theatre

- THEA 4932.03: Cross-Cultural Theatres

Seminars and Conferences

All IDS students are encouraged to attend the Global Development seminar series that are regularly sponsored through the Lester Pearson International, African Studies, the School of Resource and Environmental Studies, and the Centre for Foreign Policy Studies. Students are encouraged to incorporate in their programs classes which enable them to take advantage of Dalhousie's commitment to ocean studies, health and sustainable development.

Italian Studies

NOTE: Classes in Italian studies are administered by the French Department (page 115).

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 late 19th century, the civilizations that preceded it have exerted a dominant 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 G8, 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 65 of this calendar.

A. BA (15-Credit) Area of Concentration

A minimum of 4 full credits (24 credit-hours) and a maximum of 8 in Italian studies above the 1000 level. Within those 4 credits, students must include ITAL 2010.06 and ITAL 3010.06. At least two full credits must be above the 2000 level.

B. BA (20-Credit) Double Major

A minimum of 4 full credits (24 credit-hours) and a maximum of 9 in Italian studies above the 1000 level, combined with one of the Major subjects in the BA program. Within those 4 credits, students must include ITAL 2010.06 and ITAL 3010.06, and at least one other full credit above the 2000 level.

C. BA (20-Credit) Combined Honours

A minimum of 5 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 5 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.

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: 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/tutorial

EXCLUSION: ASSC 1010X/Y.06

ITAL 1012X/Y.06: Reading Italian.

This class is a study of the basic structures of written Italian required to develop a thorough reading knowledge of the language. Emphasis in the initial phase of the class is placed on acquiring fundamental vocabulary and developing the ability to recognize it in typical patterns of usage. Systematic features of Italian and correspondences between Italian and English are studied. In the second phase of the class, students are introduced to short reading selections ranging from current newspaper articles and features to expository texts in a variety of disciplines from the humanities, social sciences, and physical sciences. In the final stage of the class, longer texts are studied. These are examined to introduce students to matters of style, usage, etc., but the primary emphasis in the presentation of class material, in assignments, and in testing continues to be on the comprehension of texts as texts.

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

CROSS-LISTING: 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: 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/discussion

PREREQUISITE: ITAL 1010X/Y.06, or ASSC 1010X/Y.06

EXCLUSION: ITAL 2100X/Y.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: 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): G. Hanlon

FORMAT: Lecture/tutorial

CROSS-LISTING: HIST 2060X/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, the revival of Italian cinema, and Italy's political role in the European Union. This course will be conducted entirely in English.

FORMAT: Lecture

EXCLUSION: ITAL 3150.03

ITAL 2210.03: Introduction to Italian Literature.

This course will provide an overview of the development of Italian Literature from the Middle-Ages to the present day. Literature covered will include works by Dante Alighieri, Leonardo da Vinci, Niccolò Machiavelli, Galileo Galilei, Giacomo Leopardi, Luigi Pirandello, Italo Calvino, and Umberto Eco. The course will be given in English and readings for Italian minor and major students will be in Italian.

FORMAT: Lecture

PREREQUISITE: ITAL 1010X/Y.06 or permission of instructor

EXCLUSION: ITAL 3100.03

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: 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/discussion

PREREQUISITE: ITAL 2010X/Y.06 or permission of instructor

ITAL 3200.03: Modern Italian Literature.

This course will examine Italian literary production from the early twentieth century to today, in the context of modern and contemporary history and social conditions. The focus will be mainly on short fiction. The choice of authors highlights some of the most important names in Italian literature and is designed to represent a variety of writing styles, genres, and regional origins. Some of the authors discussed will be Gabriele D'Annunzio, Italo Svevo, F.T. Sciascia, Andrea Zanzotto, and Dacia Maraini. The class will be conducted entirely in Italian.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 2010X/Y.06 or permission of instructor

ITAL 3300.03: Twentieth Century Italian Fiction.

This course will focus on Italian fiction written since World War II. The class will discuss works by Italo Calvino, Leonardo Sciascia, Antonio Tabucchi, Natalia Ginzburg, Clara Sereni. The class will provide a set of critical tools to understand the literary discourse and will place the content material in its historical and cultural context. Readings and lectures will be in Italian.

INSTRUCTOR(S): F. Ciabattoni

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 New Wave.

The focus of the course: the New Wave of Italian cineastes, which received international recognition since the 1980s. Its aim to investigate current Italian film production within the social and cultural climate of contemporary Italy.

FORMAT: Lecture/seminar

CROSS-LISTING: THEA 3320

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 teaches students to write a well-structured short story as well as a cogent essay for upper-level literature classes in Italian. 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 4020.03: Italian to English Translation.

The course introduces students to theoretical, technical, and practical aspects of interpretation and translation. Students will practice translation from ITALIAN to ENGLISH by using sample texts from history, literature, film, newspapers, and websites. In doing so, they will be introduced to a variety of styles, literary devices, semantic and cultural distinctions, and structural differences between Italian and English. Students will acquire the necessary tools to develop fine translation skills from Italian to English.

FORMAT: Lecture/discussion

PREREQUISITE: ITAL 3010X/Y.06 or permission of 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.

INSTRUCTOR(S): F. Ciabattini

FORMAT: Lecture

PREREQUISITE: A 2000 level in any of the following: Classics, English, Comp. Religion, European Studies, French, Spanish, German, Russian, Music, History or permission of instructor.

CROSS-LISTING: RELS 4040

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: ITAL 4060

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: Professor Kim Kierans
Location: University of King's College
Telephone: 422-1271 Ext 164

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 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 30 credit hours in Journalism, including JOUR 1001.06 and JOUR 2000.03 and 21 credit hours in electives.

II. Curriculum

A. Core Requirements

Students must complete 1.5 full credits of core courses:

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: Students taking this class must register in both X and Y in consecutive terms. Credit will be given only if both are completed consecutively.

JOUR 2000.03: Reporting Techniques.

This is a practical course. The objective of lectures, class discussions and in- and out-of-class assignments is to help students become better practitioners of newspaper journalism. The course will consider the power of "story" in news writing and reporting. It will examine in detail matters of structure and style. Students will produce stories (based on ideas they generate themselves) for The Transcript, an online newspaper about the university community in Halifax. They will also do regular (although unannounced) in-class, on-the-clock basic reporting assignments - to familiarize them with working under the pressure of tight deadlines. 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 BJH program.

JOUR 3003.03: Introduction to Television.

This class will introduce students to broadcast news writing and reporting, emphasizing skills particular to television such as writing to pictures and interviewing live to tape. Students will visit a television news operation and examine policy, broadcast standards and ethical issues.
PREREQUISITE: JOUR 1001.06

RESTRICTION: This class is not available to BJ(H) students.

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 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 permission of the Instructor

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

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 colour 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.

PREREQUISITE: JOUR 2000.06 or permission of instructor

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.

Students taking this class will read, watch and listen to the work of great journalists including: Nellie Bly, James Cameron, Joan Didion and Barbara Frum. Hard work, dedication, imagination and courage helped make these journalists great. Studying their work helps us realize how valuable journalism can be.

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.

Law

Contact Person: Dr. Nathan Brett
 Location: Department of Philosophy
 Faculty of Arts and Social Sciences
 Telephone: 494-3534

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 actually been made by courts in Canada. There will be discussion of what the law should be, but that 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

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

Students taking a Major or Honours BA in the Faculty of Arts and Social Sciences may take a Minor in Law and Society.

A. Required Classes

- LAWS 2500.06: Introduction of Law passed with a minimum of B-

B. Elective Requirements

Three full classes or equivalent from the approved list below, including at least one half-class from each of the following disciplines: History, Philosophy, Political Science, and Sociology and Social Anthropology. To count towards the Minor, classes must be passed with a minimum of B-. Additions to the following list will be made as the program develops.

- 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 4004.03: Crime and Society in Post-Conquest England
- PHIL 2020.03: Legal Thinking
- PHIL 2160.03/GWST 2500.03*: Philosophical Issues in Feminism
- PHIL 2475.03: Justice in Global Perspective
- PHIL 2490.03: Social, Ethical and Professional Issues in Computer Science
- PHIL 3211.03: Philosophy of Law
- POLI 2210.03: Unity and Diversity: Dynamics of Canadian Federalism
- POLI 2520.03: World Politics
- POLI 3206.03: Constitutional Issues in Canadian Politics
- POLI 3303.03: Human rights: Political Issues
- POLI 3403.03: Human rights: Philosophical Issues
- POLI 3428.03/GWST 3650.03*: Woman as Citizen
- POLI 3581.03: Diplomacy and Negotiations
- SOSA 2040.06: Social Inequality
- SOSA 2180.06: Sociology of Crime and 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 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 3650

Other Approved Electives

- 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)
- SCIE 3200.03: Environmental Law

Linguistics

Location: 6135 University Ave.
Halifax, NS B3H 4P9
Telephone: (902) 494-1440
Fax: (902) 494-1957

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Dalhousie Coordinator

Please consult the Linguistics Program Website for this year's Program Coordinator.

Dalhousie Faculty

Furrow, M., English, Professor
Gordon, T. W., French, Adjunct Professor
Hamel, M. -J., French, Associate Professor
De Méo, P., French, Professor
Milicevic, J., French, Assistant Professor
Mopoho, R., French, Associate Professor
Hymers, M., Philosophy, Associate Professor
Deacon, H., Psychology, Assistant Professor
Yoon, M., Psychology, Adjunct Professor
Barnstead, J., Russian Studies, Associate Professor

I. Halifax Interuniversity Program in Linguistics

Halifax area universities offer a joint program in linguistics. Students enrolled in this program take classes from Dalhousie, Saint Mary's and Mount Saint Vincent 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 32). Interested students should contact the program coordinator for more information.

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 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 Mount Saint Vincent 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 65 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)
 - MSVU LING 2251.1(2) Nature of Language, and MSVU 2252.1(2) The Analysis of Language
- 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 neighbouring universities (see the list of options below).

B. Combined Honours in Linguistics

Combined honours programs with Linguistics may be arranged with other departments.

C. 20-credit BA with 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 3 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. 20-credit BA with 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. 15-credit BA with 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 courses 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 2190.03: Psycholinguistics
- PSYO 3052.03: Sensory Neuroscience II: Hearing and Speech
- PSYO 3790.03: Neurolinguistics
- PSYO 3093.03: Language & Literacy

Russian

- RUSS 4000.06: The Structure of Contemporary Standard Russian

Sociology

- SOSA 3081.03: Sociolinguistics

B. Classes offered at Saint Mary's University (SMU) and Mount Saint Vincent University (MSVU)

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
- MSVU LING 2281.1(2): Language and Culture

Education

- MSVU LING 3385.1(2): Teaching English as a Second Language I
- MSVU LING 3386.1(2): Teaching English as a Second Language II

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
- MSVU LING 3371.1(2): Structure and Variety in Contemporary French I: Phonetics
- MSVU LING 3372.1(2): Structure and Variety in Contemporary French II: Grammar
- MSVU LING 3384.1(2): The Development of Modern French

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

Political Studies

- MSVU LING 3308.1(2): Language and Politics

Philosophy

- SMU PHI 402.1(2): Philosophy of Language: Meaning
- SMU PHI 403.1(2): Philosophy of Language: Speech Acts

Psychology

- MSVU LING 3311.1(2): Language Development

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
Halifax, NS B3H 4R2
Telephone: (902) 494-2418
Fax: (902) 494-2801
Email: Music@dal.ca
Website: <http://music.dal.ca>

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Servant, G. (494-2418)

Student Advisor

Stodola, L. (494-3489)

Professors

Schroeder, D.P., AMus, BA, MA (Western) PhD (Cantab)
Servant, G. W., BMus (Dal), MMus, DMA (Hartt), Artist Diploma
(Opernhaus Zurich)

Associate Professors

Bain, J., BMus (Wilfrid Laurier), MA (McGill), PhD (SUNY Stony Brook)
Djokic, P., BMus, MMus (Juilliard)
Stodola, L., BMus (Chicago), MMus (Juilliard)
Swanston, M., BMus (Lethbridge), PG DipMus, Opera Program (Guildhall
School of Music and Drama, London, U.K.)

Assistant Professors

Allen, P., BMus (Mt. Allison), MMus (Yale)
Baur, S., BA (Music) (Loyola Marymount), MA (UCLA), PhD (UCLA)
Blais, J., BMus (McGill), MMus, DMus (Montreal)
Warwick, J., BMus (Toronto), MA (York), PhD (UCLA)

Instructor

Ewer, G. BMus (Dal)

Sessional Lecturers

Reach, D., BMus (Dalhousie)
Mitchell, C.

Part-Time Instructors

Adams, G., BEd, MEd (Acadia), Masters Conducting Program Diploma
(Calgary)
Bradshaw, D., BMus, MMus (Toronto)
Brownell, J., BMus (Acadia), MMus (Arizona State)
Chang, T., BMus (UBC), MMus (Minnesota)
Creighton, P., BMus (Toronto)
DuBois, E., BMus (Eastman), MMus (Emporia State)
Feierabend, C., BMus (Toronto), MMus (Juilliard)
Hoffman, A., BMus, MMus, (New England Conservatory)
Isaacs, M., BMus (Toronto), MMus (Northwestern)
Kasper, M., Artist's Diploma (Toronto)
Lemieux, S., BMus (Ottawa), MMus (Michigan)
Parker, D. BMusEd (Acadia), MMus (Boston University), Artist Diploma
(Toronto)
Rapson, J., BMus (Toronto)
Redmond, P., BA, BEd (Mt. St. Vincent)
Rothwell, I.
Scott, M., BMus (Dal)
Sheppard, C., BMus (Dal)
Stern, J., BMus, MMus (New England Conservatory)

Sutherby, R.
 Turowsky, L., BMus (Toronto)
 Walt, S., BMus (Tel Aviv)

Collaborative Pianists

Bradshaw, D., BMus, MMus (Toronto)
 Chang, T., BMus (UBC), MMus (Minnesota)

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.

The Combined Honours BA (Music and Theatre) combines the essential curricula of the voice and acting programs producing the potential 'triple threat' stage performer.

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 1001.03: Preparatory Music Theory I
- MUSC 1002.03: Preparatory Music Theory 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 2017.03: Music and Cinema: Composer/Director Collaborations
- 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 2600X/Y.06: Recording Studio Techniques
- MUSC 3060.03: Introduction to Music and Sound Technology
- MUSC 3061.03: Electroacoustic Music
- MUSC 3319X/Y.06: History of Musical Theatre (cross-listed with THEA 3010.06)
- MUSC 3362.03: Topics in Canadian Music
- GWST 2066.03: Women, Gender and Music (MUSC 3066.03 for Music Majors)
- MUSC 3365.03: Narrative Strategies in 19th-Century Music (cross-listed with GWST 3365.03)

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 web site 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 (majors or non-majors) enrolled in an applied study class (instrument or voice) must participate in a minimum of one ensemble each year as a co-requisite. Bachelor of Music students normally participate in two ensembles each year. Ensembles are chosen in accordance with instrument/program requirements and in consultation with the applied studies instructor. Please see the Department for specific guidelines and rehearsal schedules. As of the 2007/08 year, students will register online for a non-credit Ensemble requirement and receive a Pass/Fail grade. Students enrolled in applied study must successfully complete all Ensemble requirements in order to graduate.

Students should note that ensemble participation normally requires weekly rehearsals along with regularly scheduled concert 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 Chorale (G. Ewer)
 Dalhousie Chamber Choir (G. Ewer)
 Dalhousie Symphonic Wind Ensemble (G. Adams)
 Dalhousie Chamber Orchestra (P. Djokic)
 Dalhousie Jazz Ensemble (C. Mitchell)
 Dalhousie Percussion Ensemble
 Dalhousie Opera Workshop (G. Servant, M. Swanston, N. Scott Stoddard)
 Small Ensembles (staff coaches)
 Collaborative Piano (staff coaches)
 Dalhousie Orchestra
 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-credit classes.

Curriculum

- MUSC 1001.03: Preparatory Music Theory I
- MUSC 1002.03: Preparatory Music Theory II
- MUSC 1070X/Y.03: Preparatory Aural Skills
- MUSC 1071X/Y.03: Preparatory Keyboard Skills
- MUSC 1100X/Y.06: Preparatory Applied Study
- Required Writing Class (see Degree Requirements, page 65 for a list of writing classes)
- Arts & Social Sciences or Science elective, one full-credit
- MUSC 0022X/Y.00: Ensemble (Prep): (normally 1 ensemble, as approved by the Department and Applied Study instructor)

Special Notes:

1. Preparatory Music classes MUSC 1001.03, MUSC 1002.03, MUSC 1070X/Y.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 1001.03	C+
MUSC 1002.03	B-
MUSC 1070X/Y.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 sixteen out of twenty credits in Music. Upon successful completion of the second year, students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music 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 with concentration requirements.

Students wishing to pursue one of the three concentrations must apply for their area by March 1 of their 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 1202.03: 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 2 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 2201.03: Music Theory III
- MUSC 2202.03: 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, 2 half credits
- MUSC 0222X/Y.00: Ensemble II: (normally 2 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 courses. 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 have to defer their Fall half credit Arts and Social Sciences or Sciences elective to the Winter term of their second year, and will thus be taking two half-credit electives during this term. Also, MUSC 2353.03 (Music History IV) will be removed from the Winter term of their second year. Students accepted into Composition will replace MUSC 2353.03 with either MUSC 3351.03 (Music Since 1945) or MUSC 3362.03 (Topics in Canadian Music) during their third or fourth year. 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 first and second year Music 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 credit (4599.03 Project or 4399.03 Thesis) 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 3281.03: Form and Analysis I
- 2 credits of Music electives
- Arts and Social Sciences or Science elective, one full credit
- MUSC 0322X/Y.00: Ensemble III: (normally 2 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 4281.03: Form and Analysis II
- MUSC 3282.03: Orchestration
- MUSC 4599.03: Graduation Project OR MUSC 4399.03: Graduation Requirement (Thesis)
- 1.5 credits of Music electives
- Arts and Social Sciences or Science elective, one full credit
- MUSC 0422X/Y.00: Ensemble IV: (normally 2 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 course selection within the BMus General degree program.

3. Concentration in Composition

Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music 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 3283.03: Modal Counterpoint or MUSC 3284.03: Tonal Counterpoint
- MUSC 3281.03: Form and Analysis I
- 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 2 ensembles, as approved by the Department and Applied Study instructor)

Fourth Year

- MUSC 4210X/Y.06: Composition II
- MUSC 3351.03: Music Since 1945 or MUSC 3362.03: Topics in Canadian Music (replacing MUSC 2353.03 Music History IV)

- MUSC 4281.03: Form and Analysis II
- 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, .5 credit

4. Concentration in Musicology

Students in good standing (minimum overall average GPA of 2.7 [B-] in first and second year Music 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 3283.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
- MUSC 3281.03: Form and Analysis I
- MUSC 3351.03: Music since 1945
- MUSC 0322X/Y.00: Ensemble III: (normally 2 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 4281.03: Form and Analysis
- MUSC 4399X/Y.03: Graduation Requirement (Thesis)
- MUSC 0422X/Y.00: Ensemble IV: (normally 2 ensembles, as approved by the Department and Applied Study instructor)

Also in the third and fourth years (5.5 credits)

- 1.5 credits of Music electives (any choice, but students are strongly encouraged to take MUSC 3282.03 Orchestration)
- The equivalent of 2 full credits to be chosen from Musicology electives
- 1 credit of any introductory language course (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 courses 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 first and second year Music classes), along with a minimum grade of 3.3 (B+) in their first and second year 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 3283.03: Modal Counterpoint or 3284.03: Tonal Counterpoint
- MUSC 3281.03: Form and Analysis I
- MUSC 0322X/Y.00: Ensemble III: (normally 2 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 4281.03: Form and Analysis II
- MUSC 0422X/Y.00: Ensemble IV: (normally 2 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 (5.5 credits):

- MUSC 3176.03: Principles of Vocal Pedagogy
- MUSC 3177.03: Vocal Literature
- MUSC 3314.03: History of Opera
- 1.5 credits Music elective, any choice
- MUSC 2175.03 Lyric Diction for Singers, taken in year 2 or 3, depending on cycle with Pedagogy/Literature
- 2 full credits Arts and Social Sciences or Science electives (at least one Arts and Social Sciences or Science elective taken over the 4-year program must be an Introductory Language course: either Italian, German or French)

Piano (5.5 credits):

- MUSC 3186.03: Piano Pedagogy
- MUSC 3355.03: The Piano and its Literature
- 2.5 full credits Music electives, any choice; however, if offered, students should take:
- MUSC 3353.03: Chamber Music Literature
- 2 full credits Arts and Social Sciences or Science electives

Strings (5.5 credits):

- 3.5 credits Music electives, any choice; however, if offered, students should take:
- MUSC 3160.03: Conducting
- MUSC 3353.03: Chamber Music Literature
- 2 full credits Arts and Social Sciences or Science electives

Guitar (5.5 credits):

- MUSC 3308.06: Modern Guitar
- MUSC 4170.03: Improvisation Techniques and Practices
- 2 full credits Music electives, any choice
- 2 full credits Arts and Social Sciences or Science electives

Saxophone (5.5 credits):

- MUSC 4170X/Y.03: Improvisation Techniques and Practices
- MUSC 2020.03: The History of Jazz
- 2.5 credits Music electives, any choice
- 2 full credits Arts and Social Sciences or Science electives

Wind and brass instruments, percussion (5.5 credits):

- 3.5 Music electives, any choice
- 2 full credits Arts and Social Sciences or Science electives

6. 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 Music classes beyond the 1000-level in order to graduate with a BMus degree. Students must achieve a minimum grade of C in first year applied study in order to advance to second year applied study. Grades in Music 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 Areas of Concentration.

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 concentration in voice with Theatre classes in Acting and Improvisation, Dance 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 solid “triple sensation” foundation in music and theatre.

Students must successfully complete the audition/entrance tests for the first year of the Music Program, and have an interview with the Theatre Department. Permission to continue in this program is subject to a successful completion of THEA 1800X/Y.06 and the securing of a place in THEA 2800X/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) and also must submit a comprehensive essay on an aspect of musical theatre.

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 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 1202.03: 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 2201.03: Music Theory III
- MUSC 2202.03: 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
- MUSC 3319X/Y.06/THEA 3010X/Y.06: The History of Musical 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)

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. 20-credit BA with Major in Music

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

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 1202.03: 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 1 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 2201.03: Music Theory III
- MUSC 2202.03: Music Theory IV
- 2 full credits Arts and Social Sciences or Science electives
- 0222X/Y.00: Ensemble II: (normally 1 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
- 3 to 5.5 full credit Music electives, at least 3 above the 2000-level

NOTE: Students wishing to pursue a BA or BSc double major with music should consult with the department's student advisor.

E. 20-credit BA with Honours in Music

In addition to the Departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 40 of this calendar.

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 1202.03: 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 1 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 2201.03: Music Theory III
- MUSC 2202.03: Music Theory IV
- 2 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 1 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)
- 5 to 7 full credits Music electives, at least 3 above the 2000-level

F. 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 40 of this calendar).

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 1202.03: 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 4 credits in Music above the 1000-level, at least 2 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, 3351.03).

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 www.registrar.dal.ca/forms.

G. 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 20-credit BA 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 1001.03: Preparatory Music Theory I.

An introduction to University music studies for prospective music majors recommended by audition to foundational level classes in music; also open to non-majors. A knowledge of music reading and rudiments is presumed. Extensive work in rudiments applied to all aspects of music learning; the phenomenon of the tonic-melodic, harmonic and formal; modes, pentatonic scale formation, dissonances, 2-part writing to encompass these; non-tonal formations; acoustics.

NOTE: 1. auditioned students will be advised to take a year of private studies if their preparedness falls below the introductory level; 2. non-majors taking MUSC 1001.03 as an elective are not required to enrol in the aural/keyboard classes.

INSTRUCTOR(S): G. Ewer
FORMAT: Lecture 2 hours, lab

MUSC 1002.03: Preparatory Music Theory II.

A continuation of MUSC 1001.03 for foundational students and non-majors. Rhythm and phrase structures, "musica ficta" and elementary modulation in two- and three-part writing. Comparison of tonality, atonality, modality, and chromatic tonality, exploration of chord building triadic and otherwise, simple (bar) chording; elementary diatonic harmony previewing the start of MUSC 1201.03; four-part writing as an immediate transition to MUSC 1202.03.

NOTE: Non-majors taking MUSC 1002.03 as an elective are not required to enrol in the aural/keyboard classes.

INSTRUCTOR(S): G. Ewer

FORMAT: Lecture 2 hours, lab

PREREQUISITE: MUSC 1001.03 or its equivalent

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 1070X/Y.03: Preparatory Aural Skills.

An introduction to the basic concepts and practice of aural perception, through guided progressive training exercises in sight singing and dictation.

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): G. Ewer

FORMAT: Lab 2 hours

PREREQUISITE: Permission of the Department, on the basis of the results of the Entrance Aural Skills Test

EXCLUSION: All students not in the BA undeclared (preparatory year)

CO-REQUISITE: Music 1001.03, MUSC 1002.03, MUSC 1071X/Y.03

MUSC 1071X/Y.03: Preparatory Keyboard Skills.

An introduction to keyboard proficiency, to prepare the student for successful training in keyboard harmony.

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 the Department, on the basis of the results of the Entrance Keyboard Proficiency Test

EXCLUSION: All students not in the BA undeclared (preparatory year)

CO-REQUISITE: MUSC 1001.03, 1002.03, 1070X/Y.03

MUSC 1080X/Y.03: Voice Clinic for the Theatre I.

A class in the basic principles of singing as applied to dramatic and musical theatre productions. Exercises and repertoire appropriate to those idioms will be prepared by the students for class performance. No prior instruction in music or singing is presumed.

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. Redmond
FORMAT: Weekly ensemble class: 1.5 hours plus bi-weekly individual studio assistance
EXCLUSION: This class is offered exclusively to students in the third year Acting Program

MUSC 1081X/Y.03: Voice Clinic for the Theatre II.

A continuation of MUSC 1080X/Y.03, with further exercises and repertoire appropriate to dramatic and musical theatre productions.

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. Redmond
FORMAT: Weekly ensemble class: 1.5 hours plus bi-weekly individual studio assistance
PREREQUISITE: MUSC 1080X/Y.03
EXCLUSION: This class is offered exclusively to students in the fourth year 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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
- MUSC 1119X/Y.06: Lute I
- MUSC 1120X/Y.06: Harpsichord I
- MUSC 1121X/Y.06: Recorder 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

NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.

INSTRUCTOR(S): J. Blais
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 1202.03: Music Theory II.

An introduction to elementary tonal harmony, developing skills in part-writing and harmonic analysis.

SIGNATURE REQUIRED

NOTE: Successful completion of Conservatory Theory Grades III-V does not guarantee exemption from this class.

INSTRUCTOR(S): J. Blais
FORMAT: Lecture 3 hours
PREREQUISITE: MUSC 1201.03 or permission of the Department
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 1202.03. 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.

INSTRUCTOR(S): G. Ewer
FORMAT: Lab 3 hours
PREREQUISITE: Permission of the Department; MUSC 1001.03/1002.03 or equivalent
CO-REQUISITE: MUSC 1201.03, 1202.03, 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.

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; MUSC 1001.03 /1002.03 and 1071X/Y.03 or equivalent
CO-REQUISITE: MUSC 1201.03, 1202.03, 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.

SIGNATURE REQUIRED

FORMAT: Lecture

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: MUSC 1352.03 or permission of instructor

EXCLUSION: 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, M. Scott

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.

A study of the use of music in cinema with focus on the following topics: music in silent film, borrowed music, cinema and opera, music as special effects, music as subject, and notable songs/tunes. The focus is on feature-length films, but some animations and experimental films will be included.

FORMAT: Lab (Screening)/lecture, 4 hours

EXCLUSION: MUSC 2015X/Y.06

MUSC 2017.03: Music and Cinema: Composer/Director Collaborations.

A study of the collaboration of notable film composers and directors, focusing on the role of the music in contributing to the understanding and broadened perception of the film. The films included may be early or recent, from the United States or abroad.

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 analyse 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 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
- MUSC 2119X/Y.06: Lute II
- MUSC 2120X/Y.06: Harpsichord II
- MUSC 2121X/Y.06: Recorder 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 2130X/Y.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.

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/demonstration/lecture

CROSS-LISTING: THEA 2020X/Y.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.

SIGNATURE REQUIRED

FORMAT: Individual studio instruction

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: 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

PREREQUISITE: Permission of the instructor

EXCLUSION: MUSC 3175.03

MUSC 2201.03: Music Theory III.

A continuation of Theory II, covering the study of altered chords, modulation to all closely related keys, and the relationship of harmony to melody, phrasing, rhythm, meter and performance issues. Emphasis is placed on concepts of functional tonality by means of written exercises in four-part harmony and analysis of 18th and 19th century music.

SIGNATURE REQUIRED

INSTRUCTOR(S): J. Bain

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 1202.03, 1270X/Y.03, 1271X/Y.03

CO-REQUISITE: MUSC 2270X/Y.03, 2271X/Y.03

MUSC 2202.03: Music Theory IV.

The study of chromatic harmony and complex modulation. Exercises may include some texture other than four-part choral style, and analysis includes forms such as binary, ternary, sonata, rondo and variation.

SIGNATURE REQUIRED

INSTRUCTOR(S): J. Bain

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2201.03

CO-REQUISITE: MUSC 2270X/Y.03, 2271X/Y.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.

INSTRUCTOR(S): J. Blais

FORMAT: Lecture and Tutorial

PREREQUISITE: MUSC 1202.03 OR permission of instructor

MUSC 2270X/Y.03: Aural Skills II.

This class provides further practice in melodic and harmonic dictation and sight-singing; it correlates with MUSC 2201.03 and 2202.03. A special component deals with solmization skills in sight reading.

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): G. Ewer

FORMAT: Lab 2 hours

PREREQUISITE: MUSC 1201.03, 1202.03, 1270X/Y.03, 1271X/Y.03

CO-REQUISITE: MUSC 2201.03, 2202.03, 2271X/Y.03

MUSC 2271X/Y.03: Keyboard Skills II.

A continuation of MUSC 1271X/Y.03.

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 2 hours

PREREQUISITE: MUSC 1201.03, 1202.03, 1270X/Y.03, 1271X/Y.03

CO-REQUISITE: MUSC 2201.03, 2202.03, 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: 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 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 3119X/Y.06: Lute III
- MUSC 3120X/Y.06: Harpsichord III
- MUSC 3121X/Y.06: Recorder 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 3719X/Y.06: Lute III (Performance)
- MUSC 3720X/Y.06: Harpsichord III (Performance)
- MUSC 3721X/Y.06: Recorder 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 2202.03, 1352.03, 1353.03, 2352.03

CROSS-LISTING: GWST 2066.03

MUSC 3130X/Y.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. All students are required to choreograph and perform a dance.

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/demonstration/lecture

PREREQUISITE: MUSC 2130X/Y.06 or permission of instructor (interview)

CROSS-LISTING: THEA 3020X/Y.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 2202.03 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 2202.03 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 3186.03: Piano Pedagogy.

Discussion, analysis and comparison of piano pedagogical methods used in teaching from beginning to early advanced levels of performance. Reading skills, psychological issues, lesson planning, adjudication/examination grading tips and theoretical connections are among the topics to be covered as well as supervised practicum and observation.

SIGNATURE REQUIRED

FORMAT: Lecture

PREREQUISITE: Permission of the instructor

MUSC 3199X/Y.03: Recital (Year III - Performance).

Required of and restricted to all third-year Bachelor of Music students whose concentration is in Performance. The recital repertoire should consist of 30 to 45 minutes of music.

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.

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: 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): J. Blais

FORMAT: Individual lessons and group courses with other Composition students

MUSC 3281.03: Form and Analysis I.

Analytic study of the form and context of selected late eighteenth and nineteenth century compositions in various styles and idiom.

SIGNATURE REQUIRED

INSTRUCTOR(S): J. Bain

FORMAT: Lecture 2 hours

PREREQUISITE: MUSC 2202X/Y.06, 2350X/Y.06, 2351X/Y.06

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

INSTRUCTOR(S): J. Blais

FORMAT: Lecture 2 hours

PREREQUISITE: MUSC 2202.03

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

INSTRUCTOR(S): J. Blais

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2202.03

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 2202.03

EXCLUSION: MUSC 3280.03

MUSC 3285.03: Late 19th Century Chromaticism.

A seminar exploring chromaticism as it was practised in the late 19th century. Through selected readings, we will examine various independent chords, progressions and sequences, the intersection of different "scalar" collections and chromaticism, the changing nature of harmonic function, and the role of transformation and large-scale key relationships.

INSTRUCTOR(S): J. Bain

FORMAT: Seminar

PREREQUISITE: MUSC 2202.03 or permission of the instructor

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: 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

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): J. Warwick

FORMAT: Lecture

PREREQUISITE: MUSC 1350.03 and MUSC 1351.03, or permission of the instructor

EXCLUSION: MUSC 2011.06 and MUSC 3311.06

MUSC 3319X/Y.06: The History of Musical Theatre.

A survey of musical theatre - history, dramaturgy and production - from its roots in the traditions of European comic opera and the nineteenth century operetta to the works of Lloyd Webber, Sondheim and other present-day writers. A reading knowledge of music is not a prerequisite for this class.

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 3 hours

CROSS-LISTING: THEA 3010X/Y.06

MUSC 3351.03: 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: Lecture 3 hours

PREREQUISITE: Normally, for Music majors, MUSC 2202.03, MUSC 2351.03 or MUSC 2352.03

MUSC 3353.03: Chamber Music Literature.

A study in depth of chamber music from the Eighteenth century to contemporary schools.

INSTRUCTOR(S): P. Allen

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2351.03 or 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.

INSTRUCTOR(S): L. Stodola

FORMAT: Lecture 3 hours

PREREQUISITE: MUSC 2351.03 or or MUSC 2352.03 or permission of the department

MUSC 3362.03: 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: Lecture 2 hours; individual tutorial

PREREQUISITE: MUSC 2201.03, 2202.03 or permission of instructor

MUSC 3365.03: 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

MUSC 3366.03: 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 1352.03, 1353.03, 2352.03, or permission of the instructor

MUSC 3450.03: Introduction to the Principles of Music in the Elementary School.

Pedagogical aspects of music in the Elementary School classroom: song materials, movement and creativity, development of reading, writing and listening skills; the use of instructional tools such as solmization, hand signs and rhythm names; the philosophies of Kodaly and Orff. Laboratory work will include in depth study of the theoretical and practical aspects of solfa and related ear training skills; vocal and conducting techniques for children's ensembles; functional piano for the school setting; functional instruments in the classroom including recorder and guitar.

FORMAT: Lecture 3 hours, lab 2 hours plus field observation

PREREQUISITE: Permission of the Department and an interview with the instructor

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. This class normally is restricted to students majoring in wind, brass or percussion instruments.

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 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 4119X/Y.06: Lute IV
- MUSC 4120X/Y.06: Harpsichord IV
- MUSC 4121X/Y.06: Recorder 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 4719X/Y.06: Lute IV (Performance)
- MUSC 4720X/Y.06: Harpsichord IV (Performance)
- MUSC 4721X/Y.06: Recorder IV (Performance)

MUSC 4150X/Y.06: Advanced Applied Study.

By special permission of the department, a student may enroll in a fifth year of applied study, subject to enrolment quotas and budget. Individual studio instruction. Auxiliary fees apply. Co-requisite ensemble participation is 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.

PREREQUISITE: MUSC 41XX or 47XX and permission of the instructor, subject to budget and current studio capacity

MUSC 4160X/Y.03: Applied Study (Instruction).

Students in the fourth Year of the Bachelor of Music Concentration Instruction enrol in this class, consisting of thirteen bi-weekly one-hour studio lessons plus repertoire class/ensemble as appropriate to their particular Applied Study idiom.

Co-requisite ensemble participation is 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.

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: 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): 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: 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: Placement in Symphony Nova Scotia, 34-38 Services

PREREQUISITE: Nomination by Department; audition with Symphony Artistic Director and relevant Symphony Section Principals

RESTRICTION: Limited to a student in the fourth year of the BMus Program 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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: 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): J. Blais

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 2202.03, 3280X/Y.03 or 3284.03 and 3281.03

MUSC 4281.03: Form and Analysis II.

Analytic study of the form and content of selected twentieth century compositions in various styles and idioms.

SIGNATURE REQUIRED

INSTRUCTOR(S): J. Bain

FORMAT: Lecture 2 hours

PREREQUISITE: MUSC 2202.03, 2350.03, 2351.03 or MUSC 2352.03, 3283.03 or 3284.03 and 3281.03

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 Program.

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.

MUSC 4364.03: Topics in Music.

These are intensive studies of selected topics announced annually.

SIGNATURE REQUIRED

FORMAT: Seminar 2-3 hours

PREREQUISITE: MUSC 1350.03, 1351.03, 2350.03, 2351.03, or MUSC 1352.03, 1353.03, 2352.03

MUSC 4365.03: Topics in Musicology.

These are intensive studies of selected topics announced annually.

SIGNATURE REQUIRED

FORMAT: Seminar 2-3 hours

PREREQUISITE: MUSC 1350.03, 1351.03, 2350.03, 2351.03 or MUSC 1352.03, 1353.03, 2352.03

MUSC 4366.03: Topics in Music.

See class description under MUSC 4364.03.

MUSC 4367.03: Topics in Musicology.

See class description under MUSC 4365.03.

MUSC 4368.03: Special Studies.

Individually directed research and writing under the supervision of an appropriate member of the Department.

SIGNATURE REQUIRED

PREREQUISITE: MUSC 2350.03, 2351.03, or MUSC 2352.03

MUSC 4369.03: Special Studies.

See class description under MUSC 4368.03.

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

MUSC 4450.03: Introduction to the Principles of Music Instruction in the Secondary School.

Pedagogical aspects of theory and listening including Canadian Music; vocal and conducting techniques for Junior and Senior High School ensembles.

FORMAT: Lecture 2 hours plus field observation

PREREQUISITE: Permission of the Department

MUSC 4499X/Y.03: Graduation Requirement, Instruction.

Students in the BMus Concentration Instruction must receive Departmental Approval to fulfil this graduation requirement with one of the following: (1) a single topic thesis; (2) two essays (on different topics); (3) a recital consisting of 30 to 45 minutes of music and an essay. The written project(s) must demonstrate in depth study of theoretical, practical, historical and/or philosophical aspects of school music; library and field research should be involved.

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: Tutorial

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

Philosophy

Location: 6135 University Avenue, Room 1142
Halifax, NS B3H 4P9
Telephone: (902) 494-3810
Fax: (902) 494-3518
Email: dalphil@dal.ca
Website: www.philosophy.dal.ca

Note: This faculty list is accurate as of October 2007. For current listings, please check Department website.

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Vinci, T.

Undergraduate Advisor

Vinci, T.

Honours Advisor

MacIntosh, D.

Professors Emeriti

Braybrooke, D., BA (Harvard), MA, PhD (Cornell), FRSC
Campbell, R.M., BA (Harvard), PhD (Cornell) (Munro Chair in
Philosophy)

Professors

Baylis, F., BA (McGill), MA, PhD (Western), FRSC (Cross-appointed with
the Faculty of Medicine), (Canada Research Chair in Bioethics and
Philosophy)
Brett, N.C., BA (N.H.), MA, PhD (Waterloo)
Campbell, S., BA, MA (Alta), PhD (Toronto)
Schotch, P.K., PhD (Waterloo)
Sherwin, S.B., BA (York), PhD (Stanford), FRSC (University Research
Chair)
Vinci, T., BA (Toronto), MA, PhD (Pittsburgh)

Associate Professors

Glazebrook, P., BA (Alta), MA, PhD (Toronto)
Hymers, M., BSc, MA (Dal), PhD (Alberta)
MacIntosh, D., BA (Queen's), MA (Waterloo), PhD (Toronto)

Assistant Professors

Abramson, D., BA (Toronto), MSc, PhD (Indiana)
Meynell, L., BA Hons (York), MA (Calgary), PhD (Western)
Scherkoske, G., BA (Clark), MA (Simon Fraser), PhD (Cambridge)

Adjunct Professors

Baressi, J., BS, (Brown), MA (Southern California), MS, PhD (Wisconsin)
Burns, S.A.M., BA (Acadia), MA (Alta), PhD (London)
Kernohan, A., SB (MIT), MSc (Toronto), MA (Dal), PhD (Toronto)
Maitzen, S.A., BA (NW), MA, PhD (Cornell)
Nieman, M., B.J. (Carleton), MA (Toronto), PhD (Queen's)
Schellenberg, J., BA, MA (Calgary), DPhil (Oxford)
Watkins, M., PhD (Ohio State)
Wein, S., PhD (Waterloo)

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 65 of this calendar.

Note: In the statement of program requirements and prerequisites, "credit" means one full credit (six credit-hours).

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 www.registrar.dal.ca/forms.

Departmental Requirements

At least 10 credits in Philosophy of which at least 9 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, 3630.03, 3635.03, 3640.03

- 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 4 and no more than 9 credits in Philosophy beyond the 1000 level, including 2 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

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. 20-credit BA with Major in Philosophy

See BA Major (20-credit) under Degree Requirements.

Departmental Requirements

At least 6 and no more than 9 credits in Philosophy beyond the 1000 level, including 3 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

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. 20-credit BA with Double Major

See BA Double Major (20-credit) under Degree requirements.

Departmental Requirements

At least 4 and no more than 9 credits in Philosophy beyond the 1000 level, including 2 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

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. 15-credit BA with Concentration in Philosophy

See BA (15-credit) under Degree Requirements.

Departmental Requirements

At least 4 and no more than 8 credits in Philosophy beyond the 1000 level, including 2 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 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

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).

F. Bachelor of Computer Science (BCSc) with Minor in Philosophy

Dalhousie University has approved a set of Minors for the Bachelor of Computer Science (with or without Honours or Co-op).

Departmental Requirements

At least 4 full credits at or above the 2000 level in Philosophy.

Select at least one-half credit from the following:

One of PHIL 2130.03, 2660.03, 3140.03, 3165.03, or 3900.03

Select at least one-half credit from the following:

One of PHIL 2350.03, 2370.03, 2610.03, 2620.03, 3630.03, 3635 or 3640.03

At least two full credits at or above the third year level, including at least a half credit in epistemology (3051.03) or a half credit in ethics (3105.03).

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: 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/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.

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 / 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. This class is designed to be part of the Dalhousie Integrated Science Program, so examples will be chosen that relate to the specific scientific topics studied within that program. The class involves both lectures and discussion. Assignments include essays and oral presentations. It will serve as one-half of the writing requirement for first year students. Available to DISP students only.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

EXCLUSION: PHIL 2660.03, PHIL 2670.03

PHIL 1080.03: 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.

INSTRUCTOR(S): D. Abramson, T. Vinci

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1090.03, PHIL 2150.03

PHIL 1090.03: How to Win an Argument.

This class is devoted to developing the practical skills involved in evaluating reasoning and producing convincing arguments. Note that this class does not count towards satisfying the logic requirement for the major or honours program.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1080.03 and PHIL 2150.03

RESTRICTION: For first year students only

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): N. Brett, G. Sherkoske

FORMAT: Lecture/discussion

EXCLUSION: PHIL 1100.03

PHIL 2040.03/2050.03: Introduction to Philosophy I and II.

These classes are an introduction to a variety of philosophical problems (See description for PHIL 1000X/Y.06 above.). A student may take either or both half-year classes. 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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): P. Glazebrook

FORMAT: Lecture/discussion

EXCLUSION: PHIL 2080X/Y.06

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

EXCLUSION: PHIL 1111X/Y.06, PHIL 1112.03 and PHIL 2110X/Y.06

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): S. Campbell, L. Meynell, Staff

FORMAT: Lecture/discussion

CROSS-LISTING: GWST 2500.03

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): S. Campbell

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): Staff

FORMAT: Lecture/discussion

CROSS-LISTING: RELS 2205.03

EXCLUSION: PHIL 2200X/Y.06

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: PHIL 2270X/Y.06, 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): Staff

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): T. Vinci

FORMAT: Lecture/discussion

PREREQUISITE: One previous class in philosophy

PHIL 2361.03: Classical and Early Christian Philosophy.

See class descriptions for CLAS 2361.03B and CLAS 2362.03, in the Classics section of this calendar.

PHIL 2380X/Y.06: Medieval Philosophy.

See class description for CLAS 3380.06, in the Classics section of this calendar.

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

PHIL 2381.03: Mediaeval 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: : Mediaeval 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.

FORMAT: Lecture

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 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): S. Campbell

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): P. Glazebrook

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): P. Glazebrook

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

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

FORMAT: Lecture/discussion

EXCLUSION: PHIL 3460

PHIL 2610.03: History of Philosophy: The Rationalists.

The philosophy of Descartes, Spinoza, and Leibniz.

INSTRUCTOR(S): S. Campbell, 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, N. Brett, D. MacIntosh

FORMAT: Lecture/discussion

PREREQUISITE: One previous credit in philosophy or permission of the instructor

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): Staff

FORMAT: Lecture/discussion

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

EXCLUSION: PHIL 2700.06

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: Ethics and the Good Life.

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? When dealing with patients from different cultures, whose ethics should be followed: those of the patient or those of the caregiver? 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): Staff

FORMAT: Lecture/discussion

EXCLUSION: PHIL 2800X/Y.06

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 health care 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): Staff

FORMAT: Lecture/discussion

EXCLUSION: PHIL 2800X/Y.06

PHIL 3051.03: Theory of Knowledge.

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

FORMAT: Lecture/discussion

PREREQUISITE: Two of PHIL 2610.03, PHIL 2620.03, 2130.03 or permission of the instructor

CROSS-LISTING: PHIL 5051.03

EXCLUSION: PHIL 3050.06

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): N. Brett, D. MacIntosh, G. Scherkoske

FORMAT: Lecture/discussion

PREREQUISITE: Two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5105.03

EXCLUSION: PHIL 3100X/Y.06

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. Schotch, P. Glazebrook

FORMAT: Seminar with class discussion

PREREQUISITE: Two previous credits in philosophy

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

PHIL 3140.03: Logic: Logical Theory I.

An introduction to metalogic, with special attention to the soundness and completeness of formal systems, and to the philosophical evaluation of non-classical logics.

INSTRUCTOR(S): P.K. Schotch

FORMAT: Lecture/discussion

PREREQUISITE: PHIL 2130.03

CROSS-LISTING: PHIL 5140.03

PHIL 3165.03: Logic: Logical Theory II.

Devoted primarily to the study of formal semantics and its relation to symbolic language.

INSTRUCTOR(S): P.K. Schotch

FORMAT: Lecture/discussion

PREREQUISITE: PHIL 2130.03 or permission of the instructor

CROSS-LISTING: PHIL 5165.03

EXCLUSION: PHIL 3060.03

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): S. Campbell

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 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): N. Brett

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 3420.03: Philosophy of Biology.

This class provides an up-to-date systematic examination of ten leading issues in the philosophy of biology: 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

EXCLUSION: PHIL 2420.03

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

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): S. Campbell

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): S. Campbell

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 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, casual - 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, P. Glazebrook

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.

The nature of science, scientific inquiry, scientific explanation, and scientific theories are explored with particular attention to key episodes in 20th Century philosophy of science. No scientific background is presupposed

INSTRUCTOR(S): L. Meynell, Staff

FORMAT: Lecture/discussion

PREREQUISITE: At least two previous credits in philosophy, including one half- or full-year logic class such as PHIL 2660.03

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

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.

NOTE: 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 and from the departmental office.

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

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): S. Campbell, 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): Staff

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 4190.03: Topics in the History of Philosophy I.

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): Staff

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): N. Brett, P. Glazebrook, 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): N. Brett

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): N. Brett, 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): P. Glazebrook, S. Campbell, L. Meynell

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

FORMAT: Seminar

PREREQUISITE: At least two previous credits in philosophy or permission of the instructor

CROSS-LISTING: PHIL 5680.03

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): Staff

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): Staff

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
Third Floor, Room 301
Halifax, NS B3H 4H6
Telephone: (902) 494-2396
Fax: (902) 494-3825
Website: www.politicalscience.dal.ca

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Finbow, R. (Room 301B, 494-6606, email: finbow@dal.ca)

Undergraduate Advisor

Turnbull, L. (Room 360, 494-6626, email: lturnbul@dal.ca)

Professors Emeriti

Beck, J.M., OC, BA (Acadia), MA, PhD (Toronto), LLD (Dal), LLD (StFX), LLD (RMC), FRSC
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

Aucoin, P.C., BA (SMU), MA (Dal), PhD (Queen's) (Eric Dennis Memorial Professor of Government and Political Science), FRSC
Black, D.R., BA (Trent), MA, PhD (Dal)
Boardman, R., BSc, PhD, DSc (London), FRHistS (McCulloch Professor in Political Science)
Davis, J., BA (Oberlin), MA, PhD (John's Hopkins) (SAIS)(Canada Research Chair in Oil and Gas)
Fierlbeck, K., BA (Alta), MA (York), PhD (Cantab)
Finbow, R.G., BA (Dal), 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)
Middlemiss, D.W., BA, MA, PhD (Toronto)
Smith, J., BA (McMaster), MA, PhD (Dal)

Associate Professor

Carbert, L., BA (Alta), MA, PhD (York)

Assistant Professors

Arthur, P., BA (Ghana), MSc (LSE), MA (WLU), PhD (Queen's)
Bow, B., BA (UBC), MA (York), PhD (Cornell)
Good, K., BA, MA (Man), PhD (Toronto)
Turnbull, L., BA (Acadia), MA (Dal), PhD (Dal)

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 Peter Arthur, the Undergraduate Advisor, in developing a program of studies. Professor Louise Carbert 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 1 full credit in 1st year Political Science Classes.

II. Degree Programs

Students concentrating in Political Science may take a 15-credit concentration 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 65 of this calendar.

Introductory

- POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06

Canadian Government and Politics

- POLI 2210.03, 2220.03, 2230.03
- POLI 3205.03, 3206.03, 3212.03, 3220.03, 3224.03, 3228.03, 3231.03, 3233.03, 3235.03, 3245.03, 3251X/Y.06

Comparative Government and Politics

- POLI 2300X/Y.06
- POLI 3302.03, 3303.03, 3304.03, 3311.03, 3315.03, 3320.03, 3321.03, 3330.03, 3360.03, 3379X/Y.06

Political Theory and Methodology

- POLI 2410.03, 2420.03
- POLI 3401.03, 3403.01, 3427.03, 3428.03, 3430.03, 3431.03, 3435.03, 3445.03, 3475.03, 3492.03, 3493.03
- POLI 4479.03, 4480.03, 4496.03

International Politics and Foreign Policy

- POLI 2520.03, 2530.03, 2540.03
- POLI 3322.03, 3323.03, 3525.03, 3531.03, 3535.03, 3537X/Y.06, 3540.03, 3544.03, 3550.03, 3570X/Y.06, 3571X/Y.06, 3574.03, 3575.03, 3577.03, 3581.03, 3585.03, 3587.03, 3589.03, 3591.03, 3596.03
- POLI 4636.03, 4656.03

Reading Classes (with permission of individual instructor)

- POLI 3601X/Y.06, 3602.03, 3603.03

Special Topics (offered occasionally)

- POLI 2810.03, 2820.03
- POLI 3810.03, 3820.03

Emphasis in Canadian Studies

Political Science students interested in obtaining an Emphasis in Canadian Studies along with their Major or Minor in Political Science should consult the Canadian Studies calendar entry for information on requirements and for a list of Political Science classes approved with Canadian Studies.

A. Honours Program

An honours program normally consists of a first year class, or two half-credit classes, and not less than nine or more than eleven additional classes, or equivalent in half-credit classes, in Political Science. Although nine to eleven 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 3rd year.

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; POLI 2220.03 and POLI 2230.03
- 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
- Four other Political Science credits at or above the 2000 level, not including those listed below

3000 level

- POLI 3492.03 (or equivalent)
- POLI 3493.03

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 much 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 may petition to take a graduate seminar class, in addition to POLI 4204.06, which is regularly offered as an undergraduate class. These are the core classes for graduate students and correspond to the same four areas of study within Political Science as the second-year honours core classes.

This provides fourth-year honours students with the opportunity to work with graduate students at an advanced level. Honours students will be admitted to graduate core classes in the field in which they intend to write their honours essay.

The core graduate seminars by area are as follows:

- POLI 5204X/Y.06: Advanced Seminar in Canadian Politics
- POLI 5301.03: Comparative Theory, or
POLI 5340.03: Approaches to Development
- POLI 5400.03: Advanced Seminar in Political Theory
- POLI 5520.06: Theories of International Relations

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 "21st" 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. 20-credit BA with 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, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06

2000 level

- Two full credits in different core class fields

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. 20-credit BA with Double Major in Political Science

Departmental Requirements

1000 level

- One full credit (or two half credits) from the following: POLI 1010.03, 1015.03, 1020.03, 1025.03, 1030.03, 1035.03, 1100X/Y.06, 1103X/Y.06

2000 level

- Two full credits in different core class fields

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 1010, SOSA 3403 and CTMP 3000

E. 15-credit BA with Concentration in Political Science

Departmental Requirements

At least four, but not more than eight, full classes or equivalent in Political Science at the 2000 level or above

1000 level

- One full-credit introductory class or two half-credit classes; alternatively the King's Foundation Year Program with a final grade of "B-" or higher

2000 level

- At least two full credits in two different core class fields.

3000 level

- At least two additional full credits should be taken from third-year level offerings

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 1010.03: From Concepts to Reality: Freedom and Government.

The central concept of the class is political freedom. We pursue the concept in the works of several theorists, but principally Isaiah Berlin. Having established some workable notions of political freedom, we consider how they are established and maintained in the design of government. Of course there are many types of governments, and almost all make the claim to enhance freedom. We can examine only some Western governments, in particular, the parliamentary systems, the mixed parliamentary-presidential systems, and the American system. The objective is to figure out how governmental institutions are designed to enhance freedom and to limit it.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1020.03, 1030.03

POLI 1015.03: From Concepts to Reality: Freedom and the Political Process.

The central concept of the class is political freedom. It is examined in the works of several theorists, but principally Hannah Arendt. Having established the idea of active, free citizenship that she espouses, we consider how it is established and maintained - or not - in the political processes that animate the institutions of government. These political processes include interest groups, social movements, political parties, and elections. For the most part we examine such processes in the West. The objective is to figure out how the active, free citizen can be expected to fare in them.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1025.03, 1035.03

POLI 1020.03: Governments and Democracy.

What do governments do? What is democratic government? These and other questions are the focus of this class. We look at government institutions in Canada, the United States, and other countries. Topics include constitutional change, the powers of Prime Ministers and Presidents, the workings of parliaments, electoral systems, and the role of the courts.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1010.03, 1030.03

POLI 1025.03: Ideas, Politics, and People.

Should governments spend more, or less, on health care? Is globalization good or bad for Canada? A central theme of political science is the clash of ideas in contemporary society. First, we explore, through current issues, some of the key concepts of liberalism, socialism, conservatism, feminism and other ideas about politics. The second part of the class focuses on political parties, interest groups and social movements, elections and the media, with emphasis on politics in Canada and the United States.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1015.03, 1035.03

POLI 1030.03: Canadian Government in Comparative Perspective.

Should Canada have an elected Senate like the United States? Is Britain less democratic than Canada because it does not have a Charter of Rights and Freedoms? Students in this class will explore these and many other questions that arise from the study of Canadian government in comparison with government in the U.S. and Britain, the two countries from which we borrowed most of our political traditions. We will examine the constitutional, executive, legislative, and judicial systems of these three countries, with the central focus on Canada.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.03, 1103X/Y.03, 1010.03, 1020.03

POLI 1035.03: The Political Process in Canada: A Comparative Approach.

Why do Canadians practice politics differently from the citizens of the U.S. and Britain? Are we different in how we approach politics, or do the differences have more to do with the processes we use? In this class we will explore Canadian political culture, electoral systems, parties and interest groups, all in comparison with similar behaviours and processes in Britain and the U.S.

FORMAT: Lecture

EXCLUSION: POLI 1100X/Y.06, 1103X/Y.06, 1015.03, 1025.03

POLI 1100X/Y.06: From Concepts to Reality: An Introduction to National and International Politics.

By examining the fundamental ideas and principles of political science and the varied institutions and processes that give them practical expression in everyday life, this class explores the question: what makes political science "political"? The approach is both conceptual and comparative and pays special attention to Canada as well as to the major issues - such as the tension between international law and the desire for humanitarian justice - of contemporary international politics.

NOTE: Students taking this class must register in both X and Y

consecutive terms; credit will be given only if both are completed consecutively.

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: 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

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.

Canada is one of the most decentralized countries in the world. Why? Quebec nearly voted to separate in 1995 and the current government of that province says it will try again. The west feels alienated from Ottawa. Nova Scotia wants a better deal on equalization. Aboriginal peoples are pressing for self-government and the courts say they have a right to get it. Meanwhile, medicare is in crisis and university tuition fees keep going up. These are just some of the issues and questions that arise from the way power is organized in our federation. This class explores the underlying causes of these problems and why they seem so difficult to resolve. We look at the constitutional framework of Canadian federalism and the role of the courts, regionalism, federal-provincial relations, and proposals for reform. Approved with Canadian Studies.

FORMAT: Lecture and 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. Approved with Canadian Studies.

FORMAT: Lecture and 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 and 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: 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/discussion

PREREQUISITE: Introductory political science class or instructors' permission

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 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? Why are European states creating their own rapid reaction force separate from NATO, and why are U.S. and Canadian officials concerned about these trends? Why can't we enforce international law as effectively as we enforce domestic law? Can we identify an objective set of moral standards to guide relations between states and peoples? Does foreign investment by multinational corporations help or hinder development? Why are so many countries cutting development assistance? Is the U.N. a useful institution

or is it destined to fail? Should NATO have intervened in Bosnia, Kosovo, Rwanda and/or Iraq? Is the U.S. National Missile Defence program something we should welcome or fear? Is globalisation healthy or dangerous? These are a few of the many different questions and debates this course is designed to address. The objective is to introduce students to the subfield of international relations and to explore what scholars and practitioners have discovered about the conduct of leaders, states and non-state actors in the international system.

FORMAT: Lecture and discussion

PREREQUISITE: An introductory class in Political Science

EXCLUSION: POLI 2500X/Y.06

POLI 2530.03: Foreign Policy in Theory and Practice.

Foreign Policy is concerned with the way individual states decide on their international goals and strategies. The class begins with a review of International Relations theories and their application to foreign policy.

The main part of the course explores theories of what drives foreign policy decision-making: political systems, bureaucracy, culture, psychology, and innovation and leadership. The third part of the course considers military force and economic exchange. In all parts of the course, there is a mix of theory and concise applications to specific historical episodes.

FORMAT: Lecture and 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 and 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 3205.03: 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

CROSS-LISTING: POLI 5205.03

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

CROSS-LISTING: POLI 5206.03

POLI 3208.03: Canadian Provincial Politics.

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

CROSS-LISTING: POLI 5208.03

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: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission

CROSS-LISTING: POLI 5220.03

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 and discussion

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission.

Students will find it helpful to have some background in statistics or methodology, such as POLI 3494.06.

CROSS-LISTING: POLI 5224.03

POLI 3228.03/4228.03: Pressure Politics in Canada: Opportunities and Obstacles.

This class will attempt a systematic examination of the function and management of interest groups in Canada and, to a lesser extent, other western countries. It will begin by considering the functions such groups perform for their supporters on the one hand and, on the other, the role they play in (1) maintaining political systems; (2) securing and modifying public policy, and (3) implementing programs. It will explore the ways in which their structures and behaviour patterns vary according to the resources of the groups themselves, the nature of their concerns and the demands of the political/ bureaucratic systems in which they operate. An important feature of the class will be a discussion of the internal management of groups. This discussion will include a review of how membership is secured and retained and how group resources are obtained and applied; the role of professional staff in developing group positions and in interacting between the interest group and government officials. In conclusion the class will examine the role of interest groups in policy processes and the relationship between that role and the prospects for democracy in western politics. Approved with Canadian Studies.

SIGNATURE REQUIRED.

FORMAT: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission

CROSS-LISTING: POLI 5228.03, PUAD 6505.03

POLI 3231.03: Urban Governance in Canada.

Despite the fact that most Canadians live in cities, municipal governments are junior partners in Canadian federalism. Municipal, business, and community leaders in urban centres are advocating new relationships among municipal and upper levels of government - they want a "New

Deal for Cities". The objective of this course is to provide students with the analytical, theoretical, and methodological tools to understand and explain the politics and policy activities of Canadian municipalities within their historical, institutional, and constitutional frameworks. In this class, we adopt a critical perspective on urban governance and engage with contemporary debates concerning municipal governance reform, the evolving nature of urban governance within Canadian federalism, and social science debates concerning how we ought to study cities.

FORMAT: Seminar

CROSS-LISTING: POLI 5231.03

POLI 3233.03: Canadian Political Economy.

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 graduate students and senior undergraduates, who have completed classes in Canadian politics or economic history, or by permission of the instructor.

CROSS-LISTING: POLI 5233.03

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 graduates and senior undergraduates, will feature student presentations and research projects. Approved with Canadian Studies.

FORMAT: Seminar

PREREQUISITE: Open to graduate students and senior undergraduates, who have completed classes on Canadian politics, or permission of the instructor.

CROSS-LISTING: POLI 5235.03

POLI 3250.03: 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 and discussion

PREREQUISITE: POLI 2210.03/2220.03 or instructor's permission.

CROSS-LISTING: POLI 5250.03

EXCLUSION: POLI 3251

POLI 3260.03: The Politics of Health Care.

Because of its nature as both a public institution and a political icon, the Canadian health care 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 health care in Canada, including investigations of federalism, funding, and governance.

FORMAT: Seminar

PREREQUISITE: POLI 2200.03, 2210.03, 2220.03 or instructor's consent

CROSS-LISTING: POLI 5260.03

POLI 3302.03: 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

POLI 3303.03: 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. 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 in Latin America; the multilateral politics of human rights; human rights in national foreign policies, with a specific focus on the challenges posed by China; Islam and human rights; genocide and humanitarian intervention; and efforts to foster justice and reconciliation in the aftermath of abusive regimes. Finally we look specifically 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 or equivalent, or instructor's consent

CROSS-LISTING: POLI 5303.03

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: POLI 5304.03, 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 relations. Some topics include: the role of sport in political socialization and the creation of national identity; the politics of the Olympic Games, and sport and political change in South Africa.

FORMAT: Seminar

PREREQUISITE: POLI 2300.06 or POLI 2520.03/2530.03 or permission of instructor

CROSS-LISTING: POLI 5311.03

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.

INSTRUCTOR(S): Staff

FORMAT: Seminar

PREREQUISITE: POLI 2300X/Y.06 or equivalent or instructor's permission

CROSS-LISTING: POLI 5315.03

POLI 3317.03: Politics of Southern Africa.

This class focuses on political change in the Southern African region since the end of colonialism. It compares the experience of the various countries in the region to development and security pressures related to the legacies of colonialism, persistent economic problems and recent structural adjustments, environmental degradations and threats, ethnic, class and gender cleavages, strategic and social problems related to first apartheid and later post-apartheid transitions, issues of governance and regional conflict as well as more positive trends that towards abatements in civil wars and a surge of democratization. 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

CROSS-LISTING: POLI 5317.03

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.

Western 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 3322.03: The EU as a Global Actor.

The aim is to enable the student to analyse 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

POLI 3323.03: 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) as well as the Constitutional Treaty (2004). 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

POLI 3350.03: 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 transnationalisation 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 decentralisation 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 theoretical debates involving the "internationalisation" of the state; the role of identities – e.g. nationalist, ethnic, gender, cosmopolitan; the growing relevance of regionalises and the nature of and prospects for democracy and citizenship.

FORMAT: Seminar

PREREQUISITE: POLI 2300X/Y.06 or equivalent or permission of instructor

CROSS-LISTING: POLI 5350.03

POLI 3360.03: Politics in Latin America.

This seminar class surveys the politics of Latin American states from colonial to contemporary times. Students first examine political history and development, focusing on particular challenges of colonial inheritance, military politicization, modernization, development and dependency and international interference. Institutions, public policies, and state-society relations are then discussed. Other topics include women and indigenous peoples, and prospects for durable democratization. Students will debate controversial questions on each topic.

FORMAT: Seminar

PREREQUISITE: POLI 2300 or instructor's consent

CROSS-LISTING: POLI 5360.03

POLI 3379.06: 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: 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: Seminar

PREREQUISITE: POLI 2210.03/2220.03 or POLI 2300X/Y.06 or instructor's consent

CROSS-LISTING: POLI 5379.03

POLI 3401.03: Contemporary Political Thought.

How ought we to evaluate the political norms and beliefs which we hold as we enter the next millennium? This class provides a conceptual overview of contemporary political thought from the development of 20th century liberal democracy to the contemporary criticisms articulated by its opponents. Topics to be discussed include: liberal and "non-liberal" democracy; justice and distribute justice; liberty and libertarianism; rights; property and theories of entitlement; virtue and citizenship; identity and community; race and representation; epistemology (including feminist epistemology), public choice theory, and postmodernism.

INSTRUCTOR(S): Staff

FORMAT: Lecture/seminar

PREREQUISITE: POLI 2410.03/2420.03 or PHIL 2210.03/2220.03 or instructor's permission

POLI 3403.03: Human Rights: Philosophical Issues.

This class is designed to complement POLI 3303.03, which focuses upon contemporary political problems surrounding the application of human rights in specific contexts. This class, in contrast, examines the normative issues inherent in the concept of human rights. The class begins by

investigating the development and definition of "rights" within liberal theory, then looks more specifically at the normative problems concerning the idea of "human" rights. Finally, the class discusses the philosophical debates involved in attempting to apply such manifestly liberal concepts in non-liberal contexts.

FORMAT: Seminar

PREREQUISITE: POLI 2410.03 or POLI 2420.03, or permission of instructor

CROSS-LISTING: PHIL 3470.03, POLI 5403.03

POLI 3427.03: Women in Western Political Thought.

The role of women in political life has been vilified, praised or ignored by major thinkers. Pertinent texts will be read along with interpretations by modern feminists in order to assess why the formal political enfranchisement of women has not resulted in greater substantial equality.

FORMAT: Lecture and discussion

PREREQUISITE: POLI 2410.03/2420.03 or PHIL 2210.03/2220.03, or instructor's permission

EXCLUSION: POLI 2327.03

POLI 3428.03: Woman as Citizen.

Does feminism entail the end of male/female gender roles? Or can women be "equal, but different"? If so, how should government respond in terms of public policy? And how might women do politics differently from men? This class examines the historical context of feminist theory, with attention to its impact on conventional approaches to social and political thought.

FORMAT: Seminar

PREREQUISITE: POLI 2410.03/2420.03 or instructor's permission

CROSS-LISTING: GWST 3650.03

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 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: POLI 5475.03/PHIL 3475.03

POLI 3492.03: Political Inquiry I: Statistical Analysis.

This class covers topics related to research design, data gathering and aggregate data analysis, and computer programming using SPSS.

FORMAT: Lecture/discussion/lab

PREREQUISITE: Introductory Political Science class or instructor's permission.

CO-REQUISITE: POLI 3493.03 (political science honours students only)

POLI 3493.03: Political Inquiry II: Philosophy of the Social Sciences.

What is good political science, and what is not? This class is designed as a study of the discipline itself, from a perspective of research design. It investigates the major theoretical and methodological approaches currently employed to study political affairs. To a large extent, the class turns on the question of when and how political life should be studied "scientifically," using the research methods of the natural sciences, and when and how it should be studied using the research methods of the humanities. Students learn to identify various research methods and to explain their epistemological underpinnings. This knowledge enables

students to judge which methods are appropriate for a given topic of research. It also leads to an appreciation for the particular strengths, weaknesses, and pitfalls to be avoided within each broad approach and its associated set of research methods. To exemplify how these approaches and methods are employed in practice, the class concludes with an introduction to some commercial applications of social science research methods. Given that the subject matter of political life is the distribution of power, it is not surprising that ethical considerations feature strongly throughout our discussions.

FORMAT: Lecture/discussion

PREREQUISITE: Introductory Political Science class or instructor's permission.

EXCLUSION: POLI 2494X/Y.06, 3496X/Y.06, 3494X/Y.06

CO-REQUISITE: POLI 3492.03 (political science honours students only)

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

CROSS-LISTING: POLI 5525.03

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

CROSS-LISTING: POLI 5351.03

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 Industrialising 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.

CROSS-LISTING: POLI 5535.03

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

CROSS-LISTING: POLI 5540.03

POLI 3550.03: Japanese Foreign Policy.

This class focuses on the course of Japan's foreign policy since 1945, and the factors that have shaped its approaches to regional and international issues. Topics are studied in the contexts of Japanese history, cultural traditions, its economy, and domestic politics.

FORMAT: Lecture/seminar

PREREQUISITE: Class in international politics or instructor's permission

CROSS-LISTING: POLI 5550.03

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.

CROSS-LISTING: POLI 5560.03

POLI 3570X/Y.06: Canadian Foreign Policy.

The seminar examines post-World War II Canadian foreign policy in three parts: (1) a detailed analysis of major policy developments, using the case-study approach; (2) an investigation of selected recurrent and contemporary themes, issues, and problems, and (3) an investigation of the general factors that may 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. The primary emphasis is on politico-security issues, although other subjects are also considered.

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 Intensive, seminar

PREREQUISITE: Class in international politics, Canadian politics, or Canadian history in the 20th century, or with the permission of the instructor. Restricted to students in their third or fourth years.

CROSS-LISTING: POLI 5570.06

POLI 3571X/Y.06: The Politics of Contemporary Canadian Defence Policy.

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; the Somalia enquiry and its aftermath) of Canadian defence. Approved with Canadian 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: Seminar

PREREQUISITE: Class in international relations, or foreign policy, or postwar Canadian history, or instructor's permission. Restricted to students in their third year or beyond

CROSS-LISTING: POLI 5571.06

POLI 3574.03: American Foreign Policy.

Why Americans make the kind of foreign policy they do and the decision process and relevant methodologies for examining decision strategy are examined. Students develop an ability to explain foreign policy decisions of the United States.

FORMAT: Seminar

PREREQUISITE: Classes in international politics, US politics or instructor's consent

CROSS-LISTING: POLI 5574.03

EXCLUSION: POLI 3572X/Y.06

POLI 3575.03: 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

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

CROSS-LISTING: POLI 5577.03

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 are the evolution of diplomacy, national bargaining power, and the effects of psychology, domestic politics, and culture. Specific cases, including the Munich crisis, the Cuban missile crisis, and the Canada-US free trade talks, are analyzed. Students participate in a simulation exercise.

FORMAT: Seminar

PREREQUISITE: Class in international politics or instructor's consent

CROSS-LISTING: POLI 5581.03

POLI 3585.03: Politics of the Environment.

Environmental issues have become increasingly important on international agendas. In this class, political analysis of these questions is grounded in a global ecological perspective. The topics for discussion include acid rain and other problems in the relations between advanced industrialized countries; the role of international institutions and

international law in promoting environmental conservation; the environmental dimension of international development; and the politics of the transnational environmental movement.

FORMAT: Seminar

PREREQUISITE: A class in international politics or foreign policy, or instructor's permission.

POLI 3587.03: 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.

INSTRUCTOR(S): Davis, J.

FORMAT: Seminar

PREREQUISITE: POLI 2520.03 or equivalent. Students should feel comfortable with economic theory as well, otherwise by 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.

CROSS-LISTING: POLI 5589.03

POLI 3590.03: Politics of the Sea II.

This class examines Ocean Governance in the context of global developments from UNCLOS/UNCED to Integrated Ocean and Coastal Management with a particular focus on issues of Oceans and Zones of Peace, the Economics of the Common Heritage and Institutional Requirements necessary to govern oceans equitably and in a sustainable manner. The class will be delivered in a seminar format and students will be required to deliver presentations, participate in simulation exercises and submit a term paper.

FORMAT: Lecture/Seminar

CROSS-LISTING: POLI 5595.03

EXCLUSION: POLI 3590.06

POLI 3591.03: Issues in Contemporary Maritime Security.

This course will take a multi-disciplinary approach to contemporary issues in maritime security. It will examine the political-strategic dimension of maritime security and its operational application. The course will start by addressing maritime strategy from a conceptual and legal basis, and then move to address maritime security from the Canadian perspective.

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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.

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 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 POLI 2810.03/2020.03

SIGNATURE REQUIRED.

POLI 4204X/Y.06: Advanced Seminar in Canadian Politics.

This seminar class examines the major dimensions of Canadian government and politics. The first term is devoted to the institutions, processes and dynamics of the parliamentary system of government; the second term, the institutions, processes and dynamics of the federal system of government.

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: Seminar

CROSS-LISTING: POLI 5204X/Y.06

RESTRICTION: Restricted to Students in their fourth year.

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 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 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: 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): 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 4656.03: Oil, Natural Gas and Government: The Political Economy of Regulation.

Given that oil and natural gas activities are vital both for internal Canadian energy consumption and for an increasing fraction of Canadian energy exports to the United States, the conjoint management of these activities by the private and public sectors is of considerable importance. This course is designed to give students interested in issues related to oil and natural gas, natural resource exploitation, and public policy and administration, an understanding of how oil and gas activities are

managed. Key to this understanding is an appreciation of the differing industrial structures characteristic of the oil and gas industries, both up- and downstream, and how these affect their management. There reference will be made to industrial organisation theory in terms of a general framework of analysis. The class will then relate these industrial structures to such theories of regulation and management of those of "capture", principal-agent, and the use of market solutions (for example, the issues of auction design). The nature of comparative regulatory systems is the next focus of interest: We compare Canada versus the United States (oil); and continental Europe versus North America (natural gas) to the a feel of the issues and the possible range of regulatory solutions for both onshore and offshore activities. Of particular interest here are the problems associated with even the best managed systems; multiple conflicting regulatory authorities, adverse selection, moral hazard, distorted incentives, the possible presence of oligopoly rents, and the problems of regulatory capture.

SIGNATURE REQUIRED.

FORMAT: Seminar

PREREQUISITE: Third-level International Relations class; or instructor's permission

CROSS-LISTING: POLI 5656.03

Religious Studies

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The Program in Religious Studies is administered by the Classics Department, page 79.

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Undergraduate Advisor

TBA

Professor Emeritus

Ravindra, R., BSc, MTech (IIT), MA (Dal), MSc, PhD (Toronto), Adjunct Professor of Physics

I. Introduction

Religion is a phenomenon virtually universal in human society and history; some have held that it is central to the human condition. Understanding 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. The study of religion can include a broad range of methodological approaches, with special interest in historical, cultural, sociological, theological and literary matters.

II. Degree Programs

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. BA (20-credits) with Major in Religious Studies

Departmental Requirements

1000 level

- Select two classes from: RELS 1001.03, 1002.03, 1300.03

2000 level

- Select two classes from: RELS 2001.03, 2002.03, 2003.03
- Select two classes from: RELS 2011.03, 2012.03, 2013.03
- Select one other credit at or above 2000 level

3000 level

- At least two and one half credits at or above 3000 level

4000 level

- At least one half credit at 4000 level

B. BA double major in Religious Studies (20 credits)

Students must complete the Faculty requirements for a double major. These include 10-13 credits in the Major subjects at the 2000 level or higher with no more than 9 and no fewer than 4 full credits in either. Students must include at least 2 full credits at the 3000 level or higher in each subject.

C. BSc double major, second subject in Religious Studies (20 credits)

Students must complete the Faculty requirements for a double major. Religious Studies can be the second subject only, with no fewer than 4 full credits, 2 of which must be at the 3000 level or higher.

D. BA Combined Honours in Religious Studies (20 credits)

Departmental Requirements

Students must complete the Faculty requirements for the combined honours degree. These include at least 4 and no more than 7 full credits (or 9 with approval of the Department) in Religious Studies above the 1000 level (at least 11 in both subjects, or 13 with departmental approval).

Among the Religious Studies classes, students must take:

- At least two classes from: RELS 1001.03, 1002.03, 1300.03
- At least two classes from: RELS 2001.03, 2002.03, 2003.03
- At least two classes from: RELS 2011.03, 2012.03, 2013.03
- At least one and one half credits at 3000 level or above
- At least one half credit at 4000 level
- Completion of the Honours Examination if the major work is done in Religious Studies

Outside of Religious Studies one full class will be required from the following list:

- ARBC 1020.06: Introduction to Arabic (Classics Dept)
- CHIN 1030.06: Introduction to Chinese (Mandarin) (Russian Dept)
- CLAS 1700.06: Introductory Ancient Greek (Classics Dept)
- CLAS 1800.06: Introductory Latin (Classics Dept)
- CLAS 1900.06: Introduction to Classical Hebrew (Classics Dept)

E. BSc Combined Honours, second subject in Religious Studies (20 credits)

Students must complete the Faculty requirements for the combined honours degree. Religious Studies can be the second subject only, with no fewer than 4 full credits beyond the 1000 level, 2 of which must be at the 3000 level or higher.

F. BA with Concentration in Religious Studies (15 credits)

Departmental Requirements

- At least two classes from: RELS 1001.03, 1002.03, 1300.03
- At least two classes from: RELS 2001.03, 2002.03, 2003.03
- At least two classes from: RELS 2011.03, 2012.03, 2013.03
- At least two full credits above the 2000 level

This program provides Religion Studies majors with a broad introduction to both Eastern and Western religious life, and to the various ways in which religion may be studied. In light of their specific interests, Religious Studies majors are encouraged to enrol in related classes offered by other Departments. Programs should be planned in consultation with the Religious Studies undergraduate advisor.

Please consult the current timetable to determine which classes are being offered.

G. Emphasis in Canadian Studies

Religious Studies students interested in obtaining an Emphasis in Canadian Studies along with their Major or Concentration in Religious Studies should consult the Canadian Studies calendar entry for information on requirements and for a list of Religious Studies classes approved with Canadian 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 1001.03: Introduction to Eastern Religions.

This course serves as an introduction to the history, beliefs, and practices of Hinduism, Jainism, Sikhism, Buddhism, Taoism and Confucianism.

FORMAT: Lecture

EXCLUSION: COMR 1000.06

RELS 1002.03: Introduction to Western Religions.

This course serves as an introduction to the history, beliefs, and practices of Judaism, Christianity, Zoroastrianism, and Islam.

FORMAT: Lecture

RELS 1300.03: Explorations in Religion.

The description and understanding of religion requires diverse approaches: historical, psychological, sociological, philosophical. It also requires that knowledge of oneself go hand in hand with knowledge of the human phenomenon of religion. This class introduces the student to basic concepts in the academic study of religion and to some of the most recent scholarship in the area.

INSTRUCTOR(S): M. Mitchell

FORMAT: Lecture/seminar

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, and the formation of modern Jewish identity in relation to the Holocaust and the founding of the State of Israel.

INSTRUCTOR(S): M. Mitchell

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above

RELS 2002.03: Christianity.

An introduction to Christian beliefs, practices, history and writings from the New Testament period to the present. Topics to be covered include: Christian Origins, the Trinity, the Christological debates, the development of the biblical canon, and the 20th century rise of fundamentalism and ecumenism.

INSTRUCTOR(S): M. Mitchell

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above

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 Mohammed, the Qur'an, the Islamic legal tradition, the development of the Hadith, and the rise of political Islam in recent centuries.

INSTRUCTOR(S): M. Mitchell

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above

RELS 2004X/Y.06: Meetings between Hellenism, Judaism, Christianity, and Islam from Philo Judaeus to Dante.

Please see description for CLAS 2300 in the Classics section of this calendar.

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): W. J. Hankey

FORMAT: Lecture

CROSS-LISTING: CLAS 2300, HIST 3015

RELS 2011.03: Hinduism.

An introduction to the religious and cultural traditions of India, with particular attention to Indian cultural history. Topics to be covered

include: Vedic religion, classical Brahmanical religion, the caste system, bhakti (devotional) traditions and the rise of epic literature, philosophical traditions and the Upanishads, and the interaction between Hinduism and other religious traditions of the subcontinent (e.g., Jainism, Indian Buddhism, Sikhism). Modern issues such as the impact of colonial rule, independence, and partitioning upon Hindu identity will also be discussed, with particular emphasis on the thought of Mohandas Gandhi.

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above

RELS 2012.03: Chinese and Japanese Religions.

An introduction to the cultural, religious, and philosophical traditions of East Asia, with a primary focus on China and Japan. Topics to be covered include: Classical Confucianism, Neo-Confucianism, Philosophical and Religious Taoism, Shinto, Chan and Zen Buddhism. The course will also examine the interaction, competition, and overlap between these traditions.

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above

RELS 2013.03: Buddhism.

Buddhism originated in India in the 6th century B.C.E. with Siddhartha Gautama, the Buddha -the Enlightened and the Compassionate- and from there spread throughout South East Asia and the Far East in the following millennium. It practically disappeared from the land of its origin after nearly sixteen hundred years during which time it permanently influenced Indian thought and spirituality. Buddhism was considerably modified by the great cultures of China, Korea and Japan.

Buddhism has influenced the religious world-views and practices of more than half of humanity, largely owing to its great impact in Asia. Now, many Westerners are also drawn to the philosophy and meditational practices of different forms of Buddhism. This class will offer a basic introduction to the history, ideas and practices of Buddhism.

FORMAT: Lecture/seminar

PREREQUISITE: Students should be in second year or above.

RELS 2050.03: Introduction to the New Testament.

This course is designed as an introduction to the academic study of Christian Origins and its associated literature, most prominently the collection of materials comprising the New Testament, but also focusing on non-canonical writings. The course will examine the first-century origins of Christianity in the Roman province of Judea, and its movement into other regions such as Anatolia and the Italian peninsula.

FORMAT: Lecture

RESTRICTION: Second year or above

RELS 2053.03: Women and Islam.

An introduction to the various attitudes within the Islamic world concerning women. Topics to be covered include: the status of women in the Koran and the classical commentary traditions, images of the "ideal woman" in literary and popular tradition, and recent debates over the application and modern interpretation of Islamic law as it pertains to women. Regional and cultural variation within the Islamic world as to understandings of gender, sexuality, and purity will be discussed, as will contemporary points of debate surrounding the meaning of visible markers of Muslim identity like the hijab (veil).

FORMAT: Lecture/seminar

CROSS-LISTING: GWST 2053.03

RESTRICTION: Second year or above.

RELS 2070.03: The Study of Scripture: Topics in Religious Textual Traditions.

This course is intended as an introduction to the modern academic study of a specific collection of religious texts. The body of literature studied will vary, but the course will emphasize the historical formation, creation, and interpretation of a single body of material (e.g., the New Testament, the Qur'an, the Analects, the Bhagavadgita, or the Gnostic Gospels), as understood through the eyes of modern scholarship.

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 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 2503.03: From Cordoba to Jakarta: Islamic Civilizations in a Global Perspective (Seventh-Eighteenth Centuries).

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 3004.03: Religion and International Development.

The religious traditions of First World and Third World alike affect how people respond to certain practical questions. Why should I work hard? Ought we to co-operate or compete? Is my exploitation of the natural world subject to any restrictions? Is my neighbour an enemy? What is true wealth and how should it be distributed? Do men and women have different roles to play? A detailed syllabus is available from the Department of Classics.

INSTRUCTOR(S): TBA

FORMAT: Seminar

PREREQUISITE: At least one of RELS 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03

RELS 3005.03: Religion and War.

Religious attitudes toward war have ranged from pacifism, through vigorous efforts to enforce limits on war's destructiveness, to outright support for specific wars. The class will examine comparatively the human experience of war; the use of war and the warrior as religious symbols; the problem of religious ethics in wartime in the modern world.

INSTRUCTOR(S): M. Mitchell

FORMAT: Lecture/seminar

PREREQUISITE: At least one of RELS 2001.03, 2002.03, 2003.03, 2011.03, 2012.03, 2013.03 or permission of the instructor

RELS 3006.03: Western Spirituality - Mystics.

Some have argued that the mystic's experience lies at the heart of all religions, while others see it as dangerous to what has traditionally been regarded as religion. Original accounts of Jewish, Christian, Muslim and Amerindian spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Classics.

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: At least one of RELS 2001.03, RELS 2002.03, RELS 2003.03 or permission of the instructor

RELS 3007.03: Western Spirituality - Communities.

Modern persons tend to view religion as a solitary enterprise, but more often than not religious communities have taken shape around those who have had a profoundly religious experience. Original accounts of Jewish, Christian and Muslim spiritualities are studied in their historical context in this class. A detailed syllabus is available from the Department of Classics.

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: at least one of RELS 2001.03, RELS 2002.03, RELS 2003.03 or permission of the instructor

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 3013.03: Religion and 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/seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, RELS 1001.03/1002.03, or permission of the instructor

CROSS-LISTING: SOSA 3013.03

RELS 3014.03: Comparative Mysticism.

What are love and death? Why do mystics speak of love and death together? What meaning can life have in the face of the inevitability of death? Does individual identity come to a complete end or does one continue existence in some form, as most religions assert? What is the nature of judgement after death? Is there reincarnation?

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: A class in Religious Studies or the permission of the instructor; students must be in third-year or above

RELS 3016.03: Women and Religion.

This course will study the roles and the understanding of women in both ancient and modern religious traditions, including an investigation of the attitudes towards women in the authoritative writings and practices of various traditions. Special attention will be given to the differing and

competing views and interpretations of received doctrines and texts. The specific religious traditions and texts to be studied will vary from year-to-year.

INSTRUCTOR(S): TBA

FORMAT: Lecture/seminar

PREREQUISITE: Any Religious Studies course at the second year level, or one of RELS 1001.03/1002.03, GWST 1010.03, GWST 1015.03, or permission of the instructor

CROSS-LISTING: GWST 3016.03

RELS 3050.03: The Dead Sea Scrolls.

This course is designed as an introduction to the literary and physical remains of Kirbet Qumran, particularly the writings known as the Quran scrolls (commonly referred to as the "Dead Sea Scrolls"), a collection of ancient Jewish sectarian writings. The course will focus on the writings themselves, their religious ideas, and the possible identities of the group responsible for writing and preserving them. The course will analyze the relevance of this literature for the scholarly understanding of ancient Judaism and early Christianity, but the modern history of the Scrolls (their discovery), the delays in their publication, and the various popular understandings of this literature) will also be discussed.

INSTRUCTOR(S): M. W. Mitchell

FORMAT: Lecture/seminar

PREREQUISITE: A 2000-level course in RELS, CLAS, HIST, ENGL, or permission of the instructor

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: COMR 3002.03

RELS 3101.03: Readings in Eastern Religions.

This class will focus on a body of literature from one of the religious traditions of East Asia or the Indo-Pak subcontinent, such as the Bhagavadgita, the Vedas, the Tao te Ching, the Confucian Analects, or Islamic writings from this region. The course will examine the interpretation of this literature in its original context, in traditional commentaries, and in the modern academy.

PREREQUISITE: A 2000 level RELS course or permission of the instructor

EXCLUSION: COMR 3002.03

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

RELS 3410.06: St. Augustine's Confessions.

A study of the three parts of Augustine's Confessions with a view to understanding his dissatisfaction with the various positions he adopted prior to his conversion to Christianity (Part I), the practical consequences of this conversion (Part II), and the new theoretical understanding of time, space and motion which come out of his Trinitarian exegesis of the first chapters of Genesis (Part III). This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latin. This class is given alternately with CLAS 3420X/Y.06.

INSTRUCTOR(S): W. Hankey

FORMAT: Seminar

PREREQUISITE: This class presupposes some knowledge of the history of Ancient Philosophy, and some of Latin.

CROSS-LISTING: CLAS 3410.06

RELS 4310.03: Topics in Comparative Religion/RELS 4320.03: Independent Study in Comparative Religion.

Structured as a seminar or for independent guided study depending on the interests and needs of the students and faculty. The intention is to devote some concentrated time to a specific topic of interest (e.g. Cults and New Religions, The Goddess, Feminine in World Religions, Death, The Soul, Suffering). Consult the Department for topic discussed in any given term. These classes will normally only be arranged at the request of a student who is majoring in Religious Studies, though other students may then be admitted to the class upon application to the instructor. These classes permit the student majoring in Religious Studies to integrate the work of many previous classes and lines of study while examining some chosen topic in the academic study of religion.

FORMAT: Seminar

Russian Studies

Location: 6135 University Ave.
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Halifax, N.S. B3H 4P9
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Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Barnstead, J.A.

Undergraduate Advisor

Barnstead, J.A. (494-6951)

Professor Emeritus

Pereira, N.G.O., BA (Williams), MA, PhD (UC Berkeley)

Associate Professor

Barnstead, J.A., BA (Oakland), AM (Harvard)

Assistant Professor

Leving, Y., BA, MA, PhD (Hebrew University)

Instructor

Spasova, S., BA, 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, 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 (5 full 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

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 3029.03 and ONE of the following:
- RUSN 3102.03, RUSN 3121.03, RUSN 3122.03, 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.

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.

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 65 of this calendar for complete details.

A. BA with Honours in Russian Studies

Departmental requirements

1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03
- RUSN 1070.03

2000 level

- RUSN 2002.03
- RUSN 2003.03
- RUSN 2051.03
- RUSN 2052.03
- Five other credits at or above the 2000 level and not including those listed below.

3000 level

- Two credits at 3000 level or higher, one being RUSN 3002.03 and 3003.03

4000 level

- RUSN 4000X/Y.06

Other required classes

- One 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. 20-credit BA with Major in Russian Studies

Departmental requirements

1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03

2000 level

- Four credits at or above the 2000 level including RUSN 2002.03, 2003.03, 2051.03 and 2052.03

3000 level

- Three credits at or above the 3000 level, one being RUSN 3002.03 and 3003.03

4000 level

- RUSN 4000X/Y.06

Other required classes

- One full credit in Russian History (normally RUSN 2022.03 and 2023.03).

C. 15-credit BA with Concentration in Russian Studies

Departmental Requirements

1000 level

- RUSN 1000X/Y.06
- RUSN 1020.03

2000 level

- RUSN 2002.03, 2003.03, 2051.03, and 2052.03
- One additional credit at or above 2000 level

3000 level

- Two credits at or above the 3000 level, one being RUSN 3002.03 and 3003.03

D. Intensive Russian Program

Coordinator

Pereira, N.G.O. (494-3473/3946)

Associate Coordinator

Neklioudova, T. (494-3473)

1. Introduction

The Intensive Russian Program (the oldest of its kind in Canada), is an inter-disciplinary class of instruction which allows students to undertake intensive study of the Russian language both here and in Russia at St. Petersburg University. This program is offered at the third-year level of language study for students who have successfully (mark of "B") completed two years 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)

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)

- 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 and reading skills with a sound grammatical basis.

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: Instruction

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: \leq 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

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

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 2000X/Y.06

RUSN 2009.03: Introduction to Business in Russia.

This class provides an overview of the present business practices and climate in Russia. Topics addressed include: (1) the historical antecedents for present business practices in Russia; (2) banking and monetary policy (history, reforms, the current situation); (3) the Russian stock market (stock exchanges, current and pending laws concerning stock and bonds); (4) organization of exhibitions and public relations in the Russian milieu; (5) logistics of doing business in Russia; (6) insurance practices; (7) the Russian real estate market; (8) Russian business ethics; and (9) a roundtable discussion with Russian businessmen.

FORMAT: Lecture (1 roundtable discussion)

RUSN 2021X/Y.06: Imperial and Soviet Russia.

See class description for HIST 2020X/Y.06 in the History section of this calendar.

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.

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 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.

An overview of the most significant trends and periods in the development of Russian cinema from the Silent Era until the "Thaw" (1900-1960s), concentrating on the development of the main genres and styles of Russian and Soviet cinema and its major directors.

FORMAT: Lecture/discussion

RUSN 2037.03: Russian Film II.

An overview of the most significant trends and periods in the development of the Russian cinema since the 1960s, concentrating on the main genres and styles, major directors and productions, and examining issues of race, gender, war, and violence in Soviet, Post-Soviet, and New Russian cinema.

FORMAT: Lecture/discussion

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 2050.06

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 (byliny); 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 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 Program 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 Program 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 Program 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 Program 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 Program 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 Program.)
FORMAT: Seminar
PREREQUISITE: Reading knowledge of Russian and some Russian history
CROSS-LISTING: HIST 3090.03/5090.03

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 an 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, Kharmis, 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 portrayal of socio-political and psychological issues of the second half of the nineteenth century in Russia, and Chekhov, unequalled 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 joker 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*.

FORMAT: Lecture/Discussion

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: 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/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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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), McCulloch Professor

Barkow, J.H., AB (Brooklyn), AM, PhD (Chi)

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Murphy, C.J. BA (St. FX), MA (Dal), PhD (Toronto)

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Assistant Professors

Clark, P.G., BA, MA (McMaster), PhD (UBC)

Fitting, E., BA (Toronto), MA, PhD (New School)

Helland, C., BA, MA (Concordia), PhD (Toronto)

Khasnabish, A., BA, MA, PhD (McMaster)

Martin, F., BA (Queen's), MA (Melbourne)

Noble, B., BA, MA, PhD (Alberta)

Oakley, R., BA (Saint Mary's), MA, PhD (Toronto)

Park, M., BA (Toronto), MA (York), PhD (London School of Economics)

Ramos, H., BA (York), PhD (McGill)

Whelan, E. BA (Winnipeg), MA (Queen's), PhD (Carleton)

Adjunct Professors

Gamberg, H.V., BA (Brandeis), AM, PhD (Princeton)

Morgan, J.G., BA (Nott), MA (McMaster), DPhil (Oxon)

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 concentration 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 concentration 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 concentration 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 65 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.
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.
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 concentration 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 courses 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, 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 (9) and a maximum of eleven (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, 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 (9) and a maximum of eleven (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 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 13 credits beyond the 1000 level in the two honours subjects with a grade of “C” or better. Of this, at least 4 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 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 13 credits beyond the 1000 level in the two honours subjects with a grade of “C” or better. Of this, at least 4 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 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 13 credits beyond the 1000 level in the two honours subjects with a grade of “C” or better. Of this, at least 4 credits must be in SOSA courses.

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. 20-credit BA with Major in Sociology and Social Anthropology**Departmental requirements****1000 level**

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, 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 6 and a maximum of 9 SOSA credits beyond the 1000 level are required.

E. 20-credit BA with Double Major in Sociology and Social Anthropology

Students must obtain at least ten and no more than thirteen credits beyond the 1000 level in two allied subjects, with no fewer than four and no more than nine in either.

Departmental requirements**1000 level**

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, 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. 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. 15-credit BA with Concentration in Sociology and Social Anthropology**Departmental Requirements****1000 level**

- One of: SOSA 1000.06, 1050.06, 1100.06, 1200.06, or King's Foundation Year Program

2000 level

- Either SOSA 2001.06 or 2002.06
- At least one additional 2000 level credit

3000 level

- Total of two full SOSA credits

In total, a minimum of 4 and a maximum of 8 SOSA credits beyond the 1000 level are required.

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.

3. King's Foundation Year Program satisfies the introductory class prerequisite.

SOSA 1000X/Y.06: Culture and Society.

An introduction to the comparative study of human society from the parallel perspectives of Sociology and Social Anthropology.

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 1050X/Y.06, 1100X/Y.06 and 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: 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

EXCLUSION: SOSA 1000X/Y.06, 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: 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, 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, 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 2040X/Y.06: Social Inequality.

This course examines sociological explanations of how various forms of social inequality emerge and persist, focusing particularly on wealth and power. The course readings include many empirical case studies that explore actual, historical pathways to inequality between diverse social groups such as social classes, ethnic and racial groups, and men and women. Approved with Law and Society minor.

NOTE: Students must register in, and pass, both PHYL 2030X and PHYL 2030Y. Credit will only be given upon the successful completion of both halves.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06 or SOSA 1200X/Y.06

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: 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, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

SOSA 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. 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, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200 X/Y.06

CROSS-LISTING: GEOG 2100.06

SOSA 2110X/Y.06: Exploring Canadian Society.

This is a course 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: 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): Butler, P.

FORMAT: Lecture

PREREQUISITE: SOSA 1100X/Y.06, SOSA 1050Z/Y.06, SOSA 1100X/Y.06
SOSA 1200X/Y. POLI 2210 recommended.

SOSA 2161X/Y.06: Work and Occupations in a Changing World.

This class explores the consequences of several major upheavals in the world of work that are currently underway. These include the relocation of manufacturing from Northern countries to Southern countries, and the expansion of the presence of women in labour forces as workers over much of their adult life cycle. Topics may include: the international division of labour; home based labour; the impact of work on family life and family life on work; work in contemporary film; managerial and union strategies; and the relationship between education and employment. It is a sound basis for further study in the areas of management, labour relations, gender studies or development studies. 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 2400X/Y.06

SOSA 2180X/Y.06: Sociology of Crime and Criminal Justice.

How much crime is there? Why is it increasing? Are criminals different? Can we control or prevent crime? Criminology attempts to answer these questions through the social scientific study of crime and criminal justice as a social phenomena. This class introduces students to a broad variety of critical thinking, research and descriptive material on thematic issues such as the social causes of crime (e.g. poverty, culture, power, socialization), different types of crime (e.g. public, private and corporate), the structure and impact of the criminal justice system (e.g. police, courts and corrections) and public policy options and debates (e.g.. capital punishment, Young Offenders Act, decriminalizing of drugs and prostitution). This class provides a general understanding of the sociology of crime and criminal justice and a sound basis for further study in the area of social order and human justice. Approved with Law and Society minor.

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, 1050X/Y.06, 1100X/Y.06 or 1200X/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: 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 2800X/Y.06

SOSA 2200X/Y.06: The Family in Comparative Perspective.

This class examines the family as a cultural, political and economic institution. It questions the familiar. What is the family? Is it universal? How have families changed? Why are families so diverse? Why do people marry? Why do they have children? Why is a woman's work never done? Is the family in a state of crisis? Adopting a comparative perspective, and using concepts from anthropology and sociology, the class addresses these questions in a global context, drawing upon data and examples from Canada and around the world.

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, 1050X/Y.06, 1100X/Y.06 or 1200X/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: 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, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06

EXCLUSION: SOSA 2220.03

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: 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, 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: 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, 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: 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, 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: 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, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

SOSA 2501X/Y.06: Sociology of Health and Illness.

This course provides an introduction to the sociology of health, illness, and healing. We will analyse the theory and practice of medicine, our society's dominant system for addressing health problems; the experience of health care and illness from the perspectives of the ill; the social foundations of health and illness; and the structure of health care in Canada. Topics include: the historical development of the health professions; the moral regulation of health; social inequality and the political economy of health and health care; the patient-practitioner relationship; and the development of and 'crisis' in the Canadian Medicare system. Throughout the course, emphasis will be placed on critical theoretical approaches and concepts used in the field.

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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2500.03

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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

EXCLUSION: SOSA 2350.03

SOSA 3005.03: Does Industrial Society Have a Future?: 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, 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, 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 has 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. Approved with Canadian Studies.

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.

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. Approved with Canadian Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, 1100X/Y.06, 1050X/Y.06 and 1200X/Y.06

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, 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, 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, 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or IDIS 2000X/Y.06

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, 1050X/Y.06, 1100X/Y.06 or 1200.06; or an introductory class in either Psychology or Biology

SOSA 3091.03: The Sociology of Culture.

Does culture permeate all aspects of social life or are there specialised 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.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, 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, 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3141.03: Sociology of Mental Disorders.

Mental disorders as both a social and sociological problem. Social factors in the definition, incidence, etiology, and treatment of mental disorders are examined. Societal views toward and responses to so-called mental illness are reviewed and analyzed from a sociological perspective. Other topics include the social role of the mental patient and the development of mental health policy in Canada.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

SOSA 3143.03: Health, Illness and the World.

Placing the political economic bases of health and illness in ethnographic context, this course is concerned with the ways that afflictions of poverty become naturalised 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 naturalised 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, 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 health care. 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 health care define and enforce the very categories of 'women' and 'men'?; (2) how does gender, thus defined and enforced, affect the health, health care, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 3800.03

SOSA 3147.03: Social Gerontology.

A general introduction to social gerontology, in which emphasis will be placed upon the historical and philosophical development of the study of aging in Canada, theories of aging, current social and economic programs for the elderly both in Canada and to some extent cross-culturally, and various pertinent social-psychological aspects of the aging process. The class familiarizes students with some of the problems people experience as a consequence of aging in Canadian society and provides an understanding of the socio-economic factors relevant to these problems.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 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 examines the concept of addiction from a sociological perspective. The aim is to provide a more complete understanding of how sociological theory can be used to examine addiction - both historically and in contemporary society. We will investigate the social construction of drug use, drug users, and addiction and how our conception of each has been transformed over time. We will also examine the complex interconnections among drugs, addiction, health, law, and culture. Special attention will be given to current information and research on selected forms of addiction.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X.03 and SOSA 100Y.03 or SOSA 1050X.03 and SOSA 1050Y.03 or SOSA 1100X.03 and SOSA 1100Y.03 or SOSA 122X.03 and SOSA 1200Y.03

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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: GWST 3150.03

SOSA 3155.03: Sociology and Anthropology of Emotion.

This class introduces students to a wide variety of literature on emotions and social life. Beginning with classical readings in philosophical psychology, students will move on to review a range of contemporary sociological and anthropological perspectives on the interplay between emotion and society. Emphasizing both theoretical and empirical work, some topics covered by this class include: managing versus accounting for emotion, emotion and the body, emotion and gender the political economy of emotion, emotion and the self, the mass media and emotion, and emotional aspects of self presentation. Special attention will be paid to the interrelationship between emotion, social structure, and cultural belief systems.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

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; 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, SOSA 1500X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

SOSA 3169.03: Southern Africa: Comparative Societies and Institutions.

Southern Africa is a diverse region encompassing the present-day states of Angola, Zambia, Malawi, Mozambique, Zimbabwe, Botswana, Namibia, South Africa, Swaziland and Lesotho. Encompassing rich resources, Southern Africa has borne the brunt of the world market forces and endured a lengthy period of ethnic oppression, and a heroic resistance to that oppression. This course will explore the social, political and economic roots of that rich and troubled history with an attempt to place it in an ethnographic perspective. Classical and recent works by both anthropologists and sociologists will be utilized, and where applicable, historical research will guide our exploration. The social history of Southern Africa will be approached through the study of migration, the elaboration of political hierarchy and incorporation into colonial and global political economies. At all stages the focus will be on understanding the underlying social processes and theoretical issues, through the medium of ethnography. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: SOSA 1000X/Y.06, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200X/Y.06

EXCLUSION: Students who took SOSA 3165 in 2003/2004 cannot register for this class.

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, 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 of SOSA 1000X/Y.06, 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, 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, 1050 X/Y.06, 1100 X/Y.06 or 1200 X/Y.06

SOSA 3183.03: 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, 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

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, 1050 X/Y.06, 1100 X/Y.06 or 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, 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, 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, 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, 1050X/Y.06, 1100X/Y.06 or 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; or INTD 2000X/Y.06

SOSA 3214.03: The Anthropology of Globalization.

In this course we examine various definitions and approaches to globalization as a cultural, economic and political process. We consider debates about whether globalization involves economic or political hegemony and promotes cultural homogenization. We also explore

political movements that demand "globalization" be made a more equitable process.

FORMAT: Lecture and discussion

PREREQUISITE: SOSA 1000X/Y.06, 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

CROSS-LISTING: ENVI 5180.03, GEOG 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, 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 3231.03: Psychological Anthropology.

The class examines the overlap between psychology and anthropology. Topics include: culture and personality, culture and mental health, psychiatry in other cultures, cross-cultural differences in learning, and the

evolution of human psychological characteristics. Approved with International Development Studies.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/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, 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 and context of science and technology and of the meanings we confer on them. 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 and the entertainments we consume, the gendering of types of work and play, 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, 1050X/Y.06, 1100X/Y.06 or 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, 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06

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, 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, 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, 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 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, 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, 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, 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, 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: 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: 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06; SOSA 2001X/Y.06 or 2002X/Y.06; and fourth year Major or Honours standing in Sociology and/or Social Anthropology

CROSS-LISTING: SOSA 5003.03

SOSA 4004.03: Issues in Work, Industry and Development.

Consult department for class description.

FORMAT: Seminar

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology

SOSA 4005.03: Issues in Social Injustice and Social Inequality.

Consult department for class description.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology

SOSA 4006.03: Issues in Health and Illness.

Consult department for class description.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or Honours standing in Sociology and/or Social Anthropology

SOSA 4011.03: Issues in Social Theory.

FORMAT: Lecture

PREREQUISITE: One of SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06 and fourth year Major or 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, 1050X/Y.06, 1100X/Y.06 or 1200X/Y.06, and fourth year Major or Honours standing in Sociology and Social Anthropology

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, 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 4072.03: Naturalistic Approaches to the Social Sciences.

This seminar explores the implications of a Darwinian perspective for the social sciences. The latter have long followed a species-centric, environmental-deterministic ideology that today requires reconciliation with the enormous advances in recent decades in research and theory that have occurred in evolutionary biology, psychology, ethology, behavioural ecology and primate behaviour. Specific topics may include but will not be limited to biophobia, social/cultural constructionism, morality and ethics, religion, esthetics and literature, evolutionary approaches to feminist

theory, and Darwinian approaches to social problems (including ethnocentrism, racism, sexism, and crime).

FORMAT: Seminar

PREREQUISITE: SOSA 1000X/Y.06, 1050X/Y.06, 1100X/Y.06, or 1200X/Y.06; and SOSA 3071.03; and fourth year Major or Honours standing in Sociology and/or Social Anthropology.

CROSS-LISTING: SOSA 5072.03

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, 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, 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 4400X/Y.06: Majors Seminar: 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 15 students. Enrolment in the class requires instructor's permission.

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: 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: 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: 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

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Dean

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Chair

Rogers, D. M. (494-6954)

Undergraduate Advisor

Ráfales, C. (494-6658)

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

Jimenes, M., BA, MA (Sorbonne), MA (New School), PhD (Laval)

Lecturer

Santos-Montero, E., BA, MA (Salamanca)

Instructors

Abreu, M., BA (Acadia), MA (Western)
De Antueno, L., BA (NU of La Plata)
Rafales, C., BA (Barcelona)

I. Introduction

After Chinese, Spanish is the most widely spoken language in the world. It is the native tongue of over 400 million people living in 22 countries.

Spanish-speaking nations are making international headlines and students of political science, economics, commerce, sociology, anthropology, literature, history, international development studies and other academic disciplines feel increasingly interested in this area of the world. Some of our history and literature classes are conducted in English, the reading is in translation, and there are no prerequisites.

Knowledge of the Spanish language will be useful to all Canadians seeking careers as members of the foreign service, business, interpreters, translators, teachers, professors, critics, editors, journalists, and many others. Our beginning language class emphasizes all four language skills.

It is a widely recognized fact that some of the best novels and poetry are coming out of Latin America today, providing stimulating and challenging material for many of our literature classes.

If your tastes and abilities lie in the direction of Spanish or Latin American studies, you should consider the possibility of taking Spanish as an area of concentration in a General Bachelor's degree program, a Bachelor's degree with Honours in Spanish, or with Honours in Spanish and another subject combined. An undergraduate concentration in Spanish, followed by training in Management Studies, for example, could lead to a variety of possible careers in the Spanish-speaking world in international business and public service.

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: SPAN3010.03, 3020.03, 3030.03 and 3060.03

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 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 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 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 65 of this calendar.

A. Bachelor of Arts with Honours in Spanish

(Minimum 9 credits in Spanish)

Departmental requirements

Students seeking entrance to the Spanish Honours Program are expected to have at least a general A- average in Spanish.

- Same 4 credits as for a 15-credit BA with Concentration in Spanish
- An additional .5 credit in literature (student must take a course in each of Spanish literature and Spanish-American literature)
- An additional .5 credit in civilization (student must take a course in each of Spanish civilization and Spanish-American civilization)
- 3.5 optional Spanish credits (includes classes in English)
- Honours thesis

B. Bachelor of Arts with Combined Honours

(Combination of 11 credits; minimum 6 credits in Spanish if thesis completed in the Spanish Department; minimum 4 credits in Spanish if thesis completed in the other department)

Departmental Requirements

- Same four credits as for a 15-credit BA with Concentration in Spanish AND
- a. an additional .5 credit in literature (student must take a course in each of Spanish literature and Spanish-American literature) / an additional .5 credit in civilization (student must take a course in each of Spanish civilization and Spanish-American civilization) / one additional Spanish credit at the 3000 or 4000 level / thesis to be written in the Spanish Department
- OR
- b. thesis to be written in the other department

C. 20-credit BA with Major in Spanish

(Minimum 6 credits; maximum 9 credits in Spanish, including at least 3 credits at the 3000 level)

Departmental requirements

- Same four credits as for a 15-credit BA with Concentration in Spanish
- Any other advanced Spanish credits

D. 20-credit BA with Double Major in Spanish

(Combination of 10, minimum of 4 credits in Spanish)

Departmental Requirements

- Same requisites as for a Combined Honours

E. 15-credit BA with Concentration in Spanish

(Minimum of 4 credits, maximum of 8 credits in Spanish including at least 2 credits at the 3000 level)

Departmental Requirements

- 2000 level: SPAN 2020X/Y.06, or equivalent
- 3000 level: SPAN 3030.03 / SPAN3060.03 / SPAN 3010.03 or SPAN 3015.03 / SPAN 3020.03 or SPAN 3025.03 / .5 credit in Spanish or Spanish-American literature / .5 credit in Spanish or Spanish-American civilization

Notes:

- The “other” classes chosen as electives in the programs outlined above must satisfy general degree requirements.
- Combinations of classes other than those set forth above may be chosen after consultation with the Department Chair.
- A student may, with the permission of the Department, be admitted to a Spanish class at an advanced point because of prior knowledge of the language. Such a student, however must take the Spanish Placement Test (SPT) in order to find out what course is better suited to his/her

needs. Such student must take the same total number of classes as other students in the same program as well, (except he/she may be granted transfer credits in the usual way).

- Substitutions are acceptable with the advice and consent of the Department.

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 3 credits to those students who successfully complete their classes in Spain. Enquires and applications should be addressed to the coordinator of the Program.

Students must take the equivalent of 3 full classes.

Compulsory classes:

- SPAN 3100.06: Advanced Grammar I (1 credit)
- SPAN 3120.03: Advanced Spanish (½ credit)
- Students must also select one half class from each of the following three options:

Option 1

- SPAN 3154.03: Conversation & Composition (½ credit)
- SPAN 3155.03: Spanish History (½ credit)
- SPAN 3156.03: The Role of Women in Spanish History (½ credit)

Option 2

- SPAN 3160.03: Spanish Culture (½ credit)
- SPAN 3161.03: Spanish & Spanish American Literature (½ credit)
- SPAN 3162.03: The Arab World in Hispanic Culture (½ credit)
- SPAN 3163.03: Oral and Written Skills Practice (½ credit)

Option 3

- SPAN 3180.03: Spanish Art (½ credit)
- SPAN 3181.03: Spanish for Business (½ credit)
- SPAN 3182.03: Spanish & Spanish American Cinema (½ credit)

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.

- SPAN 3301.03: Spanish Language and Grammar: The Cuban Dialect
- SPAN 3302.03: Social Development in Cuba
- SPAN 3303.03: The Political Economy of Cuba
- SPAN 3304.03: Sustainable Development (Cuba)
- SPAN 3306.06: Field Research Practicum

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 2020X/Y.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 the spring of 1998, and there have been several educational, political, and commercial exchanges.

Classes taken at the University of Campeche are:

- SPAN 3100.06: Advanced Grammar I (1 Credit)
- SPAN 3320.06: Advanced Oral Spanish (1 Credit)
- SPAN 3340.06: Mexican Culture (1 Credit)

D. The Dominican Republic Program at the PUCAMAIMA University

This three credit program is available either in the fall or the winter semesters and takes place at the Pontificia Universidad Católica Madre y Maestra (PUCAMAIMA) located in Santiago de los Caballeros, the second largest city in the country.

Students must have completed SPAN 2020X/Y.06 with at least a standing of B-.

Classes taken at the PUCAMAIMA are:

- SPAN 3100.06: Advanced Grammar I (1 credit)
- SPAN 3420.03: Art and Folklore of the Dominican Republic (½ credit)
- SPAN 3440.03: Latin American Literature (½ credit)
- SPAN 3460.03: Dominican History (½ credit)
- SPAN 3480.03: Dominican Culture (½ credit)

E. Advanced Grammar II.

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 abroad. 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

F. 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 course which is better suited to your needs. Students who wish to register for a language course before taking this test may do so, but care should be taken in choosing it. Please read the course descriptions below carefully and try not to underestimate your knowledge.

This test is administered once at the end of the regular academic session, and twice at the beginning of the regular academic session. Pre-registration is required. To find out more about the dates and times and the registration procedures, please consult with the department. 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 course at Dalhousie do NOT need to take this test.

Not all classes are offered every year. Please consult the current timetable.

SPAN 1010.03: 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 1020X/Y.06: Beginning Spanish.

For students wishing to achieve proficiency in both spoken and written Spanish.

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: 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 2020X/Y.06: Intermediate Spanish.

This class continues the work done in SPAN 1010.03 or SPAN 1020.06.

Supplementary readings as necessary.

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: Discussion/conversation/tutorial, language lab and computer assisted language learning as needed

PREREQUISITE: Spanish 1020X/Y.06, or equivalent

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 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 prerequisites. Open to students in all departments.

No knowledge of Spanish necessary

CROSS-LISTING: HIST 2383.03

SPAN 2100.03: La Civilización de España.

This class is an introduction to the Spanish civilization as well as an exploration of Spain, one of Europe's most perplexing nations, with reference to its history, art, literature, languages, and customs. The goal of this course is to provide students with the basic elements of Spanish culture, through talks, readings, discussions, and slide and video

presentations; and to give students a critical overview of the Spanish history. This course is entirely conducted in Spanish.

INSTRUCTOR(S): M.J. Giménez

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06 or equivalent fluency in the Spanish language

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 prerequisites. 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 in the Novel.

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. Open to students in all departments.

No knowledge of Spanish necessary

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture/discussion, conducted in English

SPAN 2200.03: La Civilización de Hispanoamérica.

The aim of this class is to provide a basic understanding of this varied and historic area. The class examines the development of Latin America from pre-Columbian times to the Mexican Revolution. It also, with the study of selected texts, examines the way in which the reality of Latin America has shaped a continental cultural identity.

INSTRUCTOR(S): J. Kirk

FORMAT: Lecture, conducted in Spanish

PREREQUISITE: SPAN 2020.06, or the equivalent, or permission of the instructor

SPAN 2230.03: Contemporary Spanish American Prose (in translation), Part I.

This class samples short stories and novels of contemporary prosists from throughout Latin America. Included are works by such outstanding experimental writers as Julio Cortázar, Juan Rulfo, Carlos Fuentes, Alejo Carpentier, García Márquez and José Donoso — authors whose vigorous narrative, technical innovation and synthesis of surrealism, myth, and magical realism evidence not only a "new consciousness" in Latin America, but perhaps a rejuvenation in prose art of global consequence.

FORMAT: Lecture/discussion, conducted in English

PREREQUISITE: No prerequisites. Open to all students in all departments except Spanish. No knowledge of Spanish necessary.

SPAN 2240.03: Contemporary Spanish American Prose (in translation), Part II.

This class is a continuation of SPAN 2230.03, but may be taken independently of it.

FORMAT: Lecture/discussion, conducted in English

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 2020X/Y.06 or equivalent fluency in the Spanish language

SPAN 2510.03: Introducción a la literatura Hispanoamericana.

Study of illustrative works.

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

SPAN 3010.03: Workshop in Advanced Oral Spanish I.

This class intends to build vocabulary, increase fluency and enhance the style of spoken Spanish through continued development and intensive use of oral Spanish skills. Students who have participated in any of our semester classes abroad or who have some immersion experience cannot register in this class.

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

SPAN 3015.03: Workshop in Advanced Oral Spanish II.

This class, intended for students who have already participated in any of our programs abroad or who have previous immersion experience, further develops the oral skills and fluency of the students by using a whole array of communicational dynamics. Importance will also be given to written Spanish and vocabulary expansion. Students who completed Workshop in Advanced Oral Spanish I (SPAN 3010.03) can also enrol in this class.

FORMAT: Discussions/presentations, conducted in Spanish

PREREQUISITE: SPAN 3010.03, participation in our semester programs abroad or previous immersion experience

EXCLUSION: Native speakers

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 trans-position, 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 3060.03 or equivalent

SPAN 3030.03: Composición.

Training towards accuracy in writing Spanish. Vocabulary-building, free composition.

INSTRUCTOR(S): D. Rogers

FORMAT: Lecture/discussion

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

SPAN 3060.03: Español Avanzado: Puntos Gramaticales Problemáticos.

This class focuses on those particular points of the Spanish language and usage which continue to be difficult for the non-native speaker; i.e., por/para, ser/estar, use of the subjunctive, etc.

INSTRUCTOR(S): D. Rogers

FORMAT: Lecture

PREREQUISITE: SPAN 2020X/Y.06, or permission of the instructor

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 3215.03: Seminario de literatura latinoamericana.

This class studies in depth, selected topics in Spanish American prose and poetry, in their cultural and aesthetic contexts. Areas of special focus may include modernismo, creacionismo and the prose of Quiroga and the Regionalist authors, as well as the more recent inheritors of these traditions: Neruda, Vallejo, Paz and novelists of the "Boom" generation.

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

SPAN 3225.03: Seminario de literatura de la generación del 98.

This class studies in depth selected master pieces of Modern Spanish prose, poetry and essay, in their cultural and aesthetic context. This is a study of trends in literature at the turn of the 19th century. The focus of the class falls especially on such figures as Galdós, Leopoldo Alas; and writers of the Generation of '98 such as Pío Baroja, Unamuno, Ortega y Gasset, Antonio Machado, and Juan Ramón Jiménez. The aim of this class is to introduce students to an area of Spanish literature focusing on the specific context in which novels and other literary works were written.

INSTRUCTOR(S): M. J. Giménez

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 3010.03/3030.03

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 3010.03/3030.03 or instructor's permission

SPAN 3510.03: Literatura Hispanoamericana contemporánea.

A study of representative works.

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 2020X/Y.06, or equivalent

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 3010.03/3030.03 or instructor's permission

SPAN 3550.03: Utopía y exilio en la literatura hispano - canadiense.

This class is designed for advanced students who have taken the available classes at the 2000 level or equivalent. Students will be introduced to the notion of utopia, which is that place that no place, in other words it does not exist anywhere except in the discourse of the imaginary memory of a collectivity. Utopia exists only to fill a lack of place of origin, so when a collectivity settles down in a new place its utopia disappears. Students will also explore the consequences of the loss of a stable territory (real or symbolic) due to exile in the novel of Hispano-Canadian writers. The aim of this class is to introduce students to a specific area of literature focusing on two fundamental realities of the 20th century literature: exile and utopia.

INSTRUCTOR(S): M. J. Giménez

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 3010.03/3030.03 or instructor's permission

SPAN 3800.03: Seminario de cine español.

This class provides students with the basic elements of cinematic language and gives them the analytical tools to critically assess the Spanish film production from the 1930's to the present day. The works of directors such as L. Buñuel, Carlos Saura, Víctor Erice, Mario Camus, Pedro Almodóvar, and others are previously viewed by students and discussed in class.

INSTRUCTOR(S): M. Jimenes

FORMAT: Lecture/discussion, conducted in Spanish

PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of our programs abroad (or instructor's permission)

SPAN 3805.03: Survey of Spanish Film.

This course will provide the student with an historical background of Spanish cinematographic production from the 1930's up to the present. Selected works from filmmakers such as Luis Bunuel, Carlos Saura, Víctor Erice, Pedro Almodovar and Iciar Bollain. Films will be previously viewed by the students and analysed in class.

FORMAT: Seminar, conducted in Spanish

PREREQUISITE: THEA 2311 or MSVU Fine 2293 or professor's approval.

EXCLUSION: SPAN 3800.03

SPAN 3810.03: Seminario de cine latinoamericano.

This class provides the student with the basic elements of cinematic language and gives them the analytical tools to critically assess the Latin American film production emphasizing that of Argentina, Mexico, and Cuba. Films by Eliseo Subiela, Fernando Solanas, M.L. Bemberg, Paul Leduc, Tomas Gutiérrez-Alea, Humberto Solas, and others are previously viewed by the students and discussed in class.

INSTRUCTOR(S): M. Jimenes
 FORMAT: Lecture/discussion, conducted in Spanish
 PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of our programs abroad (or instructor's permission)

SPAN 3815.03: Survey of Hispanic American Film.

This course will provide the student with an historical background of Hispanic American cinematographic production emphasizing that of Argentina, Mexico and Cuba. Films by F. Solanas, E. Subiela, Paul Leduc, Tomas Gutierrez-Alea, Fernando Perez and Sara Gomez, among others, will be previously viewed by the students and analysed in class.
 FORMAT: Seminar, conducted in English
 PREREQUISITE: THEA 2311 or MSVU fine 2293 or professor's approval.
 EXCLUSION: SPAN 3810.03

SPAN 3900.03: Introducción a los estudios hispanicos.

This class is an introduction to the critical reading of selected literary writings. Students will become acquainted with some of the trends of critical literary analysis. The close reading of a wide selection of various texts (fragments of novels, short stories, essays, newspaper articles, etc.) leads to discussions in class, and ultimately to the awakening of the senses as well as a sensitive appreciation of literature. The aim of this class is the awakening of students to an artistic appreciation of literature through an in-depth knowledge of language and its relationship with its most elaborate results: literary texts. This is normally taken in the third or fourth year of study.

INSTRUCTOR(S): M. J. Giménez
 FORMAT: Lecture/discussion, conducted in Spanish
 PREREQUISITE: SPAN 3010.03/3030.03 or previous participation in one of our programs abroad, or instructor's permission

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
 EXCLUSION: SPAN 3910

SPAN 3970.03: Lecturas dirigidas de literatura Hispanoamericana.

SPAN 3975.03: Estudios hispánicos dirigidos.

SPAN 3980.03: Lecturas para especialistas.

SPAN 4510.03: Literatura de la Edad de oro.

This class offers an introduction to selected masterpieces of poetry and prose during the Spanish Golden Age: Renaissance (16th century), and Baroque (17th century), by studying such authors as Boscán, Garcilaso de la Vega, Fray Luis de León, San Juan de la Cruz, Góngora, Quevedo, and Sor Juana Inés de la Cruz, and such novels as El Lazarillo de Tormes and El Quijote by Cervantes. The goal of this class is to introduce students to one of the more important periods of Spanish Literature.

INSTRUCTOR(S): M. J. Giménez
 FORMAT: Lecture/discussion, conducted in Spanish
 PREREQUISITE: SPAN 3010.03/3030.03 or instructor's permission

SPAN 4985.03: Lecturas para estudiantes de honores.

SPAN 4990.03: Estudios hispánicos avanzados independientes.

Theatre

Location: Dalhousie Arts Centre, Fifth Floor
 6101 University Ave.
 Halifax, NS B3H 3J5
 Telephone: (902) 494-2233
 Fax: (902) 494-1499
 Website: theatre.dal.ca

Dean

Binkley, M.E., BA, MA, PhD (Toronto)

Chair

Stackhouse, S. (494-2241)

Undergraduate Advisor

Sorge-English, L. (494-1583)

Professors

Overton, D.R., BA, MA (UBC), PhD (Calif)
 Perina, P., MA, Dip. Scenography (Prague)

Associate Professors

Barker, R., BA (King's), MA (Dal), PhD (Birmingham)
 Gantar, J., BA, MA (Ljubljana), PhD (Toronto)
 Sorge-English, L., BA (King's/Dal), MA (NYU)
 Stackhouse, S., BA (Dal), Dip. (NTSC), Adv. Dip. (CSSD)

Assistant Professors

McClure, R., BA (Queen's), BEd (Toronto), MA (Toronto), Dip. (NTSC)
 Siebrits, H., BA (PE Technikon, RSA), BFA (UCLA), MFA (UCLA)

Lecturer

Edgett, K.

Instructor

Kristoff, D., BHEC (MSVU), DCS (Dal), MSc (Manitoba)

Special Instructors

MacLennan, B., BA (Dal)
 Robb, M. Dipl. (Sheridan)
 Thomson, I.

I. Introduction

The Dalhousie Theatre Department offers many ways to study the theatre or some aspect of it in other disciplines offered by the university.

1. You can undertake programs that lead to a university degree: an Honours or Combined Honours BA (4 years), a BA with Major (4 years), a General BA (3 years);
2. You can enroll in a Diploma program in Costume Studies (2 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;
4. You can enroll in one class, from a special group, as part-time or extension student.

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 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 65 of this calendar.

A. BA with 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
- 1 other full class in THEA at 1000-level
- 3 classes in other subjects

Year 2

- THEA 2011.03
- THEA 2012.03
- THEA 2900X/Y.06
- 3 full classes in other subjects

Years 3 and 4

- THEA 3200X/Y.06
- THEA 3500X/Y.06
- THEA 3600X/Y.06
- THEA 4500.03
- THEA 4501.03
- 3 full advanced electives in THEA, at least 1 of which must be either in Acting, Scenography, or Costume Studies
- 1 full advanced class in dramatic literature from another department (ENGL, CLAS, RUSS, SPAN, FREN, GERM, etc.)
- 2 full classes in other subjects, including THEA

An additional credit (the "21st credit") 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 a performer in the professional theatre. The program is progressive in nature, culminating in a company of student actors who perform in the DalTheatre season in their fourth year. Third year students in the Acting Program may be eligible to participate in the DalTheatre season dependant upon the casting requirements and discretion of the director and the Acting Program faculty. Third year Music and Theatre students may be required to participate, in order to meet their degree requirements, should the DalTheatre season include a musical. In addition, third year students will participate in a winter term project and must be available for evening and weekend rehearsals. Auditions are held at the end of the first year for admission into the upper years of study. Students then move through the remaining three years of study together and must, in addition to meeting

degree requirements, achieve a B in all Acting Program classes, and, be recommended by the acting faculty in order to advance to the next year's course of study. The program provides these students with a pre-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
- 3 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
- 1 full elective in other subject

Year 3

- THEA 3800X/Y.06
- THEA 3810X/Y.06
- THEA 3820X/Y.06
- MUSC 1080X/Y.03
- 1.5 classes in other subjects

Year 4

- THEA 4800X/Y.06
- THEA 4840X/Y.06
- MUSC 1081X/Y.03
- THEA 3500X/Y.06
- 1.5 classes in other subjects (one of these can be in THEA)

Honours Acting students will be awarded the 21st credit for their satisfactory participation in 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.

3. Scenography & Technical Scenography

People from very different backgrounds are attracted to the study of scenography. Students with considerable art school or architecture background are offered specially tailored curriculum, and should contact the scenography professor to work out a suitable program of studies in scenography. Students starting with a keen interest and a little formal background in art or architecture are admitted if they meet the university entrance requirements. Honours students must maintain at least a B+ average in all of their advanced theatre classes.

Year 1

- THEA 1000X/Y.06
- THEA 1050X/Y.06
- 3 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
- 1 full elective in other subject

Year 3

- THEA 3060X/Y.06
- THEA 3070X/Y.06
- THEA 3710X/Y.06
- 2 classes in other subjects

Year 4

- THEA 3500X/Y.06
- 2 full advanced level electives in theatre.
- 2 full classes in other subjects, including up to 1 in theatre

The 21st class in Technical Scenography and 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 could find occasional, paid employment with Neptune Theatre, the Rebecca Cohn Auditorium and IATSE Local 680 (International Alliance of Theatrical Stage Employees) with whom 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
- 3 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
- 1 full class in other subjects

Year 3

- THEA 3500X/Y.06
- THEA 3405X/Y.06
- THEA 3408.03
- THEA 3450X/Y.03
- THEA 3454.03
- THEA 3455.03
- 1 full class in other subjects

Year 4

- THEA 4400X/Y.06
- THEA 4450.03
- THEA 4452.03
- TEXTL 2000 (NSCAD)
- TEXTL 2100 (NSCAD)
- 2 full classes in other 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 21st credit for a substantial involvement in a DalTheatre production.

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 with 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 3-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 4-year BA with Combined Honours in Music and Theatre which blends the principal classes of the Bachelor of Music concentration in voice with Theatre classes in Acting and Improvisation, Dance 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 solid foundation in academic, vocal, and stage skills.

Students must successfully complete the audition/entrance tests for the first year of the Music Program, and have an interview with the Theatre Department. Permission to continue in this program is subject to a successful completion of THEA 1800X/Y.06 and the securing of a place in THEA2800X/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, or as a separate ensemble recital) and also must submit a comprehensive essay on an aspect of Musical Theatre.

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
- MUSC 3319X/Y.06 (THEA 3010X/Y.06)
- THEA 3800X/Y.06
- THEA 3820X/Y.06
- 1 required full elective
- Ensemble: Chamber Choir/Opera Workshop

Year 4

- MUSC 4101X/Y.06
- THEA 4800X/Y.06
- THEA 4840X/Y.06
- 2 remaining required full electives
- Ensemble: Chamber Choir/Opera Workshop
- Honours Music and Theatre students will be awarded the 21st credit for their satisfactory participation in DalTheatre productions.

C. 20-credit BA with 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 3-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. 15-credit BA with Concentration 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.

Year 1

- THEA 1000X/Y.06
- 1 other full class in THEA at 1000-level
- 3 credits in other subjects

Years 2 and 3

- THEA 2011.03
- THEA 2012.03
- THEA 3500X/Y.06
- Between 2 and 6 advanced Theatre classes, of which at least 1 credit has to be at the 3000-level
- At least the equivalent of 2 full classes in other subjects

E. Costume Studies, Diploma in 2 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 2000 (NSCAD)
- TEXTL 2100 (NSCAD)

Year 2

- THEA 3405X/Y.06
- THEA 3408.03
- THEA 3450X/Y.03
- THEA 3454.03
- THEA 3455.03
- THEA 4400X/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 be able to address specific problems within their papers and discuss possible 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: 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 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 construction, properties, sound, lighting and costume for the stage. 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. This class is a prerequisite for upper level technical scenography classes. 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.

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 2 hours, lab 4 hours

THEA 1300X/Y.06: Introduction to Film.

This class explores the history and development of film, from its beginnings to the present day. It also examines film genres and history, the component elements of film, and the medium's impact on 20th-century society. In addition to this, the class 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 Program. 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 give some of the basic techniques employed in the education of a stage performer. The basic approach will be practical and experiential, with the learning being focused into three major sections throughout the year: Space, Character, and Action. Students will be required to participate in exercises, which will test and strengthen coordination, focus, communication and teamwork. The focus will be on self-discovery, and working with others to create a safe dynamic environment in which all participants will be free to stretch themselves physically, vocally, artistically, and ignite their imagination.

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/seminar 3 hours

THEA 2000X/Y.06: Theatre Performance.

This class is designed to provide experience in performance outside the Acting Program. 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 Program, 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 dramatic literature, staging practices, and theoretical foundations of the early history of theatre. Specific topics covered include Greek, Roman, and medieval, 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 the final years of European neoclassicism. 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 2020X/Y.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.

NOTE: Students taking this class must register in both Z and Y in consecutive terms; credit will be given only if both are completed consecutively.

FORMAT: Lab/demonstration/lecture 3 hours

CROSS-LISTING: MUSC 2130X/Y.06 - Jazz Dance I (spring session only)

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: 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 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, construction, 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: 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 6 hours

PREREQUISITE: THEA 1050X/Y.06

CO-REQUISITE: THEA 2060X/Y.06

THEA 2300X/Y.06: Film Study.

See description under THEA 1300X/Y.06. As THEA 2300X/Y.06, this class may be taken as one of the required classes of the Minor in Film 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.

THEA 2310X/Y.06: Film Genres.

This course is designed to give students both a practical and theoretical overview of the dominant film genres and their conventions. The

evolution of each genre will be illustrated, from its earliest beginnings to its latest examples. Special attention will be given to the reason behind this evolution, the broader historical context and important facts from film history that explain the apparent changes in particular. Also, a broader theoretical framework will be offered, so that students learn how to define film genres, how to read their codes and how to recognize elements of film genres even when they are mixed into a heterogeneous film.

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/seminar

THEA 2311.03: Film Analysis.

This course provides the students with the theoretical instruments which will enable them to analyse a wide array of narrative films. Through readings, lectures and discussions, students will learn about the language of film. Five feature films (viewed by the students outside of class time), each one of them brilliantly illustrating a specific aspect of film narrative and style, will be closely studied in class.

FORMAT: Lecture/discussions

PREREQUISITE: Previous completion of THEA 2300 or equivalent is recommended.

THEA 2312.03: Issues in Film Aesthetics.

This course is an introduction to some of the crucial ethical and aesthetic issues related to the cinematic arts. Through readings, lectures and discussions the course will provide an overview of the varied aesthetic goals of narrative filmmakers as well as some basic instruments to analyse selected documentary, experimental and animated film. Seven films (viewed by the students outside of class time) will be discussed in class.

FORMAT: Lecture/discussion

PREREQUISITE: Previous completion of THEA 2311.03 "Introduction to Film Study" is recommended.

THEA 2313.03: Shakespeare and this 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.

INSTRUCTOR(S): D. Nicol

FORMAT: Lecture and seminar

PREREQUISITE: Experience in Shakespeare at any level OR experience in Film Studies at any level.

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 Program.

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/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 Program.

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

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, colour 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 Program.

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 create modern and historical costumes for the stage. In addition, students work on productions in order to understand better the integral role played by costume in staging a play, and in an actor's character development, and body image and representation. Much of the show-related work takes place outside of class time. This class is part of the Costume Studies Program.

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 2700X/Y.06: Scenography I.

This class is designed to give students basic visual judgement and understanding. In the first half, it follows the Bauhaus approach to graphic design but adapts it to the needs of three-dimensional theatre space. In the second half, perspective and colour theory are taught. Throughout the year analysis and criticism of various works are encouraged. The texts followed are Gyorgy Kepes' Language of Vision and Johannes Itten's The Elements of Colour. This class is open to all students.

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 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 improvisation, 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 be recommended by the acting faculty in order to advance to the next year's course 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 Program 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: Students taking these classes 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

PREREQUISITE: THEA 1800X/Y.06

CO-REQUISITE: THEA 2810X/Y.06, THEA 2820X/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: 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: Lecturer/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: 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/Demonstration/Lab 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 2900X/Y.06: Dramaturgy.

This class involves specific study of dramaturgical practices introduced in the Introduction to Theatre. Plays are read as performance scripts to gain an understanding of the implicit theatrical and social conventions which they contain, and with an eye to connecting scripts from other societies to a contemporary audience. The relationship between theatres and their communities will be examined and students also work actively with the DalTheatre season of plays.

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/seminar 3 hours

PREREQUISITE: THEA 1000X/Y.06 or permission of instructor

THEA 3010X/Y.06: The History of Musical Theatre.

A survey of musical theatre: history, dramaturgy and production - from its roots in the traditions of European comic opera and the nineteenth century operetta to the works of Lloyd Webber, Sondheim and other present-day writers.

See class description for MUSC 3319X/Y.06 in the Music section of this calendar.

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.

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. All students are required to choreograph and perform a dance.

FORMAT: Lecture/lab

PREREQUISITE: THEA 2020 or approval of instructor (interview)

CROSS-LISTING: MUSC 3130X/Y.06 Jazz Dance II

THEA 3060X/Y.06: Technical Scenography II.

This class is designed to supplement Technical Performance and is a continuation of THEA 2060X/Y.06 covering the topics in greater detail.

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 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: construction, properties, lights and sound, or stage management. Students are required to work on four (4) production sets 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: 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 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: 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 hours

PREREQUISITE: THEA 2900X/Y.06 and permission of instructor

THEA 3311X/Y.06: The Cinema of David Lynch.

This course examines filmmaker David Lynch's entire body of work, including his theatrically released films, his TV series *Twin Peaks*, his independently distributed experimental films and his paintings and sculpture. By devoting a full year course to one artist, the course permits exceptionally close analysis of Lynch's work, his source material and his inspirations.

FORMAT: Lecture and seminar

PREREQUISITE: At least one of the required courses in the Film Minor (THEA 2300, 2311, 2313) or their equivalents at MSVU (FINE 2293).

THEA 1300 or THEA 2310 may also be accepted but priority will be given to Film Minor students.

THEA 3330.03: Film Theory I.

This course will survey and discuss the major 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/Seminar

PREREQUISITE: One of the Film Studies courses (or other exposure to the discipline)

THEA 3331.03: Film Theory II.

This course will survey and discuss the major 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.

INSTRUCTOR(S): A. Cristiano

FORMAT: Lecture/Seminar

PREREQUISITE: One of the Film Studies courses (or other exposure to the discipline)

THEA 3405X/Y.06: The Aesthetics of Historical Costume.

A continuation of THEA 2406X/Y.06, this class examines the aesthetics of historical dress, tracing the evolution of changing silhouettes and historical pattern-making techniques in the eighteenth and nineteenth centuries. The student will learn to appreciate artifacts as historical source material to re-create costumes of the eighteenth and nineteenth centuries. Primary research forms a significant component of this class. This class is part of the Costume Studies Program.

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

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 3408.03: The Aesthetics of Ritual Costume.

This class will examine the role played by men's and women's formal attire in theatre and society. The classic suit, military uniforms, and religious dress will be analyzed, compared and contrasted through a variety of historical periods, with a view to gaining a better understanding of people's need to clothe themselves in formally conventional ways. This class is part of the Costume Studies Program.

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 3450.03: 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 Program.

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 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 Program.

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 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 professional tailored garments is studied in detail. This class is part of the Costume Studies Program.

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.

The modern theatre has been 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: 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/seminar 3 hours

PREREQUISITE: THEA 2011.03 and THEA 2012.03 or permission of the instructor

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 then revised, critiqued, and given a public presentation.

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 hours

PREREQUISITE: THEA 2900X/Y.06 and 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. Students concentrate on learning in more detail about three-dimensional theatrical space, its dynamics and composition. At the same time, they learn technical drawing for the theatre and the methods of executing construction and a designed work. They are introduced to the directorial/scenographic relationship. The text followed is "Scenography of Josef Svoboda" by Jarka Burian.

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 6 hours

PREREQUISITE: THEA 2060X/Y.06, 2070X/Y.06, 2011.03, 2012.03 2700X/Y.06

THEA 3800X/Y.06/THEA 3810X/Y.06/THEA 3820.06: 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

implement the freedom they have discovered as they gain further understanding of physical, vocal, and imaginative expression. Third-year students may be invited to perform in the DalTheatre season, 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 be recommended by the acting faculty in order to advance to the next year's course 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 3800X/Y.06: Acting III.

This class is designed to build upon the creative and imaginative work completed in the first two years of the Acting Program. Students continue to explore personal awareness, physical/vocal expressiveness, and the role that psychology and emotion play in the creation of character and action within scenes. This is achieved by the continued in-depth study and exploration of dramatic texts from various periods and styles of theatre. The students are also introduced to mask work as a tool for exploring character.

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, 2810X/Y.06, 2820X/Y.06, and permission of the Acting Faculty

CO-REQUISITE: THEA 3810X/Y.06, THEA 3820X/Y.06

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: 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

PREREQUISITE: THEA 2800X/Y.06, THEA 2810X/Y.06, THEA 2820X/Y.06 (Grade B- or higher)

CO-REQUISITE: THEA 3800X/Y.06, 3820X/Y.06, MUSC 1080X/Y.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: 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/demonstration/lab 3 hours

PREREQUISITE: THEA 2800X/Y.06, 2810X/Y.06, and THEA 2820X/Y.06 and permission of the Department

CO-REQUISITE: THEA 3800X/Y.06, 3810X/Y.06

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, Africa 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 (for example, *Buffy the Vampire Slayer*, *Queer as Folk*, *The Lord of the Rings*, and the music videos of Madonna) to the oppositional (for instance, the theatre of Split Britches and Sky Gilbert, the performance art of Diamanda Galás and Cindy Sherman). Through this intertextual exploration of theory and performance, we will aim to expand our understanding of the ways in which 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 4400X/Y.06: Dress and Identity: King's Court to Mass Culture, 1700 – Present.

This is a survey class which traces the development of dress, 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. Emphasis will be placed on dress worn in England and France, but the dress from other countries may be explored as individual topics of research. The social and cultural aspects of dress history, using slides of representative works of art, films and artifacts as visual documentation for each period will also be emphasized. This class may be taken by general BA students, and is also part of the Costume Studies Program.

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 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, 3500X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies: See Costume Studies class combinations.

THEA 4450.03: Costume Technology.

This class extends the expertise in costume creation developed in THEA 1450X/Y.06, THEA 2451.03 and THEA 3450.03 to examine techniques of fine finish as students prepare their costume 'masterpiece.' This class is part of the Costume Studies Program.

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, 3500X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03. For Diploma in Costume Studies: See Costume Studies class combinations.

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 Program.

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, 3500X/Y.06, 3405X/Y.06, 3408.03, 3450X/Y.06, 3454.03, 3455.03

For Diploma in Costume Studies: See Costume Studies class combinations.
RESTRICTION: Costume Studies degree or diploma students only.

THEA 4500.03: Colonial Canadian Theatre.

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 this country.

FORMAT: Seminar/discussion 3 hours

THEA 4501.03: Post-Colonial Canadian Theatre.

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 3 hours

THEA 4700X/Y.06: Special Topics I.

The student explores in detail particular areas of the theatre of special interest, with the guidance of members of the faculty. Frequency and the length of meetings are decided to meet the needs of the particular topic or project under study.

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: Seminar 2 hours

THEA 4735X/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. 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 and History.

CROSS-LISTING: HIST 4162.06

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. The company of fourth year Acting Program students will be cast in the DalTheatre season and will receive instruction in specific skills related to each production. Classes are devoted to preparing the student actor's transition into the profession.

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 4800X/Y.06: Acting IV.

The fourth year acting class is designed to prepare the Acting student for entrance into the world of professional theatre. Major emphasis is placed on audition technique and 'professional deportment'. Students are guided through an in-depth study of the 12 Guideposts as outlined in Michael Shurtleff's text, *Audition*. A number of professionals may be invited into the classroom to discuss the 'business of acting.' Students will complete the year with a portfolio of suitable audition pieces for use in the professional audition situation. In addition, students are given a chance to practice skills required to give a competitive audition for film/television.

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 15 hours per week, rehearsals week-nights and Saturdays

PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06 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 instruction that will assist the students with developing skills which can be applied in the DalTheatre season of four productions, as well as in the world of the professional theatre. The students will be instructed in four practical modules, one corresponding to each DalTheatre production. These modules will address different aspects of performance such as audition technique, voice and speech, dance and movement, as well as other theatre or performance related areas such as stage combat or on camera audition technique. Each module will take place during a six-week period of intensive in-depth study. The selection of particular modules will vary from year to year, depending on the specific needs of the DalTheatre season. This class will not be offered until academic year 2004/05.

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/lecture 3 hours

PREREQUISITE: THEA 3800X/Y.06, 3810X/Y.06, 3820X/Y.06 and permission of Department

EXCLUSION: THEA 4810X/Y.06, THEA 4820X/Y.06

CO-REQUISITE: THEA 4800X/Y.06

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 2 hours

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, 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, the students should be prepared for alternative methods of research.

FORMAT: Lecture/seminar: 3 hours

THEA 4932.03: Cross-Cultural Theatres.

In an increasingly global context, radically different traditions of theatre and performance meet one another on a daily basis. Such encounters can be destructive, resulting in the loss or adulteration of vital forms of performance; they can also be constructive, leading to the enrichment of existing theatres and the creation of new ones. In the first half of this seminar class, we will explore the conceptions of performance that inform six world traditions accessible within our own Canadian context. The particular forms of performance to be studied will vary from year to year, and will be encountered through sessions led by members of the performance communities in question as well as through more traditional academic reading and writing. In the second half of the class, we will use theoretical readings and practical exercises to examine models of theatre that explore the potential relationships between such diverse performance traditions. These models may include post-colonial theatre, intercultural theatre, theatre anthropology and developmental theatre, among others. Through these encounters, the class will strive to give students an increased awareness of the multivalent nature of global performance and to open up critical and practical avenues for theatrical and social development.

FORMAT: Lecture/seminar: 3 hours

Faculty of Computer Science

Location: Computer Science Building
6050 University Avenue
Halifax, NS B3H 1W5
Telephone: (902) 494-2093
Fax: (902) 492-1517
Website: www.cs.dal.ca

Dean

Shepherd, M., MSc, PhD (Western)

Associate Dean

McAllister, M., BMath (Waterloo), MSc, PhD (UBC)

Administrative Assistant to the Dean

Publicover, A., BSc, BA (Dalhousie), Telephone: (902) 494-1199

Departmental Secretary—Undergraduate

Mahoney, M., Telephone: (902) 494-3702

Departmental Secretary—Multidisciplinary Programs

Bolivar, A., Telephone: (902) 494-2740

Departmental Secretary—Graduate

Teferra, M., Telephone (902) 494-6438

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 permits Computer Science to conduct primary research in Network Centered Computing, Software Engineering, Health Informatics, Data Mining, Human-Computer Interfaces, Visualization, and Privacy and Security.

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: 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.

Course Selection

The content of every course that students take to meet degree requirements must represent new material: students may not take courses whose content is largely repetitive of, or more elementary than, a course 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 courses in other departments

Computer courses 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 course to satisfy a prerequisite condition for a CSCI class.
- A grade of at least C- is required in all Computer Science Technical core classes to graduate with any Bachelor of Computer Science degree.

Dismissal

A student who meets the conditions for dismissal as outlined in Section 20, Academic Dismissal, page 7 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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Dean

Shepherd, M., MSc, PhD (Western)

Associate Dean

McAllister, M., BMath (Waterloo), MSc, PhD (UBC)

Professors

Abidi, S., BEng (N.E.D. Univ of Eng & Technology), MS (Miami), PhD (Surrey)
Bodorik, P., BSc (Calgary), MEng, PhD (Carleton)
Borwein, J., BA (Western Ontario), MSc, PhD (Oxford)
Brown, J.I., BSc, (Calgary), MSc, PhD (Toronto), cross appointment with Department of Mathematics and Statistics
Cox, P.T., BSc, MSc (Auckland), PhD (Waterloo)
Duffy, J., BS, MS, PhD (Iowa), cross appointment with School of Business Administration
Farrag, A., PhD (Alberta)
Gao, Q., MAsC, PhD (Waterloo)
Gentleman, M., BSc (McGill), MA, PhD (Princeton)
Grundke, E. W., BSc, MSc (Dalhousie), PhD (Waterloo)
Hitchcock, P., MA (Oxford), PhD (Warwick)
Inkpen, K., BSc, (Dal), PhD (UBC)
Jost, A., BSc, MSc, PhD (Dalhousie)
MacDonald, N., BSc, MSc, MD (Ottawa), FRCPC, Infectious Disease, cross-appointment with Faculty of Medicine
McHugh, John, BS (Duke), MS (Maryland), PhD (Texas)
Milios, E.E., Dipl Eng (National Technical University), SM & EE, PhD (MIT)
Rau-Chaplin, A., BCompSc (York), MCompSc, PhD (Carleton)
Riordan, D., BSc, MSc (Port Elizabeth), PhD (Carleton)
Sampalli, S., BEng (Bangalore), PhD (Ind. Inst. of Sc.)
Scrimger, J. N., BSc (UBC), MSc, PhD (Western Ontario)
Shepherd, M., MSc, PhD (Western)
Slorim, J., BSc, MSc (Western), PhD (Kansas)
Smedley, T. J., BMath, MMath, PhD (Waterloo)
Trappenberg, T., MSc, PhD (Aachen)
Wach, G., BA (Western ONT), MSc (South Carolina), PhD (Oxford), cross appointment with Department of Earth Sciences
Waters, C.R., BSc, MSc, MLS (Western Ontario), PhD (Technical University of Nova Scotia)
Zitner, D., MD (Dalhousie), cross-appointment with Faculty of Medicine

Associate Professors

Heywood, M., PhD (Essex)
Keselj, V., BSc (Belgrade), MMath, PhD (Waterloo)
Marche, S., BA (Royal Military College) Professional Diploma (Alberta), MEd (Alberta), PhD (London School of Economics), cross appointment with Faculty of Management
McAllister, M., BMath (Waterloo), MS, PhD (UBC)
Mitnitski, A., MEng (Baltic State Tech, University), PhD (Baltic State Tech Univ), cross appointment with Faculty of Medicine
Sedgwick, A., MS (Wisconsin), PhD (Toronto)
Selinger, P., Vordiplom Mathematics (Technische Hochschule Darmstadt), PhD (Pennsylvania), cross-appointed with Department of Mathematics and Statistics

Toms, E., BA (Memorial), MLS (Dalhousie) PhD (Western), cross-appointment with Faculty of Management
Zincir-Heywood, A.N., BSc, MSc, PhD (Ege University)

Assistant 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)
Chiasson, T., BSc (Brandon), MSc, PhD (Dalhousie)
Cox, A., B. of Technology with Honors (Ryerson), M. of Mathematics (Waterloo), PhD (Waterloo)
Zeh, N., Diplom-Informatiker (Friedrich-Scholler, PhD (Carleton)

Instructor

Kalyaniwalla, N., BSc (Bombay), M.S., PhD (Rensselaer)

Adjunct Professors

Cercone, N., BS (Steubenville), MS (Ohio), PhD (Alberta)
Hartzman, C., MSc (Toronto), PhD (Colorado)
Siberschatz, A., PhD (SUNY)
Yesha, Y., BSc (York), MSc, PhD (Ohio)

Adjunct Associate Professor

Shakshuki, E., BSc (Al-Fateh), MAS, PhD (Waterloo)

Adjunct Assistant Professors

Dobcsanyi, P., MSc (Jozsef Atilla), PhD (Auckland)
Fisher, M., BA (York), MSc (McMaster), PhD (York)
Hussain, S., BS (UET), MS (KFUPM), PhD (Manitoba)
Jutla, D. N., BSc (U. W. Indies), MCSc., PhD (TUNS)
Kuruvila, J., BEng (Kasataka), MCIS (Queen's)
Leathers, B., PhD (Cornell)
Lyons, K., BSc, MSc, PhD (Queen's)
Marchand, Y., MCS (Paris, D.E.A. (Caen), PhD (Compeigne)
Read, J., BSc, MS (Wheaton), PhD (Darmstadt)
Silver, D.L., BSc (Acadia), CIM (SMU), MSc, PhD (Western Ontario)
Wang, H., BSc (UNB), MSc, PhD (Toronto)
Yang, Q., BEng, MEng (Harbin), PhD (Alberta)

I. General Interest Classes

The Faculty offers seven classes that should be of interest to students whose major field of study while at Dalhousie will not be Computer Science. They are:

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.

FORMAT: Lecture 3 hours, lab 1.5 hours

CROSS-LISTING: ASSC 1000.03

CSCI 1201.03: Introduction to Multimedia for the Arts.

This is a class on the general concepts of multimedia. Students can expect to learn the principles of graphics, sound, video, animation and scripting with some of the most common and versatile multimedia programs available. Students will also learn how to develop and create an interactive multimedia project. This class is open to arts students only.

PREREQUISITE: CSCI 1200.03

CSCI 1204.03: Computer Techniques for Health and Life Sciences.

This class introduces computers as practical problem-solving tools in the health and life sciences at the introductory level. Data analysis and visualization techniques are taught using high-level tools such as spreadsheets and Visual Basic for Applications. Basic computer programming concepts are introduced. This course cannot be taken for credit in Computer Science degree programs.

PREREQUISITE: Nova Scotia PreCalculus or Calculus Math or equivalent
EXCLUSION: CSCI 1100.03, CSCI 1202.03

CSCI 1205.03: Design and Use of Databases.

CSCI 1205 focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts. This is an elective course for students outside Computer Science, and may not be taken for credit by Computer Science students.

PREREQUISITE: CSCI 1200.03 or CSCI 1204.03

CSCI 1206.03: Introduction to Website Creation.

This class introduces students to key web concepts and skills for creating and maintaining websites. The class is intended for students with no formal computer training. Topics include introduction to the web, hypertext markup language (HTML), web-page authoring tools, multimedia foundations, dynamic content and website organization and maintenance. This class cannot be taken for credit in a Computer Science degree.

CSCI 1502.03: Core Business Applications.

See the class description for COMM 1502.03 in the Commerce section of the calendar.

CROSS-LISTING: COMM 1502.03

CSCI 2201.03: Introduction to Information Security.

Information security is becoming increasingly important in today's networked world, and is impacting every aspect of our lives including finance, healthcare, government, education, arts and entertainment. The objective of this class is to teach the basic principles of information security from the perspective of providing security awareness and its best practices for the real world. Topics include motivation for security, tools and techniques used by adversaries to gather information and launch attacks, Internet security, firewalls, basics of encryption and authentication, virus protection, secure credit card and bank transactions, wireless security, computer forensics, identity theft and protection, anti-phishing and biometric security. This class is open to any students except those registered in the B.Comp.Sc. or the B.Sc. with a major in Computer Science.

CROSS-LISTING: INFX 2601.03

II. Degree Programs

A. Academic Regulations

For all variations of the Bachelor of Computer Science degree:

- of the 19 half-credit CSCI courses required at all levels, at least 10 must be chosen from Dalhousie CSCI course offerings, and
- of the 11 half-credit CSCI courses required at the 3000 and 4000 level, at least 6 must be chosen from Dalhousie CSCI course offerings.

B. Bachelor of Computer Science

1. Bachelor of Computer Science

The following regulations apply to students starting the program in September 2005 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 2140.03 Data and Knowledge Fundamentals

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 business, science, or engineering half-credit class 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

Courses of the form CSCI X2XX, where X is any digit, and CSCI 1502.03 may not be counted towards a Bachelor of Computer Science degree.

2. Bachelor of Computer Science with 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 courses 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 nine courses chosen as follows, where X is any digit:

- CSCI 2113.03 Discrete Structures II
- One course from the following list:
 - CSCI 4112.03 Theory of Computation
 - CSCI 4113.03 Analysis of Algorithms II
 - CSCI 4115.03 Topics in Graph Theory
 - CSCI 4116.03 Cryptography
- Either one other course from the CSCI 411X.03 group, or a Mathematics course approved by the Honours Advisor.
- One course from each of four of the following groups:
 - CSCI 412X.03 (Systems courses)
 - CSCI 413X.03 (Software Engineering and Languages courses)
 - CSCI 414X.03 (Database courses)
 - CSCI 415X.03 (Artificial Intelligence courses)

- CSCI 416X.03 (Graphics, HCI and Multimedia courses)
- CSCI 417X.03 (Networks courses)
- CSCI 418X.03 (Bioinformatics courses)
- CSCI 8871.00
- CSCI 8872.00 (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 courses 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, and Science. 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. The minor in the Faculty of Management is a minor in Business. Minors in the Faculty of Science are available in Biology, Chemistry, Earth Sciences, Economics, Environmental Programs, Mathematics, Physics, Psychology, and Statistics.

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 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. Entry Points to Bachelor of Computer Science

There are three main entry points into the Bachelor of Computer Science program:

1. 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.
2. Applicants who already have some credits at the post-secondary level may apply for entry into an accelerated program. If accepted they may be able to enter the third year of the program after one year of study.
3. Students who have completed the requirements of the first two years at the Associated Universities will be able to apply for entry into the third year of the program.

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 30.

6. 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 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 course 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. Bachelor of Informatics

A Bachelor of Informatics program is offered with majors in Bioinformatics, Health Informatics, and Software Systems. Consult the regulations on the Bachelor of Informatics on page 252.

E. Software Engineering

A Bachelor of Software Engineering program is offered jointly with the Faculty of Engineering. Completion of any or all software engineering classes offered by the Faculty of Computer Science does not qualify persons to hold the designation "Professional Engineer" as defined by various Provincial Acts governing the Engineering Profession. Students wishing to pursue formal qualifications in Software Engineering should consider the Bachelor of Software Engineering program as described on page 255.

F. Scholarships

Scholarships and bursaries are available to both new and returning students. See the Awards and Financial Aid section of this calendar.

G. 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 in Java 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 Java programming and linear data structures.

PREREQUISITE: CSCI 1100.03

CSCI 1105.03: Introduction to Computer Programming.

See the class description for INFX 1604.03

EXCLUSION: INFX 1600X/Y.18, CSCI 1100.03

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.

FORMAT: Lecture 3 hours, lab 1.5 hours

CROSS-LISTING: ASSC 1000.03

CSCI 1201.03: Introduction to Multimedia for the Arts.

This is a class on the general concepts of multimedia. Students can expect to learn the principles of graphics, sound, video, animation and scripting with some of the most common and versatile multimedia programs available. Students will also learn how to develop and create an interactive multimedia project. This class is open to arts students only.

PREREQUISITE: CSCI 1200.03

CSCI 1204.03: Computer Techniques for Health and Life Sciences.

This class introduces computers as practical problem-solving tools in the health and life sciences at the introductory level. Data analysis and visualization techniques are taught using high-level tools such as spreadsheets and Visual Basic for Applications. Basic computer programming concepts are introduced. This course cannot be taken for credit in Computer Science degree programs.

PREREQUISITE: Nova Scotia PreCalculus or Calculus Math or equivalent
EXCLUSION: CSCI 1100.03, CSCI 1202.03

CSCI 1205.03: Design and Use of Databases.

CSCI 1205 focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts. This is an elective course for students outside Computer Science, and may not be taken for credit by Computer Science students.

PREREQUISITE: CSCI 1200.03 or CSCI 1204.03

CSCI 1206.03: Introduction to Website Creation.

This class introduces students to key web concepts and skills for creating and maintaining websites. The class is intended for students with no formal computer training. Topics include introduction to the web,

hypertext markup language (HTML), web-page authoring tools, multimedia foundations, dynamic content and website organization and maintenance. This class cannot be taken for credit in a Computer Science degree.

CSCI 1502.03: Core Business Applications.

See the class description for COMM 1502.03 in the Commerce section of this calendar.

CROSS-LISTING: COMM 1502.03

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.

This class is only open to Bachelor of Computer Science students.

FORMAT: Lecture 3 hours, lab 1.5 hours

PREREQUISITE: Students are expected to have completed their English Writing Requirement.

CROSS-LISTING: ENGL 2100.03

EXCLUSION: COMM 2701.03, COMM 1701.03, COMM 1702.03

CSCI 2102.03: Initiating the Technology Venture.

This class addresses the practical issues in preparing to venture. It is targeted primarily at students in the Faculties of Computer Science and Management. The class exposes students, through individual and team work, to the issues and challenges of creating new technical ventures. It provides the opportunity to explore and develop venture ideas of interest to the students. The class includes experiential exercises, exposure to subject matter experts, dialogue with practicing entrepreneurs and practical preparation.

PREREQUISITE: Either CSCI 1101 and CSCI 2110 (co-requisite), or COMM 1010 and COMM 2401 (co-requisite), or MGMT 1000 and MGMT 1001, or permission of the instructor.

EXCLUSION: CSCI 2101.00

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 Java 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 1100.03 or suitable prior programming experience

CSCI 2140.03: Data and Knowledge Fundamentals.

This class provides a holistic view of managing information and answering queries from the information. This class covers introductory topics in database systems and intelligent systems. Data fundamentals are introduced in terms of data models, relational and OO modelling and the use of SQL to both design databases and to answer queries that are founded in database systems. Knowledge fundamentals are introduced in the context of intelligent systems; in particular, search methods, predicate logic, automated inference and knowledge representation are addressed.

PREREQUISITE: CSCI 2110.03 and CSCI 2112.03

CSCI 2201.03: Introduction to Information Security.

Information security is becoming increasingly important in today's networked world, and is impacting every aspect of our lives including finance, healthcare, government, education, arts and entertainment. The objective of this class is to teach the basic principles of information security from the perspective of providing security awareness and its best practices for the real world. Topics include motivation for security, tools and techniques used by adversaries to gather information and launch attacks, Internet security, firewalls, basics of encryption and authentication, virus protection, secure credit card and bank transactions, wireless security, computer forensics, identity theft and protection, anti-phishing and biometric security. This class is open to any students except those registered in the B.Comp.Sc. or the B.Sc. with a major in Computer Science.

CROSS-LISTING: INFX 2601.03

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

RECOMMENDED: STAT 2060.03

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

CSCI 3122.03: Microcomputers and the Real World.

See the class description of PHYC 3810.03 in the Physics section of this calendar.

PREREQUISITE: Permission of the instructor

CROSS-LISTING: PHYC 3810.03

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, and CSCI 2140.03

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 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 3140.03: Database Management Systems.

The class provides an introduction to Database Management Systems (DBMSs). It covers various topics such as data models, relational algebra and calculus, SQL, DB design, query languages, query optimization, concurrency control and recovery. Assignments and projects will require use of a DBMS.

PREREQUISITE: CSCI 2140.03 or INFX 2640.03

EXCLUSION: COMM 3516.03

CO-REQUISITE: CSCI 3120.03

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 2110.03 and CSCI 2132.03

CO-REQUISITE: CSCI 2140.03

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 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 and CSCI 3171 or INFX 2600 and INFX 2601

CO-REQUISITE: CSCI 3171 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: All of CSCI 2100.03, CSCI 2132.03, and CSCI 2140.03, or permission of the instructor

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 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 4125.03: Programming for Performance.

This course explores the design, implementation, and evaluation of computer programs for applications in which performance is a central issue. In the sequential computing setting, it explores topics such as profiling, cache effects, I/O performance, floating-point issues, compiler directives and performance tuning. In the parallel computing setting it introduces techniques for the design, implementation and evaluation of programs for both Shared-Memory Multiprocessors (SMPs) and Distributed Memory Multicomputers (clusters).

PREREQUISITE: CSCI 3110.03 and CSCI 3120.03

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 4132.03: Personal Software Process.

This class deals with the Personal Software Process, which is designed to control, manage and improve the way individuals produce software.

PREREQUISITE: CSCI 3130.03

CSCI 4133.03: Application Frameworks.

This class examines the theory and practice of modern application frameworks.

PREREQUISITE: CSCI 3132.03

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 4135.03: Code Optimization and Generation.

Optimization and code generation are significant and complex elements of a modern optimizing compiler. This class examines intermediate representations, code analysis techniques, potential optimizations, code generation, linking, and loading. The course complements, and is independent of, CSCI 4131.03. It is suitable for any fourth year computer science student who is interested in learning what goes on 'behind the scenes' in today's compilers.

PREREQUISITE: CSCI 2110.03, CSCI 2121.03 and CSCI 2132.03

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 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

CSCI 4142.03: Multimedia Information Systems.

There are three parts to this class. The first part concentrates on the characteristics of audio, image, and video, including their digital representation and compression. The second part of the class concentrates on storage models, retrieval and orchestration. This will include such systems as those for computer supported collaborative work and telemedicine. The final part of the class will cover middleware models for distributed multimedia systems.

PREREQUISITE: CSCI 3120.03 or permission of the instructor. Students should be comfortable in a UNIX environment, with a GUI such as XView or tcl/tk, and with C, C++, or Java.

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 3140.03

CSCI 4150.03: Introduction to Artificial Intelligence.

The course is an introduction to the automation of intelligent capabilities, including knowledge representation and reasoning (search and logical inference), interpreting, behavior modelling and learning.

PREREQUISITE: CSCI 2112.03, CSCI 2140.03, CSCI 3110.03, STAT 2060.03,

MATH 2030.03, and either MATH 1010.03 or CSCI 2113.03. Students must be in fourth year.

RECOMMENDED: CSCI 2132.03

EXCLUSION: CSCI 3150.03

CSCI 4154.03: Opponent Modeling for Computer Gaming.

This class introduces and evaluates various techniques used to provide opponent models for non-player characters (NPC) in a cross-section of computer gaming environments. The course makes a brief survey of computer gaming domains and associated requirements and defines the scope of behavioural modeling. Paradigms for modeling NPC behavioural modeling are then introduced, beginning with widely utilized 'rule-based' methods such as finite state machines, fuzzy logic, and expert systems. The concept of probabilistic decision making is then introduced, where this representation acts as a metaphor for incorporating a prior knowledge while giving the NPC variation in play behaviour. Finally, we review the utility of models based on biological metaphors such as neural networks and evolutionary computation, where these models are increasingly used in a wide range of opponent behavioural modeling contexts.

PREREQUISITE: CSCI 2121.03, CSCI 2132.03, CSCI 2140.03, and STAT 2060.03

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

RECOMMENDED: CSCI 2132.03

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 3130.03 and CSCI 3160.03

CSCI 4165.03: Digital Media.

This class covers technical aspects of digital media. It will include topics relating to the history and human perception of various media types, as well as digital representation, compression and generation. The forms of media to be covered include text, images, 2D animation, video, sound, and 3D graphics and animation.

PREREQUISITE: CSCI 3130.03

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

RECOMMENDED: CSCI 3120.03

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 4175.03: Distributed Systems.

This class extends the notions of control, synchronization, and coordination of resources to multiple hosts across a network. It presents the challenges associated with distributed systems, reviews mechanisms such as naming, interprocess communication, RPC/RMI, and coordination mechanisms that are used to offer distributed services, and discusses the operation of existing distributed services.

PREREQUISITE: CSCI 3120.03 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 of the 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 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 and CSCI 3171.03

CSCI 8871.00: Honours Seminar I.

This is the first of two classes through which students complete their Honours Thesis requirements. Honours students in Computer Science must register for this class, normally in the second-last term of study. Faculty members describe available research projects and each student chooses a supervisor and a project, following a timeline specified by the Honours Coordinator. Students perform the background literature review and carry out most or all of their research. Pass/fail grading applies to this class.

PREREQUISITE: Permission of the Honours Coordinator

CSCI 8872.00: Honours Seminar 2.

This is the second of two classes through which students complete their Honours Thesis requirements. Honours students in Computer Science must register for this class, normally in the last term of study. Under the

direction of their supervisors, students complete their research, write their Honours Theses, and give public presentations on their work. Pass/fail grading applies to this class.

PREREQUISITE: CSCI 8871.00

CSCI 8890.00: Co-Op Seminar.

Students in the Bachelor of Computer Science Co-operative Education Program 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 I.

This class is the first work term for students in the Bachelor of Computer Science Co-operative Education Program. 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 Program. 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 Program. 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 ever expanding relationship between information systems and the daily lives of real 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
- interface next generation devices

This new degree program is offered by the Faculty of Computer Science in collaboration with the Faculty of Arts and Social Sciences, the Faculty of Health Professions, and the Faculty of Science, and offered in partnership with the Faculty of Medicine for the major in Health Informatics. The Bachelor of Informatics learning environment is patterned after the future workplace: you work to find new solutions that reflect the information needs of the real world - socially, culturally, and in real organizations.

In the Bachelor of Informatics you join a team of your fellow students in an exciting new integrated studies program where you see the links between disciplines. Professors from different departments teach as a team. You see the big concepts that unite computer science, math, the humanities, the arts, and the sciences.

II. Degree Programs

A. Bachelor of Informatics

1. Program Structure

Integrated Studies courses are taken by all Bachelor of Informatics students, regardless of major. They account for 40-60% of the credits in the first four terms. In terms 1 to 4 they provide the foundations of informatics, computing, mathematics, and other disciplines. Terms 5 to 8 continue with project activities. Students entering the program in year 2 take other specified courses instead of the first year integrated course.

Major courses are traditional courses in your chosen area where you apply information technology. Technology is not used in isolation - the application occurs in the context of a human undertaking, and professionals need to have a deep understanding of that context. You choose a major area of study which is an application area of Information Technology. Currently there is a choice of three majors: Bioinformatics, Health Informatics, and Software Systems. Students should consult with the Faculty of Computer Science for details on other options that are being developed.

Elective courses are any eight courses 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.

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

- INFX 1600.18 Integrated Informatics Studies: Foundations
- INFX 2600.12 Integrated Informatics Studies: Structures
- INFX 2601.03 Introduction to Information Security
- INFX 2640.03 Use and Design of Databases
- INFX 3600.03 Project 1
- INFX 3601.03 Project 2
- INFX 3630.03 Software Engineering and Project Management
- INFX 4600.03 Project 3
- INFX 4601.03 Project 4
- CSCI 3160.03 User Interface Design
- CSCI 3172.03 Web-Centric Computing
- HAHF 3100.03 Research Methods (or equivalent)
- 6 full credits in credits specified by the major
- 2 full credits of free electives at or above the 1000 level
- 2 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 Bioinformatics

The Major in Bioinformatics follows the general Bachelor of Informatics requirements and must include the following courses:

- BIOL 1010.03 Principles of Biology Part I
- BIOL 1011.03 Principles of Biology Part II
- BIOL 2030.03 Genetics and Molecular Biology Application of Probability Theory to Biology
- CSCI 1101.03 Computer Science I
- CSCI 2132.03 Software Development
- CSCI 4180.03 Introduction to Computational Biology and Bioinformatics
- MATH 1000.03 Differential and Integral Calculus I
- MATH 2030.03 Matrix Theory and Linear Algebra I
- STAT 2060.03 Introduction to Probability and Statistics I
- One full credit of biology, statistics, mathematics, or computer science classes at or above the 3000 level.

4. Major in Health Informatics

The Major in Health Informatics follows the general Bachelor of Informatics requirements and must include the following courses:

- HAHF 1000.03 Introduction to Health, Health Promotion and Health Professions
- HESA 4000.03 Canadian Healthcare System
- HINF 1100.03 Introduction to Health Informatics
- HINF 2100.03 Health Information Flow and Management
- HINF 2501.03 Clinical Processes and Decision Making 1
- HINF 2502.03 Clinical Processes and Decision Making 2
- HINF 3101.03 Health Data Standards and Terminologies
- HINF 3102.03 Medical Coding
- HINF 3500.03 Healthcare Decision Support Systems
- HINF 4100.03 Healthcare Enterprise Information Systems
- HINF 4102.03 Inquiry in Health Informatics
- HSCE 2000.03 Healthcare Ethics

5. Major in Software Systems

The Major in Software Systems follows the general Bachelor of Informatics requirements and must include the following courses:

- CSCI 1101.03 Computer Science II
- CSCI 2110.03 Computer Science III
- CSCI 2132.03 Software Development
- CSCI 3132.03 Object Orientation and Generic Programming
- CSCI 3136.03 Principles of Programming Languages
- CSCI 3140.03 Database Management Systems
- CSCI 3171.03 Network Computing
- Two and one half full credits of CSCI classes at or above the 3000 level

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 following year 2 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

HINF 1100.03: Introduction to Health Informatics.

This class introduces students to the discipline of health informatics: its world context, its origins, its purposes and the nature of its current body of knowledge. Areas of focus include the role and use of information and communications technology (ICT) in health, healthcare and health related organizations; healthcare data and information; how healthcare information is currently captured, converted to machine language, stored and accessed. Students will be exposed to various current applications of ICT to health information in areas such as e-health and telemedicine. Through case studies of working systems, students will gain an introductory understanding of health informatics.

HINF 2100.03: Health Information Flow and Management.

This class gives students an overall understanding in relation to the needs of patients and their care. This class tracks the flow and use of health information through healthcare processes and across healthcare systems. It includes how healthcare information is generated through documentation of encounters; where it travels in relation to care or services processes; how it is stored and accessed; and how often, by which groups, for what purposes, and in what contexts each piece of health information is used. The role of electronic health documents in discharging patient care, administration, planning, measurement, and clinical research are also discussed. Students will work with issues such as privacy, confidentiality, accessibility, security, completeness, and person versus machine interfaces for health information.

PREREQUISITE: HINF 1100.03

HINF 2501.03: Clinical Processes and Decision Making I.

The purpose of HINF 2501 is to enable health informatics students to communicate effectively with clinicians by developing an understanding of the purposes of health care, how clinicians and patients make decisions about care (including diagnostic strategies for common ailments and choosing appropriate treatment options), and how care processes take place in various health care settings. Students will be better able to support

clinical decisions through information and technology management when they understand these basic processes.

HINF 2502.03: Clinical Processes and Decision Making 2.

This class is a continuation of HINF 2501.03.

PREREQUISITE: HINF 2501.03

HINF 3101.03: Health Data Standards and Terminologies.

To work with healthcare documentation, health informatics professionals need to know how health data is classified or grouped, and how it is encoded in machine readable representation for electronic manipulation.

The purpose of this class is to give students an understanding of how health data is encoded for storage and access, and how messages are designed for various tasks and information systems. Students develop competence in using health data terminologies/vocabularies with examples such as XML, CDA, DIACOM, MeSH, SNOMED, and UMLS.

PREREQUISITE: HINF 2100.03

HINF 3102.03: Medical Coding.

This class familiarizes students with basic medical/health record coding systems and principles for transforming verbal descriptions of disease, injury, and procedures within medical documentation into numeric medical codes. The class introduces students to different medical coding systems, in particular ICD, CPT and HCPCS codes. The class provides the theory of medical classification as well as opportunities to develop practical skills in health record coding. This class also prepares students for health record administration and management tasks.

PREREQUISITE: HINF 2100.03

HINF 3500.03: Healthcare Decision Support Systems.

This class focuses on the organization of information that supports healthcare decision making for care givers/providers, and the electronic systems that provide access to this information. Four kinds of systems are examined: knowledge based systems, evidence based systems, guideline based systems (using primarily clinical practice guidelines or CPGs), and data driven systems. Emphasis is on supporting decision making by providers that is based on best evidence of effectiveness.

PREREQUISITE: HINF 2502.03, INFX 2640.03

HINF 4100.03: Healthcare Enterprise Information Systems.

The objective of this class is to familiarize students with healthcare enterprise ICT systems for patient support, clinical care and decision support, diagnostic processes (e.g. laboratory, diagnostic imaging systems), and administrative processes and decision support. Details on how information flows within and among different systems and how enterprise-wide information systems are integrated for overall decision support are also included.

PREREQUISITE: HINF 3500.03, CSCI 3172.03, INFX 2640.03

HINF 4102.03: Inquiry in Health Informatics.

The purpose of this class is to help students to integrate what they have learned to-date about health informatics, through independently researching a relevant question of their own design. In this independent learning class, held during the second semester of fourth year, students choose a problem or issue in health informatics to study holistically in a societal context; develop responses; prepare presentations for the class group and write discussion papers. The emphasis is on inquiry, holistic thinking, synthesis, and communication skills.

PREREQUISITE: INFX 3690.03

INFX 1600X/Y.18: Integrated Informatics Studies: Foundations.

INFX 1600 introduces students to the foundations of informatics in a single class that encompasses computer studies, mathematics, and other disciplines chosen from the sciences, arts and professional studies. The integrated approach draws out concepts common to all the disciplines. Activities are designed to help students develop technical skills as well as professional skills such as problem solving, creativity, critical thinking, time management, communications, teamwork, leadership, project

management and negotiation. The learning experience includes group projects and activities as well as lectures and labs. Communication skills are strongly emphasized.

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.

PREREQUISITE: Registration in the Bachelor of Informatics program or permission of the Director of Informatics

EXCLUSION: INFX 1601.06, INFX 1604.03, CSCI 1100.03, CSCI 2112.03, STAT 1060.03

INFX 1601X/Y.06: Quantitative Foundations of Informatics.

This class introduces students to elements of discrete structures, probability, and statistics in preparation for further studies in Informatics. The class is intended for students who are entering the Bachelor of Informatics program in year 2 with advanced standing, and consists of the mathematics component of INFX 1600.

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.

PREREQUISITE: Permission of the Director of Informatics

EXCLUSION: INFX 1600.18, CSCI 2112.03, STAT 1060.03

INFX 1604.03: Introduction to Computer Programming.

This class gives a general introduction to computers and computer programming using a scripting language such as Python.

CROSS-LISTING: CSCI 1105.03

INFX 2600X/Y.12: Integrated Informatics Studies: Structures.

This class explores more advanced topics in informatics by building on the foundations of INFX 1600.

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.

PREREQUISITE: INFX 1600.18 or permission of the Director of Informatics

INFX 2601.03: Introduction to Information Security.

Information security is becoming increasingly important in today's networked world, and is impacting every aspect of our lives including finance, healthcare, government, education, arts, and entertainment. The objective of this class is to teach the basic principles of information security from the perspective of providing security awareness and its best practices for the real world. Topics include motivation for security, tools and techniques used by adversaries to gather information and launch attacks, Internet security, firewalls, basics of encryption and authentication, virus protection, secure credit card and bank transactions, wireless security, computer forensics, identity theft and protection, anti-phishing and biometric security. This class is open to any students except those registered in the B.Comp.Sc. or the B.Sc. with a major in Computer Science.

CROSS-LISTING: CSCI 2201.03

INFX 2640.03: Use and Design of Databases.

This class focuses on practical problem-solving by designing and using relational databases. Case studies and popular single-user database products are used to explore basic database concepts.

INFX 3600.03: Project 1.

In this class 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 2600.12, INFX 2660.03, INFX 2640.03

INFX 3601.03: Project 2.

This class is a continuation of INFX 3600.03

PREREQUISITE: INFX 3600.03

INFX 3630.03: Software Engineering and Project Management.

This class introduces students to accepted practices in software engineering and software project management with the goal of delivering reliable software on time and within budget.

EXCLUSION: 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: Project 3.

This class is a continuation of INFX 3601.03

PREREQUISITE: INFX 3601.03

INFX 4601.03: Project 4.

This class is a continuation of INFX 4600.03

PREREQUISITE: INFX 4600.03

Software Engineering

I. Introduction

The Bachelor of Software Engineering programme is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

Software Engineering is about the tools and techniques, theories and practices to make the development, support and evolution of software a viable business.

Software has a role in almost every domain of human endeavor. Software Engineering is not about what the software does - that is the responsibility of the domain - rather software engineering is about how the software should be developed, supported and evolved. This makes Software Engineering quite different from other branches of engineering (e.g. Aeronautical, Petroleum) where the domain of application is central.

While many people with different backgrounds produce software, the study of software engineering concerns how the design, production and support of software can be improved. Moreover, any successful software by definition survives over time, and it is normal for the environment to change during that time, so that well-designed software must meet new expectations, exploit new technology, and satisfy new requirements. Thus for a viable business, good initial design and implementation are not sufficient - better strategies for ongoing maintenance and evolution are also critical.

What does improved and better mean? The practitioner wants to know:

- how to design tractable software that is adaptable to changing business conditions,
- how to improve productivity of software developers thereby reducing costs,
- how to reduce time to market thereby gaining market share while enjoying a revenue stream,
- how to improve quality thereby enhancing reputation and satisfying customers while avoiding rework,
- how to improve product and process predictability thereby facilitating better business decisions, and
- how to design for greater generality, thereby amortizing development costs over a broader customer base while reducing the risks of future requirement changes.

Software Engineering not only has its internal technical basis; it is also fundamentally multidisciplinary. The obvious explanation for this is that any specific piece of software is intended for application in some particular domain. Not only is domain knowledge essential for the software's functionality and architecture, but also the culture of that domain affects the availability of components, the acceptability of user interfaces, the sophistication of users, and the kind of changes that must be accommodated over time. The less widely recognized explanation for software engineering being multidisciplinary is the role that other disciplines play in the process of building and supporting software. Computer science and computer engineering obviously contribute technologies that the software engineer must know. Effective communication between people in written, oral, and visual form is key not just for precision of detail, but to convey broad operational concepts. Software is built by people, and to understand how to help them build it efficiently and with minimal defects, it is important to understand cognitive issues in the psychology of programmers.

Most large software artifacts are developed and supported by large teams that must be sustained over extended periods of time, which can be more effective if the sociology of such groups is taken into account. Testing, sizing, and tuning software, as well as adapting software to conditions in the field, are fundamentally empirical activities and benefit from statistical knowledge of design and analysis of experiments. The business aspects of

the software industry (such as cost estimation) are critical to viability, and management of software products and projects is obviously fundamental - these are traditional management science issues, although in the software context, there are some distinctive wrinkles. Process, tools, and the work environment are the core issues of industrial engineering - however they are also central issues in software engineering. The list goes on and on.

II. Co-operative Programme

Students are encouraged to participate in the work/study co-operative programme. This allows students to work for three terms under the guidance of practicing software engineers, thereby acquiring skills that are complementary to their academic training. Such professional training programs have been well received and supported by industry and government agencies.

A. Work Terms

The university solicits appropriate positions in industry and government. Students compete for positions of their preference by submitting resumes and attending interviews. The employer's preferences and the student's preferences are matched wherever possible. Students should be prepared to work anywhere in Canada.

The University endeavours, but makes no commitment to find a position for every student. A student is at liberty to arrange his or her own employment, but in order to qualify as part of the Co-op work experience, the position must be approved by the Program Committee.

Each work term will be evaluated and academic credit will be granted on the condition that satisfactory evaluations of the various components of the work term are achieved.

Students who have successfully completed the requirements for the degree of Bachelor of Software Engineering and who, in addition, have accumulated three terms of approved work experience, will receive the "Co-op Programme" designation on their degree.

B. Co-op Schedule

The following table shows the layout of study and Co-op (work) terms for the Bachelor of Software Engineering Programme:

Yr/Term	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	AT4	FREE
Year 3	AT5	AT6	WT1
Year 4	WT2	AT7	WT3
Year 5	AT8		

AT = Academic study term
WT = Co-op Workterm

C. Software Engineering Programme

As can be seen from the syllabus of classes below, the Software Engineering programme does not follow the common Year 1 programme outlined in the calendar for the other engineering programmes.

Year 1

	Writing class X/Y
CSCI 1100.03	Programming 1
CSCI 1101.03	Programming 2
ENGI 1100.03	Eng Design & Graphics
IENG 2005.03	Engineering Economics
MATH 1000.03	Calculus 1
MATH 1010.03	Calculus 2
PHYC 1100 X/Y	Intro to Physics
PSYO 1000 X/Y	Intro to Psychology

Year 2

CSCI 2110.03	Data Structures
CSCI 2121.03	Intro Computer Org
CSCI 2132.03	Software Development
CSCI 3130.03	Intro Software Eng
ECED 2000.03	Electric Circuits
ECED 2200.03	Digital Circuits

ECED 2400.03	System Analysis
ENGM 2022.03	Eng. Math. For Software Eng
ENGM 2032.03	Applied Probability & Statistics
ENGM 2041.03	Linear Algebra
MATH 2112.03	Discrete Structures
PSYO 2130.03	Intro to Cognitive Psych

Year 3

CSCI 3110.03	Algorithm Analysis
CSCI 3120.03	Operating Systems
CSCI 4163.03	Human Computer Interaction
CPST 2000.03	Communication
CPST 3020.03	Engineering in Society 1
ECED 3204.03	Microprocessors
ECED 3402.03	Real Time Systems
IENG 3313.03	Analysis and Design of Work
IENG 3443.03	Quality Control & Reliability
IENG 4529.03	Industrial & Organizational Psych
IENG 4547.03	Company Operations & Mgmt
IENG 4558.03	Project Mgmt & Control

Year 4

CSCI 4114.03	Formal Aspects of Software Eng
CSCI 4134.03	Software Architecture
CPST 3030.03	Engineering in Society 2
ECED 4404.03	Computer Nets and Comm
IENG 4574.03	Decision and Risk Analysis
	Software Engineering Project
CSCI 4136.03	Software Testing and Quality Assurance
	Software Processes and Tools
CSCI 4137.03	Software Deployment, Maintenance, and Evolution
CSCI 4138.03	Empirical Performance Modeling

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:

- Biological Engineering
- Chemical Engineering
- Civil Engineering
- Computer Engineering
- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering
- Software Engineering

The Bachelor of Software Engineering program is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

The Faculty also offers a BAsC in Food Science, and post-graduate studies at the master's and doctoral level.

The preparation for an engineering career includes both formal academic studies at a university and intensive training in the practice of engineering. A similar pattern is to be found in preparation for careers in medicine or law, and is characteristic of any development of professional competence. The Co-operative Engineering program in the Faculty of Engineering provides a completely integrated pattern of academic study and industrial experience in various phases of engineering with ultimate graduation requiring satisfactory performance in both areas. All programs are offered in a co-operative format. Engineering disciplines offering co-operative programs schedule work periods in industry at various times of the year. This sequencing may vary according to the discipline, details of which are outlined in the curricula in this calendar.

All students in the upper division of the engineering degree program are eligible to apply for the co-op program. Permission to participate in the placement process requires that a student be in good standing, in accordance with University Regulations. Students are also required to complete the Professional Development Workshop at the beginning of the study term preceding the work term. All co-op program students must be properly registered and pay the appropriate co-op program fees. For other regulations pertaining to the co-op program, please refer to the Faculty Working Rules which are available on the web.

The 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 only the introduction to an engineering career, and 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 B. Eng. 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 the Canadian Council of Professional Engineers. 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 4-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 Program" 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 Diploma of Engineering/Bachelor of Science

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 70 will be awarded the Diploma in Engineering and the 15 credit Bachelor of Science Degree.

1.g Combined Diploma of Engineering/Bachelor of Arts

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 70 will be awarded the Diploma in Engineering and the 15 credit Bachelor of Arts Degree.

2. Software Engineering

Students may register in the Software Engineering program which is jointly offered by the Faculty of Computer Science and the Faculty of Engineering. Students who have successfully completed the academic study program in this discipline will be granted the degree of Bachelor of Engineering.

3. Food Science

Bachelor of Applied Science

This is a standard 20-credit curriculum. Consult the Food Science and Technology section (page 284).

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. Masters of Engineering (Internetworking)

This is a ten 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

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I. Engineering as a Profession

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- Electrical Engineering
- Environmental Engineering
- Industrial Engineering
- Materials Engineering
- Mechanical Engineering
- Mineral Resource Engineering
- Software Engineering.

The Bachelor of Software Engineering program is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

The Faculty also offers a Bachelor of Applied Science in Food Science, and post-graduate studies at the master's and doctoral level.

The preparation for an engineering career includes both formal academic studies at a university and intensive training in the practice of engineering. A similar pattern is to be found in preparation for careers in medicine or law, and is characteristic of any development of professional competence. The Co-operative Engineering program in the Faculty of Engineering provides a completely integrated pattern of academic study and industrial experience in various phases of engineering with ultimate graduation requiring satisfactory performance in both areas. All programs are offered in a co-operative format. Engineering disciplines offering co-operative programs schedule work periods in industry at various times of the year. This sequencing may vary according to the discipline, details of which are outlined in the curricula in this calendar.

All students in the upper division of the engineering degree program are eligible to apply for the co-op program. Permission to participate in the placement process requires that a student be in good standing, in accordance with University Regulations. Students are also required to complete the Professional Development Workshop at the beginning of the study term preceding the work term. All Co-op program students must be properly registered and pay the appropriate co-op program fees. For other regulations pertaining to the co-op program, please refer to the Faculty Working Rules which are available on the web.

The 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.

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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 the Canadian Council of Professional Engineers. 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. 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
Andrew Mitchell, Director
The Ivan Curry School of Engineering
- **Cape Breton University**
Sydney, Nova Scotia
E. MacLellan, Director
Diploma in Engineering Program
- **Nova Scotia Agricultural College**
Truro, Nova Scotia
K. Sibley, Head
Department of Engineering
- **St. Francis Xavier University**
Antigonish, Nova Scotia
E. Oguejiofor, Chairman
Department of Engineering
- **Saint Mary's University**
Halifax, Nova Scotia
M. Butler, Acting Director
Division of Engineering
- **University of Prince Edward Island**
Charlottetown, Prince Edward Island
D. MacEwen, 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 Biological, Chemical, Civil, Computer, 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 Studley 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.

III. 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, and are available to students on the Web.

Classes on Letters of Permission

The academic program for a student will normally contain a maximum of two courses 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 260.

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 required to withdraw if the grade achieved in the repeated mandatory class or the repeated elective class or the substituted class is less than D.

Readmission After Required Withdrawal

A student who has been required to withdraw only once from the program may apply to be readmitted to the same program after a minimum of eight (8) months from the time of withdrawal, or, such a student may apply to be admitted to a different 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 required to withdraw, subject to special academic conditions set by the department, which are based on an evaluation of the student's academic record by the department. See also Academic Dismissal, page 39.

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 normally be held in late August prior to the fall term, early January in the winter term and early May in the summer term.

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.

See also Supplementals, page 260.

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 Faculty of Engineering Appeals Committee. 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.

IV. Undergraduate Programs

A. Bachelor of Engineering

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. Many of these classes will change very little over the course 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 and Computer Engineering administers programs in Electrical and Computer Engineering and the Department of Process Engineering and Applied Science administers degree programs in the disciplines of Biological, Environmental, Chemical, Food Science and

Materials. The remaining departments are Industrial Engineering and Mechanical Engineering.

At the end of Year 1, students submit a “Discipline Choice” form indicating the order of their preference of the disciplines. The Faculty of Engineering will inform students who have met the criteria of promotion from Year 1 to Year 2 of their 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 at Dalhousie 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.**

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 (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).

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 (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 Assistant Dean for the Faculty of Arts and Social Sciences.

Classes in the fourth and fifth years are those required to finish the Bachelor of Engineering degree.

Students who meet the admission requirements for the Bachelor of Engineering program are eligible to select this concurrent degree option. Students wishing specific advice should consult the Faculty of Engineering (Associate Dean M. E. El-Hawary, or Linda Conrad), and the Assistant Dean for the Faculty of Science.

The following chart illustrates the typical distribution of classes to be taken in the first three years of study for the BSc/BEng and the BA/BEng. Consult the specific engineering discipline in this calendar.

Term	Fall	Winter
Year 1	CHEM 1021.03 MATH 1000.03 ENGI 1100.03	CHEM 1022.03 MATH 1010.03 ENGI 1400.03
	PHYC 1100X/Y.06 Writing Class X/Y.06	
Year 2	Three Engineering Classes Two 2000-level classes in the subject of concentration	Three Engineering Classes Two 2000-level classes in the subject of concentration

Term	Fall	Winter
	Language/Humanities or Social Science Elective X/Y.06	
Year 3	Two 3000-level classes in the subject of concentration Two Engineering Classes Elective*	Two 3000-level classes in the subject of concentration Two Engineering Classes Elective*
	*should be, languages/humanities or social science elective, which ever not taken above	

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 courses as specified in the discipline curriculum.

Biological Engineering	Chemical Engineering	Civil Engineering	Computer Engineering	Electrical Engineering	Environmental Engineering	Industrial Engineering	Materials Engineering	Mechanical Engineering	Mineral Resource Engineering
FALL TERM 3									
ENGM 2021 Engineering Mathematics III ENGM 2081 Computer Programming ECED 2000 Electric Circuits									
BIOL 1010 Principles of Biology	ENGI 2800 Engineering Thermodynamics				BIOL 1010 Principles of Biology	1 ENGI 2800 Engineering Thermodynamics			
ENGI 2200 Mechanics of Materials	IDIS 2000 Fundamentals of Environmental Engineering	ENGI 2200 Mechanics of Materials	1 ECED 2200 Digital Circuits		ERTH 1080 Geology I	ENGI 2200 Mechanics of Materials			
Humanities			ENGM 2041 Applied Linear Algebra		2 Humanities				
1 - Industrial students take two of ENGI 2800, ENGI 2300, ENGI 2400 and ECED 2200					2 - Humanities is optional for Industrial students				
WINTER TERM 4									
ENGM 2032 Applied Probability and Statistics									
ENGI 2300 Fluid Mechanics			ECED 2900 Electrical Engineering Design I		1 ENGI 2300 Fluid Mechanics				
ENGI 2400 Mechanics II	CHEE 2404 Industrial Chemistry	ENGI 2400 Mechanics II	ECED 2282 Data Structures and Numerical Methods		ERTH 1090 Geology II	1 ENGI 2400 Mechanics II or MECH 2100			
BIOL 1011 Principles of Biology	ENGM 2062 Engineering Mathematics IVa		ENGM 2262 Engineering Mathematics IVb		BIOL 1011 Principles of Biology	3 ENGM 2062 Engineering Math IVa		Humanities	ENGM 2062 Engineering Math IVa
CHEM 2441 Organic Chemistry		CPST 2000 Technical Comm.	ECED 2400 Systems Analysis	CPST 2000 Technical Comm.	CHEM 2441 Organic Chemistry	CPST 2000 Technical Comm.		MECH 2100 Design and Graphics II	CPST 2000 Technical Comm.
IENG 2005 Engineering Economics	CHEE 2420 Fundamentals of Chemical Eng	IENG 2005 Engineering Economics	ECED 2001 Circuit Analysis		4 IENG 2005 Engineering Economics				
3 - Industrial students take either ENGM 2062 or ENGM 2262					4 - Mechanical Co-op students take IENG 2005 in year 3				

Curricula for Terms 1 - 4

Year 1—Term 1 Fall

- CHEM 1021.03 Engineering Chemistry I
- ENGI 1100.03 Engineering Design & Graphics I
- MATH 1000.03 Calculus I
- PHYC 1100.06 Introduction to Physics
- *Writing Class

Year 1—Term 2 Winter

- CHEM 1022.03 Engineering Chemistry II
- ENGI 1400.03 Mechanics I
- MATH 1010.03 Calculus II
- PHYC 1100.06 Introduction to Physics
- *Writing Class

Year 2—Term 3 Fall

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- *Humanities I

Discipline Specific Choices

The following classes replace those noted above where indicated for each specific discipline.

Biological Engineering

- BIOL 1010.03 Principles of Biology Part I
- CHEM 2441.03 Organic Chemistry

Environmental Engineering

- ERTH 1080.03 Geology I

Chemical Engineering

- IDIS 2000.03 Fundamentals of Environmental Engineering

Civil Engineering

- Humanities

Electrical and Computer Engineering

- ENGM 2041.03 Applied Linear Algebra
- ECED 2200.03 Digital Circuits

* Humanities Classes

Classes in the following departments meet the requirement for the second year BEng humanities credit: Canadian Studies, Classics, Comparative Religion, Gender and Women's Studies, History, History of Science and Technology, Music, Philosophy, Political Science, Psychology, Sociology, Theatre.

* Writing Classes

The following classes meet the requirement for the writing credit: Classics 1000X/Y, Classics 1010X/Y, Classics 1100X/Y, English 1000X/Y, English

1010/1020, German 1020X/Y, 1080X/Y, History 1867X/Y, Philosophy 1010X/Y, Political Science 1103X/Y, Russian 1020/1070, Theatre 1000X/Y.

Year 2—Term 4 Winter

- CPST 2000.03 Technical Communications
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2062.03 Engineering Mathematics IV(a)
- IENG 2005.03 Engineering Economics

Discipline-Specific Choices

The following classes replace those noted above where indicated for each specific discipline.

Biological Engineering

- BIOL 1011.03 Principles of Biology Part II

Environmental Engineering

- EARTH 1090.03 Geology II

Chemical Engineering

- CHEE 2404.03 Industrial Chemistry
- CHEE 2420.03 Fundamentals of Chemical Engineering
- CHEM 2441.03 Organic Chemistry

Electrical and Computer Engineering

- ECED 2001.03 Circuit Analysis
- ECED 2900.03 Electrical Engineering Design I
- ENGM 2262.03 Engineering Math IV (b)
- ENGM 2282.03 Data Structures and Numerical Methods

Computer Engineering

- ECED 2400.03 System Analysis

Industrial Engineering

- ENGM 2062.03 Engineering Math IV (a) **OR**
- ENGM 2262.03 Engineering Math IV (b)

*Students must take two of:

- ECED 2200.03 Digital Circuits
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II **OR**
- ENGI 2800.03 Engineering Thermodynamics I

Mechanical Engineering

- MECH 2100.03 Engineering Design and Graphics II AND a Humanities class

Students taking the co-op option do not take IENG 2005.03

Materials Engineering

May take

- MECH 2100.03 Engineering Design and Graphics II

E. Technical Co-op Program

Co-operative education is based on the principle that an academic program combined with work experience in alternating terms, is relevant to, and desirable for, effective professional preparation. Work term employment, which varies from sector to sector and location to location, allows students to acquire experiences in their areas of career interest, while academic terms are devoted primarily to fundamental and theoretical studies. These practical experiences and academic studies complement one another.

The motivation, responsibility, and opportunity for insight gained through co-operative education can be of significant value to the student's future. The co-operative concept enables those with a career orientation to become full-time students of their subject, both during the academic terms and during the related work terms, within a structure of organized purpose and serious study.

The Study and Work Sequence

The co-operative system requires students to alternate periods of study with periods of employment. The period of employment is called a work

term and is normally four months in length. Some programs combine two or more four-month work terms.

Each academic program has a specific work and study term schedule which students are required to follow (see the following 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								
Discipline	Fall	Winter	Summer	Fall	Winter	Summer	Fall	Winter
Industrial & Mechanical	Study	Work	Study	Work	Study	Work	Study	Study
Electrical & Computer	Study	Work	Study	Work	Study	Work	Study	
Chemical	Work	Study	Work	Study	Work	Work	Study	Study
Civil & Mineral Resource	Study	Study	Work	Work	Study	Work	Study	
Biological, Environmental & Materials	Study	Study	Work	Study	Work	Work	Study	

Study and Work Term Dates

Work terms must normally be at least 14 weeks of full-time employment. The precise dates on which to start and finish individual work terms are established through consultation between students and their co-operative employers.

Employment

The employment process is highly competitive and factors such as academic performance, skills, motivation, maturity, attitude, professional conduct, flexibility and performance potential determine whether or not a student is offered employment. It is the student's responsibility to arrange suitable work term employment with the assistance of the Co-o Office. If a student fails to secure employment, and had made reasonable effort to do so, the student may make application to continue in the Co-op program.

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 (e.g., layoffs, intellectual property issues, confidentiality agreements, strikes, etc.).

Responsibilities of Students

Eligibility

Once accepted into the co-op program according to the requirements of the Engineering Faculty, students will:

- maintain registration as full-time co-operative education students in their program in all terms from point of entry through to the final academic term, and follow the study and work term sequence that corresponds to their programme
- maintain acceptable academic standing according to the regulations of their program
- maintain applicable registration for all work terms
- pay all applicable Co-op fees
- attend the sessions on career development pertaining to their co-op employment in order to have a clear understanding of the process and to acquire job searching skills
- keep the Co-op Office informed of their employment status (e.g., actively seeking employment through the placement process, returning to previous co-op employer, or other situations) at all times
- ensure that their student file is updated and accurate
- refrain from actions either during the placement process or while at work that may have a negative impact on the long-term success of the co-op program

- refrain from deliberately misrepresenting themselves in matters pertaining to the co-op programme
- complete all work terms and work reports, according to the requirements of their specific program, before their final academic term (as defined by the “Study and Work Sequence” chart located in this chapter).

Work Terms

As ambassadors of Dalhousie University and its co-operative education program, 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 (normally four consecutive months)
- attempt to resolve any difficulties which arise during the work term with the employer
- contact the Co-op Office prior to making any decision affecting their employer and/or employment
- ensure that their employer completes a “Co-operative Student Performance Evaluation” form prior to the end of the work term in order to receive a passing grade for the work term (a work term evaluation is required for every work term undertaken by the student)
- inform the Co-op Office of their intentions for the next scheduled work term (returning to previous employer, participating in co-op interview process, arranging own position, graduating, etc.) by the end of the first week of lectures.

Work Evaluation

Students are required to submit the following items for each work term:

1. A work term report
2. Monthly experience records
3. A performance appraisal completed by the supervisor
4. Other requirements as determined by individual academic programs.

Students must achieve a satisfactory grade for each item in order to achieve a passing grade for the work term. Students receive a pass/fail grade for work terms. The grades are assessed and submitted by the Faculty Co-op Advisor.

The specific guidelines for each of these items are available from a variety of sources including the Co-op Office and program websites.

Graduation

In order to complete successfully the requirements for graduation with a “Co-operative Education” designation on their degree, students will complete the minimum number of credited work terms (see Study and Work Sequence table).

V. Class Descriptions

CHEE 2404.03: Industrial Chemistry.

This class reviews chemical knowledge as applied to the industrial chemical process industries, with particular emphasis on Canadian applications. An examination of the relationships between kinetics, thermodynamics, unit operations and process design is made.

FORMAT: Lecture 3 hours, tutorial 1 hour, lab 2 hours

CHEE 2420.03: Fundamentals of Chemical Engineering.

The main objective of this class is to develop the student's ability to perform mass and energy balances on reactive and non-reactive processes. Introductory topics include systems of units and a study of process variables such as temperature, pressure and flowrate. Also covered are fundamental properties of multiphase systems: phase equilibrium, vapour pressure, phase rule, Raoult's and Henry's Laws, and colligative properties. Emphasis is placed on developing problem solving skills.

FORMAT: Lecture 3 hours, tutorial 2 hours

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 1010.03, PHYS 1100.06

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

ECED 2400.03: 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

ECED 2900.03: Electrical Engineering Design I.

This class will cover aspects of design methodology in electrical engineering. Issues addressed include: the engineering design method covering design overview, problem decomposition, solving & planning; decision support techniques, uncertainty and time management; analysis and synthesis for implementation, technical design, design evaluation, prototype construction and evaluation technical design rules, design heuristics, testability, manufacturability, and troubleshooting; project reports; and ethics in design including the employee's dilemma, the value of written records, and reporting problems.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: ECED 2000.03, ECED 2200.03

ENGI 1000.00: Engineering Fundamentals.

An introduction to the variety of disciplines of engineering. Introduction to the engineering profession. Academic regulations for engineering. Introduction to engineering ethics and professional responsibility, study skills, examination skills, writing and presentation skills.

ENGI 1100.03: Engineering Design & Graphics I.

The object of the class is to provide students with conceptual design experience, team work experience, and computer drafting experience; develop the following skills: engineering free-hand sketching, 3-D visualization, and reading of engineering drawings. An integral part of the class is Design Project, focused on design as the essence of engineering, the process of design and reporting.

FORMAT: Lecture 3 hours, lab 3 hours

ENGI 1400.03: Mechanics I.

Statics teaches the concepts of force, movement, and equilibrium. Topics include a review of the laws of motion, vector algebra, 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, and shear forces and bending moments in beams are presented. Coulomb friction, centroids and centres of mass, and area moments and products of inertia are also included.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MATH 1000.03

EXCLUSION: ENGI 1120.03

ENGI 2200.03: Mechanics of Materials.

This class is an introduction to the study of stress, strain and deformation of a solid body which is subjected to static forces. Topics considered include: definitions and transformation relations for stresses and strains, principal stresses and strains, Mohr's circle for stress and strain, strain gauges, mechanical properties of materials and failure theories, axial and torsional loading applications, bending of beams with symmetrical cross-section, combined static loading, thin-walled pressure vessels and column action.

PREREQUISITE: ENGI 1400.03; MATH 1010.03

EXCLUSION: ENGI 2331.03

ENGI 2300.03: Fluid Mechanics.

This introductory class comprises the study of fluid properties, fluids at rest and in motion. Dimensional analysis is introduced. The fundamental flow-governing equations (conservation of mass, momentum and energy) are derived and applied to a selection of engineering problems. Incompressible viscous flow through pipes is also presented.

PREREQUISITE: ENGI 1400.03, MATH 1010.03

EXCLUSION: ENGI 2341.03

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 1400.03; ENGM 2081.03; MATH 1010.03

EXCLUSION: ENGI 2222.03

ENGI 2800.03: Engineering Thermodynamics I.

Fundamental definitions and concepts are reviewed. Engineering analysis of properties, heat, work and systems is carried out. The zeroth, first, and second laws are presented. Ideal gases and mixtures, real gases, liquid-vapour relations, availability, irreversibility, entropy concepts, and flow in nozzles and diffusers is examined. Gas and vapour power cycles are studies with emphasis on cycle analysis.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGI 1400.03; CHEM 1021.03, CHEM 1022.03; MATH 1010.03

ENGM 2021.03: Engineering Mathematics III.

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: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

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: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2041.03: 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

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2062.03: Engineering Mathematics IVa.

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, rank, determinants, Cramer's rule, space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.

FORMAT: Lecture 4 hours, lab 1 hour

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2081.03: 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

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2262.03: Engineering Mathematics IVb.

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.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2282.03: 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 implementation 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 2041.03, ENGM 2081.03

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 learned. We must know when to repair or when to replace, when to make and when to buy. Taxes and inflation can also have significant impact on the viability of projects. 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 1 hour

MECH 2100.03: Engineering Design and Graphics II.

This class provides a project-based exercise in the engineering design process. Students work in teams and as individuals on defined projects which utilize knowledge and skills in graphics, statics, computing, and mechanics of materials. The projects encompass conceptual design,

detailed analysis, engineering drawings, experimentation, physical model fabrication, laboratory testing, and preparation of professional reports.

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: ENGI 1100.03, ENGI 1400.03, ENGI 2200.03 and ENGM 2081.03

EXCLUSION: ENGI 2101.03

CPST Series: Complementary Studies Classes

CPST 2000.03: Technical Communications.

The class deals with several aspects of professional activity including the preparation of technical memos, letters and reports. Topics include professional associations, the relationship of engineers to society and the subject of engineering societies and their work in publications, codes and standards. Guest lecturers are invited to participate in discussions.

Throughout the class students practice their writing skills by submitting assignments which are marked for clarity, style and presentation as well as for proper English.

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: Engineering Approved Writing class

CPST 3020.03: Engineering in Society I.

This class contains three modules. The first module introduces the historical impact of major technological and engineering achievements on human society. A diverse set of case studies from major engineering disciplines is included. Students are expected to research and report on impact of technology topics that are related to their field of study. The second module gives an overview of important aspects of the practice of the engineering profession with emphasis on ethical issues. Topics discussed include professionalism, ethical theories, and ethical problem solving techniques. The module considers applications, and codes of ethics of major engineering societies. The third module introduces the subject of law in its relation to the practice of engineering. Consideration is given to the promotion, organization and financing of engineering affairs, through the legal entities of partnership and companies. The sources and operation of law are considered with reference to the practice of professional engineering contracts.

FORMAT: Lecture 3 hours

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

IDIS Series: Interdisciplinary Studies Classes

IDIS 2000.03: 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

IDIS 4000.03: Engineering Entrepreneurship.

This course is an introduction to business planning and strategy in start-up and early stage technology-driven businesses. The course addresses all functional activities in a typical business enterprise including: finance, marketing, production and human resource management. Business analysis and planning skills are developed and students are introduced to new business paradigms in the global, digital economy.

Biological Engineering

Location: N Building, Sexton Campus
1360 Barrington St.
Halifax, NS B3J 1Z1
Telephone: (902) 494-3275
Fax: (902) 423-2423
Email: bio.engineering@dal.ca

Dean

Leon, L.J., BSc, MSc, PhD (Dal), 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

Biological Engineering occupies a unique position in the engineering professions in applying the principles of engineering to the biological world. Biological Engineers are involved in many areas in which the principles of engineering are applied to bio-systems, such as: bioprocessing, environment, food biotechnology and biomedical.

The curriculum in Biological Engineering is tailored to providing an education across many fields of engineering and their application to the biotechnology and the agri-food industries. As a result, co-op students and graduates are to be found in a very wide range of professional jobs in both the public and private sectors. In the public sector, Bio-Engineers are employed in the federal and provincial departments of agriculture and food, fisheries and environment. In the private sector, Bio-Engineers are to be found in consulting, machinery manufacturing, and food processing in all levels of design and management and in other diverse industries where their breadth of training is required.

II. Curriculum and course descriptions

Refer to Sections IIA and IIIA, Biological Engineering Program, in the Process Engineering and Applied Science section of this calendar, pages 297 and 300.

III. Co-operative program and schedule

Refer to section F. Technical Co-op Program, in the Engineering section of this calendar page 263.

IV. Admissions

The entrance requirement to the Biological Engineering program is a successful completion of the first year engineering at a recognized university. Students who have completed a first year of a science program will also be considered for admission into this program. Students who have completed two or more years of university studies will be considered for admission on the basis of transfer of credits.

Chemical Engineering

Location: 1360 Barrington St., Sexton Campus
Halifax, N.S. B3J 1Z1
Telephone: (902) 494-3953
Fax: (902) 420-7639

Dean

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Department Head, Process Engineering and Applied Science

Pegg, M.J., BSc, PhD (Leeds), PEng

Undergraduate Program Co-ordinator

Yuet, P.K., BEng (TUNS), MSc (Queen's), PhD (MIT), 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. They may also undertake a thesis project involving original research activities under the guidance of a faculty member or an industrial supervisor.

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 or doing an internship.

II. Curriculum and course descriptions

Refer to sections IIB and IIIB, Chemical Engineering Programs in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule

Refer to section F. Technical Co-op Program, in the Engineering section of this calendar page 263.

IV. Admissions

Admission requirements are those specified by the Faculty of Engineering.

CHEE 2420.03 (Fundamentals of Chemical Engineering) must be completed prior to admittance into Term 5. Students are strongly advised to complete CHEE 2404.03 (Industrial Chemistry) prior to Term 5.

Civil and Resource Engineering

Location: "D" Building, Room D215
1360 Barrington St.
Halifax, NS B3J 1Z1
Telephone: (902) 494-3960
Fax: (902) 494-3108
Email: civil.resource@dal.ca
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Dean

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Zou, D.H., BSc (CUMT, China), PhD (UBC), PEng

Professors

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(Undergraduate Program Co-ordinator, Civil Engineering)
Gagnon, G.A., BScE (Guelph), PhD (Waterloo), PEng
Islam, M.R., Dip. Ing (Algeria), MSc, PhD (Alberta)
Rockwell, M.C., BEng (Petro), MEng, PhD (TUNS), PEng
Satish, M. G., BSc, BECivEng (My.), MEng, PhD (Concordia), PEng
Taheri, F., BEng, MSc, PhD (TUNS), PEng
Trottier, J.F., BScA, PhD (Laval), PEng
Zou, D.H., BSc (CUMT, China), PhD (UBC), PEng

Associate Professors

Hansen, D., BScE (Guelph), MScE (UNB), PhD (Ottawa), PEng
Hill, J.D., BSc, MSc (Acadia), PhD (UWO) (Undergraduate Program Co-ordinator, Mineral Resource Engineering)
Lake, C., BEng (TUNS), PhD (UWD), PEng
Liu, L., BSc (Nankai), MSc, (Peking), PhD (Regina) (Coordinator, Graduate Programs)
Liu, Y., BScE, MScE (Xi'an), PhD (UNB), PEng (Co-op Advisor)
Newhook, J.P., BEng, MSc, PhD (TUNS), PEng

Assistant Professors

Flint, I.M., BSc, BSc, MSc (Toronto), PhD (UBC)
Thorburn, J., BSc (UNB), MSc (Alberta), PhD (Dal), PEng
Walsh, M.E., BEng (TUNS), MEng (McGill), PhD (Dal), PEng

Adjunct Professors

Akhavi, M.S., BSc, MSc (Colorado), PhD (Iowa)
Butt, S.D., BEng, MSc (MUN), PhD (Queen's), PEng
El-Jabi, N., BSc (Sherbrooke), MSc, PhD (UMontreal, Polytechnique), PEng
Sastry, V.V.R.N., BE (Osmania), ME (IIS Bangalore), PhD (TUNS), PEng

Adjunct Associate Professors

Forrester, D.J., BSc, PhD (Nottingham), PEng
Kasemets, J.T., BEng (RMC), MEng (Alberta), MBA (Ottawa)
Kenny, Shawn, BEng, MEng (MUN), PhD (Dal)
Pegg, N., BSc (Guelph), MSc (UBC), PhD (TUNS), PEng

Adjunct Assistant Professors

Caissie, D., BSc, MSc (Moncton), PhD (Dal), PEng
Forgeron, D., BEng (TUNS), PhD (Dal)
Gibson, M., BA (Sheffield), MSc, PhD (Strathclyde)
Limaye, V., BE (Baroda), MSc, PhD (Dal), PEng
Morcoux, G., BEng, MSc (Cairo), PhD (Concordia), PEng

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 Program

Years 1 and 2 follow the program that is outlined in the 'Faculty of Engineering' section of this calendar. The two Options mentioned above contain a strong common core in those aspects of engineering considered to be crucial for all civil engineering baccalaureates, irrespective of specialization. Term 5 is the same for both Options. In Terms 6, 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.

1. Infrastructure Option, Non Co-op Program

Year 3 Term 5 (Fall)

- CIVL 0124.005 Surveying Field School
- 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 and Methods
- MINE 3500.03 Introduction to Geology for Engineers

Year 3 Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality and Treatment
- CIVL 3515.03 Structural Systems II – Loads & Behaviour
- CIVL 3740.03 Computations and Systems Modelling
- CIVL 4710.03 Construction Planning

Year 4 Term 7 (Fall)

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4525.03 Design of Steel Structures
- CIVL 4801.005 Senior Project I
- CPST 3030.03 Engineering in Society II

Technical Electives*

- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Form and Process in Alluvial Channels
- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4541.03 Application of Finite Element Method in Static and Dynamic Systems
- CIVL 4830.03 Applied Geomatics
- ENGM 4675.03 Risk Assessment & Management

Year 4 Term 8 (Winter)

- CIVL 4515.03 Reinforced Concrete Design
- CIVL 4802.025 Senior Project II
- CPST 3020.03 Engineering in Society I

Technical Electives*

- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering
- CIVL 4431.03 Water Distribution and Sewerage Systems

- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4560.03 Special Topics in Structural Systems
- MINE 3620.03 Petroleum Engineering

2. Infrastructure Option, Co-op Program

Year 3, Term 5 (Fall)

- CIVL 0124.005 Surveying Field School
- 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 and Components
- CIVL 3725.03 Construction Materials and Methods
- MINE 3500.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality and Treatment
- CIVL 3515.03 Structural Systems II – Loads and Behaviour
- CIVL 3740.03 Computations and Systems Modelling
- CIVL 4710.03 Construction Planning

Year 4, Term 8 (Winter)

- CIVL 4515.03 Reinforced Concrete Design
- CIVL 4801.005 Senior Project I
- CPST 3020.03 Engineering in Society I

Technical Electives*

- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering
- CIVL 4431.03 Water Distribution and Sewerage Systems
- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4560.03 Special Topics in Structural Systems
- MINE 3620.03 Petroleum Engineering

Year 5, Term 7 (Fall)

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4525.03 Design of Steel Structures
- CIVL 4802.025 Senior Project II
- CPST 3030.03 Engineering in Society II

Technical Electives*

- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Form and Process in Alluvial Channels
- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4541.03 Application of Finite Element Method in Static and Dynamic Systems
- CIVL 4830.03 Applied Geomatics
- ENGM 4675.03 Risk Assessment & Management

*total number of technical electives for terms 7 and 8 must equal five.

3. Earth and Environment Option, Non-Co-op Program

Year 3, Term 5 (Fall)

- CIVL 0124.005 Surveying Field School
- 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 and Components
- CIVL 3725.03 Construction Materials and Methods
- MINE 3500.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality and Treatment
- CIVL 3515.03 Structural Systems II – Loads and Behaviour
- CIVL 3740.03 Computations and Systems Modelling

1 Technical Elective from:

- CIVL 4460.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

Year 4, Term 7 (Fall)

- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4801.005 Senior Project I
- CPST 3030.03 Engineering in Society II
- CHEE 4772.03 Environmental Assessment and Management

Technical Electives*

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Form and Process in Alluvial Channels
- CIVL 4830.03 Applied Geomatics
- ENGM 4675.03 Risk Assessment & Management
- ENVE 3251.03 Environmental and Industrial Microbiology

Year 4, Term 8 (Winter)

- CIVL 4440.03 Water and Wastewater Treatment
- CIVL 4802.025 Senior Project II
- CPST 3020.03 Engineering in Society I

Technical Electives*

- CHEE 4872.03 Air Pollution Control
- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering
- CIVL 4431.03 Water Distribution and Sewerage Systems
- CIVL 4460.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

4. Earth and Environment Option, Co-op Program**Year 3, Term 5 (Fall)**

- CIVL 0124.005 Surveying Field School
- 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 and Components
- CIVL 3725.03 Construction Materials and Methods
- MINE 3500.03 Introduction to Geology for Engineers

Year 3, Term 6 (Winter)

- CIVL 3200.03 Transportation Engineering
- CIVL 3310.03 Engineering Hydrology
- CIVL 3451.03 Water Quality and Treatment
- CIVL 3515.03 Structural Systems II – Loads & Behaviour
- CIVL 3740.03 Computations & Systems Modelling

1 Technical Elective from:

- CIVL 4460.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

Year 4, Term 8 (Winter)

- CIVL 4801.005 Senior Project I
- CIVL 4440.03 Water and Wastewater Treatment
- CPST 3020.03 Engineering in Society I

Technical Electives*

- CHEE 4872.03 Air Pollution Control
- CIVL 4250.03 Highway Engineering
- CIVL 4350.03 Hydraulic Engineering
- CIVL 4431.03 Water Distribution and Sewerage Systems
- CIVL 4460.03 Solid Waste and Landfill Engineering
- MINE 3620.03 Petroleum Engineering

Year 5, Term 7 (Fall)

- CIVL 4410.03 Engineering Hydrogeology
- CIVL 4802.025 Senior Project II
- CPST 3030.03 Engineering in Society II
- CHEE 4772.03 Environmental Assessment and Management

Technical Electives*

- CIVL 4111.03 Geotechnical Engineering
- CIVL 4200.03 Transportation Systems
- CIVL 4359.03 Form and Process in Alluvial Channels
- CIVL 4830.03 Applied Geomatics
- ENGM 4675.03 Risk Assessment & Management
- ENVE 3251.03 Environmental and Industrial Microbiology

*total number of technical electives for terms 7 and 8 must equal five.

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).

B. Mineral Resource Engineering Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)

- CPST 2000.03 Technical Communications
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2062.03 Engineering Mathematics IV (a)
- IENG 2005.03 Engineering Economics

Year 3, Term 5 (Fall)

- CIVL 0124.005 Surveying Field School
- CIVL 3101.03 Soil Mechanics I
- CPST 3020.03 Engineering in Society I
- IENG 4500.03 Operations Research for Systems Engineering
- MINE 3500.03 Introduction to Geology for Engineers
- MINE 3520.03 Introductory Mining Engineering
- MINE 3530.03 Mineral Processing

Year 3, Term 6 (Winter)

- ENGM 3052.03 Applied Numerical Methods
- MINE 3605.03 Mining Geology I
- MINE 3600.03 Equipment Selection and Materials Handling
- MINE 3611.03 Rock Mechanics
- MINE 3612.03 Rock Penetration & Fragmentation
- MINE 3620.03 Petroleum Engineering

Year 3, Work Term 1 (Summer)**Year 4, Work Term 2 (Fall)****Year 4, Term 7 (Winter)**

- CPST 3030.03 Engineering in Society II
- MINE 4705.03 Mining Geology II
- MINE 4711.03 Mine Ventilation and Environment Control
- MINE 4712.03 Mineral Economics
- MINE 4714.03 Computer-Aided Mine Planning
- One of:
 - MINE 4710.03 Mine Excavation Systems (required for mining option)

- MINE 4821.03 Petroleum Reservoir Engineering (required for petroleum option)

Year 4, Work Term 3 (Summer)

Year 5, Term 8 (Fall)

- MATL 3500.03 Materials Engineering
- MINE 4811.03 Senior Design Project
- MINE 4812.03 Mine Production Engineering
- Take two technical electives, including at least one MINE class

Technical Electives

- BIOE 3212.03 Measurement and Analysis
- CHEE 4772.03 Environment Assessment Management
- CIVL 4411.03 Geotechnical Engineering
- CIVL 4830.03 Applied Geomatics
- MINE 4801.03 Advanced Topics in Rock Mechanics
- MINE 4815.03 Mining and the Environment
- 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 Production
- MINE 4830.03 Advanced Mineral Processing
- MINE 4831.03 Coal Processing
- MINE 4832.03 Flotation
- Other approved class

III. Class Descriptions

A. Civil Engineering Series

CIVL 0124.005: Surveying Field School.

The purpose of this field school is to teach students how to operate surveying equipment and expose them to the various applications of engineering surveys in the civil and mining engineering disciplines. Employers expect graduates to have a good understanding of modern land-surveying procedures and instrumentation. This four-day field school will expose students to both optical and digital methods of surveying.

FORMAT: Lab 32 hours

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: ENGI 2200.03, ENGI 2300.03

EXCLUSION: CIVL 3100.03

CO-REQUISITE: MINE 3500.03

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

CO-REQUISITE: CIVL 0124.005

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

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, so as to determine the appropriate size of a detention pond. Statistical hydrology and snow hydrology are also discussed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI, 2800.03, ENGM 2021.03, ENGM 2032.03, CIVL 3300.03, MINE 3500.03

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: MATH 100.03 and MATH 1010.03, CHEM 1021.03 and

CHEM 1022.03, ENGI 2300.03

EXCLUSION: CIVL 3450.03

CIVL 3505.03: Structural Systems I: Form and Analysis.

This class covers the calculation of elastic deformations for statically determinate structures and various methods for analyzing statically indeterminate structures including the slope deflection method, the moment distribution method and the stiffness method with matrix analysis. The application of matrix analysis in computer modeling using a typical commercially available structural analysis program will be studied. Also, approximate methods for indeterminate structures and influence lines for moving loads will be introduced.

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: ENGI 1400.03, ENGI 2200.03

EXCLUSION: CIVL 3500.03, CIVL 3510.03

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

EXCLUSION: CIVL 3520.03 and CIVL 3530.03

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, lab 2 hours

PREREQUISITE: ENGI 1400.03, ENGI 2200.03, ENGI 2400.03, ENGM 2062.03, MATH 1000.03

EXCLUSION: CIVL 3700.03

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

EXCLUSION: CIVL 3720.03, CIVL 4730.03

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 2062.03, ENGM 2081.03

EXCLUSION: CIVL 4720.03

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

EXCLUSION: CIVL 4110.03

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

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 3200.03

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 brook is also part of the class.

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 beings 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, ENGM 2021.03, introductory course in geology

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. Students develop the pre-design of one of these systems for an actual subdivision, and present their design to the class. 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

EXCLUSION: CIVL 4430.03

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

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 3505.03, CIVL 3515.03, CIVL 3705.03, CIVL 3725.03

EXCLUSION: CIVL 3520.03, CIVL 4510.03

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 3505.03, CIVL 3515.03, CIVL 3705.03, CIVL 3725.03

EXCLUSION: CIVL 3530.03 AND CIVL 4520.03

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

EXCLUSION: CIVL 4540.03

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 3505.03, CIVL 3515.03

CO-REQUISITE: CIVL 4515.03

CIVL 4701.03: Civil Engineering Project.

The class objective is to provide experience in the application of engineering principles to the solution of a specific civil engineering problem. Students are required to select a topic, prepare a proposal, and prepare a work schedule. The project is executed under the supervision of a faculty member and may focus on laboratory experiments, field work, a design problem, or a detailed review of the state-of-the-art in a given field. Students are required to prepare a formal report and make an oral presentation of their project. It is expected that the project be started in the second-to-last academic term and finished in the last academic term.

FORMAT: Lecture 1 hour, lab 4 hours

EXCLUSION: CIVL 4700.03

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 prepares students for the research and formal writing associated with their Senior Report. Topics will include an explanation of the categories for possible projects and the research philosophies that each reflects. Faculty standards for report preparation and oral presentations will be presented. The deliverable for this class, a formal proposal, must be prepared to a professional standard of engineering practice and will receive a letter grade. The use of library resources will also be presented.

EXCLUSION: CIVL 4701.03

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

EXCLUSION: CIVL 4701.03

CIVL 4803.03: Senior Project II.**CIVL 4830.03: Applied Geomatics.**

The class covers principles of geomatics utilizing exercises to show applications of the use of Global Positioning Systems (GPS) and Geographical Information Systems (GIS) technologies in engineering projects. Concepts of GPS such as data collection, processing and integration are discussed. GIS tools are used to acquire existing data sets, to merge GPS observations with these data, and to produce maps and to perform common, as well as more complex, analyses on a prototype GIS.

FORMAT: Lecture 2 hours, lab 3 hours

CO-REQUISITE: CIVL 0124.005

B. Mineral Resource Engineering Series**MINE 3500.03: Introduction to Geology for Engineers.**

This class deals with the fundamental principles of geology. Topics include mineralogy, rock-forming processes, weathering, erosion, groundwater, glaciation, 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 of 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 3 hours

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

EXCLUSION: MINE 3510.03

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

EXCLUSION: MINE 3610.03

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 3500.03

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 3500.03

MINE 4705.03: Mining Geology II.

The physical characteristics and origins of the main types of ore deposits are covered. Individual orebodies are described in terms of their mineralogy, rock types, structures and geologic factors affecting mining engineering. Laboratory sessions and assignments concentrate on the three dimensional analysis of ore deposits using hand specimen petrography, maps, sections, structure contours, and reserve modelling. Assigned reading and a term project are important components of the course.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: MINE 3605.03

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

EXCLUSION: MINE 4814.03

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 4712.03: Mineral Economics.

This class applies the economic concept of a free enterprise system to evaluate the investment risk factors in the mineral industry. The major subjects discussed are the influence of mineral commodities on economy and politics, mineral policy, marketing of mineral commodities, price mechanisms, mine project evaluation, feasibility studies, and mine financing. A term report is assigned to each student to conduct a mineral economics analysis.

FORMAT: Lecture 2 hours, lab 2 hours

MINE 4714.03: Computer-Aided Mine Planning.

This class deals with planning and design of underground and surface mining operations, long and short-term mine production, planning, and project planning and execution. Students are familiarized with computer-aided mine planning through the application of software in CAD. Computer experience is gained in the use of commercially available software for geological data analysis, mineral resource modelling, mine design and valuation.

FORMAT: Lecture 3 hours, lab 2 hours

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: MINE3611.03 or permission by instructor

MINE 4811.03: Senior Design Project.

This design project incorporates previous and concurrent coursework in the Mining Engineering curriculum. The project scope can include feasibility studies, mine planning and design, mineral processing design and petroleum design. All projects will incorporate technical design components as well as economic analysis and valuation. Individual supervision of students is provided. Students will have to submit project proposals, regular progress reports, and a final project report and presentation. Wherever feasible, project development, supervision and evaluation will be done in collaboration with industry representatives.

FORMAT: Lecture 2 hour, lab 3 hours

PREREQUISITE: Completion of all classes except the final academic term of the Mineral Resource Engineering Program

EXCLUSION: MINE 4810.03

MINE 4812.03: Mine Production Engineering.

The topics covered in this class are: engineering and management techniques to increase mine productivity; operating units problems analysis, production scheduling and optimization; material movement modelling, and mine maintenance. The tutorial includes computer applications in mine production and class discussions of case studies. Each student is required to solve problems and produce a term project using computer simulation programs.

FORMAT: Lecture 2 hours, lab 3 hours

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 3500.03

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 4817.03: Mineral Resource Engineering Seminar.

At each session students give prepared addresses on subjects related to developments on mining engineering topics that are of common interest to the members of the group. Careful selection of subject matter and adequate preparation is required. The use of proper English expression is stressed. Constructive criticism is offered by the staff and discussion by the students is encouraged.

FORMAT: Lecture 2 hours

MINE 4818.03: Mine Waste Management.

This class provides general understanding of the relationship between planning, technical requirements and design of safe, economical and environmentally acceptable mine waste disposal sites. A major portion of the class is devoted to site selection, waste disposal methods and design procedures for waste disposal sites. Monitoring techniques of waste water quality are discussed along with efficient treatment for environmental control. Other topics include acid mine drainage, site reclamation and alternative options to mineral waste disposal.

FORMAT: Lecture 2 hours, lab 3 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 3510.03

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 3500.03, 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 optimisation, 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 4831.03: Coal Processing.

This class offers detailed study of coal cleaning processes and is intended for students with a special interest in the field. The topics covered are: properties of coal, size reduction, screening, jigs, dense medium baths and cyclones, Dyna-whirlpool and Vorsyl separators, water-only cyclones, shaking tables, spirals, flotation, split conditioning, oil agglomeration, selective flocculation, dry concentration, sulphur reduction, dewatering, refuse disposal, evaluation of optimum cleaning results and a flowsheet design project.

FORMAT: Lecture 2 hours, lab 3 hours

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

Civil Engineering

Location: 1360 Barrington St., D215, Sexton Campus
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I. Introduction

Civil engineering deals with the design, construction, and maintenance of the infrastructure of human civilisation. 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 centres of population and highly organised 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 bases 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 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 characterised 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 B.Eng. 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. In 2002 the Canadian Council of Professional Engineers reported that more than 20% of Canada's engineers were civil engineers.

The Department of Civil 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 course descriptions

Refer to sections IIA and IIIA, Civil Engineering Program, in the Civil and Resource Engineering section of this calendar, pages 269 and 271.

Electrical and Computer Engineering

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Department Head

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Professor Emeritus

Marble, A.E., BEng, MSc, PhD (TUNS), PEng

Professors

Cada, M., Dipl. Ing., MSc, PhD (Prague), PEng
Chen, Z., BEng (Fuzhou), MSc (Southeast), PhD (Ottawa), PEng
El-Hawary, M.E., BEng (Alexandria), PhD (Alta), PEng
El-Masry, E.I., BEng (Alexandria), MSc (Alexandria), PhD (Man), PEng
Gregson, P.H., BEng, MEng, PhD (TUNS), PEng
Hughes, F.L., BSc (Carleton), MSc, PhD (Newcastle upon Tyne) (Computer Engineering Coordinator)
Leon, L.J., BSc, MSc, PhD (Dal), PEng

Part-Time Professor

Nugent, S.T., BEng (TUNS), MSc (Toronto), PhD (UNB)

Associate Professors

Gu, J., BSc (Hefei), MSc (Shanghai), PhD (Alberta), PEng (Undergraduate Program Co-ordinator)
Ilow, J., BSc (Poland), MSc, PhD (Toronto) (Graduate Advisor)
Little, T.A., BScEng (UNB), MEng (Memorial), PhD (UNB) (Director, Core Program)

Assistant Professors

El-Sankary, K., BSc (Lebanese U), MSc (U of Quebec), PhD (U of Montreal)
Gonzalez-Cueto, J., BEng (Cuba), MScE (Cuba), PhD (UNB)
Ma, Y., BSc, MEng (Southeast), MSc, PhD (Alberta)
Ponomarenko, S., Dipl. Phyc. (Russia), PhD (U of Rochester) (Co-op Advisor)

Adjunct Professors

Baird, C.R., BEng (TUNS), MSc (UBC), PhD (UNB), PEng
Gashus, O.K., BSc, PhD (Glas), PEng
Marble, A.E., BEng, MSc, PhD (TUNS), PEng
Nie, H., MEng (Tsinghua), PhD (UBC), PEng

Adjunct Associate Professors

Sivakumar, S., PhD (UNB), PEng
Vallee, R., MEng (Carleton), PhD (TUNS)

Adjunct Assistant Professors

Iseñor, G., BSc (Dal), BEng (TUNS), MSc (TUNS), PhD (Dal)
Linney, N., BSc (Mount Allison), BEng, MSc, PhD (TUNS)

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 daily life of people, but has also changed the course 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 curricula is based on the physical and mathematical principles which constitute the unchanging foundation of the discipline, followed by classes which apply these principles to various specialized application areas.

In the final year of the electrical engineering program, a number of 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.

II. Degree Programs

A. Electrical Engineering Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- | | |
|----------------|------------------------------|
| • ECED 2000.03 | Electric Circuits |
| • ECED 2200.03 | Digital Circuits |
| • ENGI 2800.03 | Engineering Thermodynamics I |
| • ENGM 2021.03 | Engineering Mathematics III |
| • ENGM 2041.03 | Applied Linear Algebra |
| • ENGM 2081.03 | Computer Programming |

Year 2, Term 4 (Winter)

- | | |
|----------------|---------------------------------------|
| • CPST 2000.03 | Technical Communications |
| • ECED 2001.03 | Circuit Analysis |
| • ECED 2900.03 | Electrical Engineering Design I |
| • ENGM 2032.03 | Applied Probability & Statistics |
| • ENGM 2262.03 | Engineering Mathematics IV (b) |
| • ENGM 2282.03 | Data Structures and Numerical Methods |

Year 3, Term 5 (Fall)

- | | |
|----------------|-----------------------------|
| • ECED 3003.03 | Networks & Systems |
| • ECED 3100.03 | Electromechanics |
| • ECED 3201.03 | Introduction to Electronics |
| • ECED 3300.03 | Electromagnetic Fields |
| • ECED 3500.03 | Signal Analysis |
| • ECED 3800.03 | Electrical Materials |

Year 3, Work Term 1 (Winter)

Year 3, Term 6 (Summer)

- | | |
|----------------|----------------------------------|
| • ECED 3101.03 | Power Systems I |
| • ECED 3202.03 | Analog Electronics |
| • ECED 3203.03 | Instrumentation |
| • ECED 3204.03 | Microprocessors |
| • ECED 3501.03 | Analog Communications |
| • ECED 3901.03 | Electrical Engineering Design II |

Year 4, Work Term 2 (Fall)**Year 4, Term 7 (Winter)**

- CPST 3020.03 Engineering in Society I
- ECED 4301.03 Electromagnetic Waves & Propagation
- ECED 4502.03 Digital Signal Processing
- ECED 4503.03 Digital Communications
- ECED 4600.03 Modern Control Systems
- TE

Year 4, Work Term 3 (Summer)**Year 5, Term 8 (Fall)**

- CPST 3030.03 Engineering in Society II
- ECED 4601.03 Digital Control Systems
- ECED 4902.03 Senior Year Project
- IENG 2005.03 Engineering Economics
- TE

B. Computer Engineering Program

Students wishing to pursue the Computer Engineering Program must have completed ECED 2400.03 Systems Analysis prior to Term 5.

Students follow the Electrical Engineering program for Terms 1 to 3. In Year 2, Term 4, the student starts the Computer Engineering program as outlined below.

Year 2, Term 4 (Winter)

- ECED 2001.03 Circuit Analysis
- ECED 2400.03 Systems Analysis
- ECED 2900.03 Electrical Engineering Design I
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2262.03 Engineering Mathematics IV (b)
- ENGM 2282.03 Data Structures and Numerical Methods

Year 3, Term 5 (Fall)

- CPST 2000.03 Technical Communications
- ECED 3003.03 Networks & Systems
- ECED 3100.03 Electromechanics
- ECED 3201.03 Introduction to Electronics
- ECED 3400.03 Microcomputer Systems
- ECED 3500.03 Signal Analysis

Year 3, Work Term 1 (Winter)**Year 3, Term 6 (Summer)**

- CSCI 3120.03 Operating Systems
- ECED 3202.03 Analog Electronics
- ECED 3203.03 Instrumentation
- ECED 3403.03 Computer Architecture
- ECED 3501.03 Analog Communications
- ECED 3901.03 Electrical Engineering Design II

Year 4, Work Term 2 (Fall)**Year 4, Term 7 (Winter)**

- CPST 3020.03 Engineering in Society I
- ECED 4402.03 Real Time Systems
- ECED 4404.03 Computer Networks & Communications
- ECED 4502.03 Digital Signal Processing
- ECED 4503.03 Digital Communications
- ECED 4600.03 Modern Control Systems

Year 4, Work Term 3 (Summer)**Year 5, Term 8 (Fall)**

- CPST 3030.03 Engineering in Society II
- CSCI 3140.03 Database Management Systems
- ECED 4260.03 IC Design and Fabrication
- ECED 4902.03 Senior Year Project
- IENG 2005.03 Engineering Economics

C. Cooperative Education Program Sequencing

The schedule for the cooperative education program includes eight academic terms (AT) and three work-terms (WT), as follows:

Yr/Term	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	AT4	FREE
Year 3	AT5	WT1	AT6
Year 4	AT8/WT2	AT7	WT3
Year 5	AT8		

D. 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 1010.03, PHYC 1100.06

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

ECED 2400.03: 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/tut 2 hours

PREREQUISITE: ECED 2200.03

ECED 2900.03: Electrical Engineering Design I.

This class will cover aspects of design methodology in electrical engineering. Issues addressed include: the engineering design method covering design overview, problem decomposition, solving & planning; decision support techniques, uncertainty and time management; analysis and synthesis for implementation, technical design, design evaluation, prototype construction and evaluation, technical design rules, design heuristics, testability, manufacturability, and troubleshooting; project reports; and ethics in design including the employee's dilemma, the value of written records, and reporting problems.

FORMAT: Lecture 2 hours, lab / tut 3 hours

PREREQUISITE: ECED 2000.03, ECED 2200.03

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, lab / tut 2 hours

PREREQUISITE: ECED 2000.03, ENGM 2021.03

ECED 3100.03: 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 / tut 3 hours

PREREQUISITE: ECED 2001.03

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 / tut 2 hours

PREREQUISITE: ECED 3100.03, 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 3 hours

PREREQUISITE: ECED 2001.03

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 3 hours

PREREQUISITE: ECED 3003.03 and ECED 3201.03

ECED 3203.03: Instrumentation.

This class provides an in depth coverage of instrumentation systems and practices. Topics covered include: accuracy, precision, resolution and linearity, noise and noise sources, noise-equivalent bandwidth, signal conditioning and low noise measurement technique, quantization, sampling, shielding and grounding.

FORMAT: Lecture 3 hours, lab / tut 2 hours

PREREQUISITE: 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 / tut 2 hours

PREREQUISITE: ENGM 2262.03

ECED 3400.03: Microcomputer Systems.

This class introduces the fundamental of microcomputers and microcomputer systems for Computer Engineers. Topics include microcomputer structure and operation, software tools, assembly language programming, interface design, device design and programming, and interrupts.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: 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

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 discretetime signals including the z-transformation. Introduction to communication systems, exponential and sinusoidal amplitude modulation.

FORMAT: Lecture 3 hours, lab / tut 2 hours

PREREQUISITE: ENGM 2021.03, ENGM 2041.03 and ENGM 2262.03

ECED 3501.03: Analog Communications.

This class is concerned with techniques for communicating using continuous time/continuous amplitude signals. The spectra of useful functions are reviewed. Then, the principles of analog communications are covered, including amplitude, frequency, and phase modulation and

demodulation techniques, their implementation, the performance of these techniques, the principle of operation of a phase locked loop, and the principle of frequency division multiplexing. Standard AM and FM radio and TV systems are discussed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ECED 3500.03

ECED 3800.03: Electrical Materials.

This class deals with the understanding and application of electronic materials used by electrical engineers. The class will begin by introducing Schrodinger's equation in context with understanding the electronic transport properties of semiconductor and metals. The concept of holes, effective mass, polarization, optical absorption, dielectric breakdown, and lasers will be developed. The properties and characteristics of pn junctions, dielectrics, magnetic materials, optical materials, and pn light detectors will be introduced.

FORMAT: Lecture 3 hours, lab/tut 2 hours

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/tut 3 hours

PREREQUISITE: ECED 2900.03

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, lab/tut 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/tut 2 hours

PREREQUISITE: Permission of instructor

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 4301.03: 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/tut 2 hours

PREREQUISITE: ECED 3300.03

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 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 implementation Design and implementation project will be undertaken.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2282.03, ECED 3400.03 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

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/tut 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/tut 2 hours

PREREQUISITE: ECED 3500.03

ECED 4503.03: Digital Communications Systems.

This is an introductory class in the theory and practice of digital communications with emphasis on the system side of a digital generation of communication systems. It starts with the fundamentals of digital communication technologies. Then, access, transport, and signaling standards in modern telecommunication systems are introduced. In particular, ISDN and residential broadband access alternatives are discussed. The digital hierarchy in SONET/SDH, the frame relay and ATM protocols are among the subjects covered. Wireless standards for cellular and satellite systems are considered and emerging personal communication services are introduced.

FORMAT: Lecture 3 hours, lab/tut 3 hours

PREREQUISITE: ECED 3500.03 and ECED 3501.03

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/tut 2 hours

ECED 4600.03: 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/tut 2 hours

PREREQUISITE: ECED 3003 .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 2 hours

PREREQUISITE: ECED 3003.03

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 2 hours

ECED 4902.03: Senior Year Project.

Senior year students will be required to select a topic and prepare a proposal, including a work program, for a project to be undertaken under the supervision of a faculty member and an industrial advisor.

Preliminary work on the project may take place in Term 7, but the bulk of the project will be completed in Term 8. Projects may include laboratory or field experiments, design problems, or literature reviews. The student will be expected to produce a typewritten report.

FORMAT: Lab 5 hours

Engineering Mathematics and Internetworking

Location: 1340 Barrington St., Sexton Campus
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Cottreau, M., BSc, BEd (SMU), MSc (TUNS)

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 2021.03: Engineering Mathematics III.

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: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

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: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2041.03: 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

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2062.03: Engineering Mathematics IVa.

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, rank, determinants, Cramer's rule, space curves, arclength, curvature, functions of several variables, partial derivatives, implicit functions, constrained and unconstrained extrema, multiple integrals, surface area and volume, scalar and vector fields, line integrals, gradient, divergence and curl.

FORMAT: Lecture 4 hours, lab 1 hour

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2081.03: 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

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2262.03: Engineering Mathematics IVb.

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.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 1011.03 and ENGM 1012.03 or MATH 1000.03 and MATH 1010.03

ENGM 2282.03: 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 implementation 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 2041.03, ENGM 2081.03

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 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 3352.03: Numerical Methods and Linear Algebra.

This class provides an introduction to Numerical Analysis and Linear Algebra with emphasis on solution of problems related to Mechanical Engineering. The following topics are covered: a review of Computer Programming; concepts of software engineering; approximations and errors; roots of non-linear equations; matrix algebra, vector spaces and systems of equations, numerical solution of systems of equations, LU decomposition, Singular Value Decomposition, condition number; curve fitting; numerical integration and differentiation; and numerical solution of ordinary differential equations.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGM 2021.03, ENGM 2081.03

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
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Undergraduate Program Co-ordinator

Hart, W., BSc (Ohio Wesleyan U), PhD (Dal)

Undergraduate Advisor

Jamieson, R., BEng (TUNS), MAsc (Dal), PhD (Guelph)

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 course descriptions

Refer to sections IIC and IIIC, Environmental Engineering Program, in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule

Refer to section E. Technical Co-op Program, in the Engineering section of this calendar, page 263.

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

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Undergraduate Program Co-ordinator

Truelstrup-Hansen, L., Cand. brom., PhD (Royal Vet Agr Univ Denmark)

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.

Dalhousie's BAsC degree in Food Science is a four year program consisting of 20 credits or 120 credit hours. During the first two years of the program, students study the basic sciences necessary for advanced understanding of all areas of Food Science. The first and second year students take introductory classes in Food Science which explore core concepts and industry practices in food production. The specialized core classes in Food Science are taken during the program's third and fourth year, where students are studying in depth the chemistry, physics, biochemistry, processing and microbiology of food products. The learning environment is characterized by small class sizes and the integration of theory with practical laboratories and demonstrations. Importantly, students also gain expertise in presenting technical seminars and conducting Food Science research and development work, as all students have to do individual research projects (thesis) in their final year of study. The Food Science professors supervise the research projects, which are often done in conjunction with their own active research programs or with industry participation. The students have a number of free electives which they may use to obtain supplementary expertise in areas such as commerce, biochemistry, chemistry, engineering, languages and food science thus fully benefiting from the breadth of classes offered by Dalhousie University.

Students graduating with the BAsC Food Science degree have a number of options open to them. These options include obtaining a job practising food science or pursuing graduate studies to the Masters or Doctorate levels at Dalhousie University or another university. The food industry is the second largest employer in Canada and the largest manufacturing industry in the world. A food scientist with a BAsC degree may choose from a variety of career paths including positions with the food and allied industries, government, education and research institutions, non-governmental organizations, and international development agencies. Graduates find work in food and beverage product and process development, food inspection and regulation, quality assurance, technical and research services, management, marketing and sales. Job prospects are numerous and continue to grow as demands for safe, wholesome and appealing food products increase.

II. Curriculum and course descriptions

Refer to sections IID and IIID, Food Science Program, in the Process Engineering and Applied Science section of this calendar, page 296.

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

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Gunn, E.A., BSc (MtA), MA (Dal), PhD (Toronto), PEng

Professors

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He, Q.-M., BSc, PhD (China), PhD (Waterloo) (Graduate Advisor)

Part-time Professors

Barzilai, J., BSc, MSc, DSc (Technion)

Sandblom, C.-L., Fil.Kand., Fil.Mag. (Lund), PhD (Birm)

Associate Professors

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Pelot, R.P., BAsC (Ottawa), MAsC (Alberta), PhD (Waterloo), PEng (Co-Op Advisor)

Venkataadri, U., BTech (IT-BHU), MS (Clemson), PhD (Purdue), PEng

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MacDonald, C. A., BEng (TUNS), PhD (Dal), PEng

Adjunct Professors

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Eiselt, H.A., Dip-Kfm, Dr.rer.pol (Göttingen)

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Worrall, B.M., BSc, PhD (Hull), PEng

Yang, T., BEng (Tsinghua), MAsC, PhD (Toronto), PEng

Adjunct Associate Professors

Black, N., BAsC (Waterloo), MAsC (TUNS), PhD (UNB), PEng

Li, H., BSc (China), PhD (NC State)

MacKay, K., BMath, MSc, PhD (Waterloo)

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 wind 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 project. Projects are drawn from companies or institutions outside the University and are treated as a consulting assignment. The students are evaluated based upon 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 challenging 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

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGI 2800.03 Engineering Thermodynamics I * or
ECED 2200.03 Digital Circuits*
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming

Year 2, Term 4 (Winter)

- CPST 2000.03 Technical Communications
- ENGI 2300.03 Fluid Mechanics*
OR ENGI 2400.03 Mechanics II *
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2062.03 Engineering Math IV (a)
OR ENGM 2262.03 Engineering Math IV (b)
- IENG 2005.03 Engineering Economics

*NOTE: Students who take the Industrial Engineering program are not required to take the humanities class in Year 2. Students are only required to complete two of ENGM 2800.03 Engineering Thermodynamics I, ENGI 2300.03 Fluid Mechanics, ENGI 2400.03 Mechanics II, or ECED 2200.03 Digital Circuits.

Year 3, Term 5 (Fall)

- IENG 3305.03 Computational Methods and Algorithms for IE
- IENG 3311.03 Modelling and Design of Industrial Systems
- IENG 3313.03 Analysis and Design of Work
- IENG 3316.03 Design of Information Management Systems
- IENG 3344.03 Operations Research: Linear Models

Year 3, Term 6 (Winter)

- Work Term 1

Year 3, Term 7 (Summer)

- IENG 3315.03 Accounting
- IENG 3321.03 Manufacturing Processes and Materials
- IENG 3334.03 Industrial Statistics
- IENG 3345.03 Operations Research: Stochastic and Non-Linear Models
- IENG 3347.03 Ergonomics and Safety Engineering

Year 4, Term 8 (Fall)

- Work Term 2

Year 4, Term 9 (Winter)

- IENG 3443.03 Quality Control and Reliability
- IENG 4432.03 Simulation of Industrial Systems
- IENG 4445.03 Facilities Design
- IENG 4452.03 Design of Inventory and Production Systems
- MECH 4330.03 Mechanical Design

Year 4, Term 10 (Summer)

- Work Term 3

Year 5, Term 11 (Fall)

- IENG 4529.03 Industrial and Organizational Psychology
- IENG 4541.03 Industrial Engineering Design Project I
- IENG 4548.03 Systems Engineering
- IE Elective
- IE Elective

Year 5, Term 12 (Winter)

- IENG 4547.03 Company Operations and Management
- IENG 4551.03 Industrial Engineering Design Project II
- IE Elective
- IE Elective
- IE Elective

Industrial Engineering Electives

- IENG 4544.03 Routing and Scheduling
- IENG 4558.03 Project Management and Control
- 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

III. Class Descriptions

IENTG 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 learned. We must know when to repair or when to replace, when to make and when to buy. Taxes and inflation can also have significant impact on the viability of projects. 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 1 hour

IENTG 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 2081.03

IENTG 3311.03: Modelling and Design of Industrial Systems.

This class introduces students to the modelling and design of industrial systems. The history, development and theoretical basis of industrial engineering will be discussed. A broad cross section of industrial engineering techniques for designing, modelling or analyzing production processes will be presented. Specific topics include manufacturing planning, workplace design and ergonomics, operations management, project planning, and operations research. Students will submit a project which uses IE techniques to analyze and improve an existing production process.

FORMAT: Lecture 3 hours, lab 2 hours

IENTG 3313.03: Analysis and Design of Work.

A comprehensive approach to work analysis and design is pursued through the application of classical industrial engineering, ergonomics, safety and behavioral science concepts. The class will deal with work design/redesign concepts, models and application. The class includes ergonomic workstation and tool design, graphical techniques of work methods analysis, operations analysis, time study, performance rating, allowances, predetermined time standards, work sampling, indirect labour standards, computerized work measurement, job evaluation and wage payments.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENGM 2032.03

IENTG 3315.03: Accounting.

This class deals with the principles of financial and managerial accounting. Students are exposed to accounting theory and the manner in which the accounting system integrates with the overall functioning of an organization. Attention is given to the build-up of accounting data within the system and the preparation of financial statements. Considerable time is devoted to the use of accounting data by management as a means of anticipating the effect of changes on future operations.

FORMAT: Lecture 3 hours

IENTG 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 2081.03

IENTG 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

IENTG 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

IENTG 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 2062.03, ENGM 2262.03

EXCLUSION: IENG 3342.03

IENTG 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, Lab

PREREQUISITE: ENGM 2032.03

EXCLUSION: IENG 3333.03

IENTG 3347.03: Ergonomics and Safety Engineering.

This class deals with those aspects of the design and use of machines which are influenced by the human operator. The ways of designing human/machine systems, displays, controls, the workplace, manual materials handling systems, hand tools and the work environment are considered so as to match functionality with human physical and cognitive capabilities and limitations. A design project is undertaken applying principles of ergonomics and safety engineering.

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: IENG 3338.03

IENTG 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

PREREQUISITE: IENG 3313.03

EXCLUSION: IENG 3445.03

IENG 4452.03: Design of Inventory and Production Systems.

This class introduces a number of quantitative methods for the analysis and improvement of productivity of modern manufacturing. Focusing on inventory control in production, various static and dynamic production planning models are considered. These include deterministic and probabilistic economic order quantity (EOQ) models and variants, single and multiple period inventory models, material requirements planning (MRP) and production lotsizing, just-in-time (JIT) models, and other advanced production and inventory models. Forecasting algorithms applicable to production systems are discussed.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: IENG 3334.03, IENG 3344.03, IENG 3345.03

EXCLUSION: IENG 3452.03

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

EXCLUSION: IENG 3311.03, IENG 3333.03, IENG 3432.03

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 4541.03: Industrial Engineering Design Project I.

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.

FORMAT: Lab 6 hours

PREREQUISITE: Completion of all classes except those in the last two academic terms of the Industrial Engineering Program.

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 traveling 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

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: IENG 4452.03

IENG 4551.03: Industrial Engineering Design Project II.

This class is a continuation of the earlier industrial engineering design project. The orientation leans heavily towards the application of more innovative solutions to the industrial problem already worked upon with the idea of making some worthwhile contribution to the advancement of the application of industrial techniques in the solution of real industrial problems. Successful completion of the class requires a high-caliber final report and oral presentation.

FORMAT: Lab 6 hours

PREREQUISITE: IENG 4541.03

IENG 4558.03: Project Management and Control.

This class identifies the common aspects and peculiarities of projects and then illustrates the applications 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: health care. Throughout the class, examples drawn from health care 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 3311.03

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 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 2005.03

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 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 3311.03 or IENG 4500.03, IENG 3443.03

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 4452.03

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

Materials Engineering

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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 composites, automotive alloys, aerospace materials, electronic materials, corrosion, wear, and near-net-shape materials processing technologies.

II. Curriculum and course descriptions

Refer to sections IIE and IIIE, Materials Engineering Program, in the Process Engineering and Applied Science section of this calendar, page 296.

III. Co-operative program and schedule

Refer to section F. Technical Co-op Program, in the Engineering section of this calendar page 263.

Mechanical Engineering

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Assistant Professors

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Groulx, D., BSc, PhD (Sherbrooke) (Recruitment Co-ordinator)
Koksal, M., BSc, MSc (Middle East Tech U), PhD (Dal)
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Hsiung, C.C., BSc (Taiwan Cheng-Kung), MSE (Mich), PhD (Calif), CEng,
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McTaggart, K., BSc (Queen's), MEng (Western), PhD (UBC)
Quinn, W., BSc (U AsC Hamberg), MSc (TU Berlin), MSc, PhD (Queen's)

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Fung, A., BSc (Dal), BEng, MASc (TUNS), PhD (Dal), PEng
Qiu, W., BBA, BSE, MASc (Dalian U of Tech), PhD (Dal)

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, typically result in construction and testing of prototypes.

Postgraduate studies in the Department are concentrated in the areas of 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 which is completed over nine academic terms
2. Eight-Term Program which is completed over eight academic terms

Students who choose to follow the Eight-Term Program could still fulfill the co-op requirements by securing a 12- or 16-month internship position beginning at the end of the winter term of Year 3. However, they should understand that they would be doing this on an "on-own" basis (see the "Co-operative Engineering Program" section of this calendar). Essentially this means that they must find their own co-op position subject to approval by the co-op advisor of the department. Students not interested in doing this, can graduate a year earlier (see schedule below), but they must opt out of the co-op program.

A. Co-op Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials

- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)

- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II
- ENGM 2032.03 Applied Probability & Statistics
- MECH 2100.03 Engineering Design and Graphics II
- Humanities II

Year 3, Term 5 (Fall)

- CPST 2000.03 Technical Communication
- ENGM 3361.03 Vector Calculus & PDE
- MECH 3010.03 Machine Design I
- MECH 3300.03 Fluid Dynamics
- MECH 3500.03 Dynamics of Machines

Year 3, Work Term 1 (Winter)

Year 3, Term 6 (Summer)

- CPST 3020.03 Engineering in Society I
- ENGM 3352.03 Numerical Methods & Linear Algebra
- IENG 2005.03 Engineering Economics
- MATL 3500.03 Material Science

Year 4, Work Term 2 (Fall)

Year 4, Term 7 (Winter)

- CPST 3030.03 Engineering in Society II
- MECH 3020.03 Machine Design II
- MECH 3700.03 Heat Transfer I
- MECH 3800.03 Engineering Thermodynamics II
- MECH 3900.03 Systems I

Year 4, Work Term 3 (Summer)

Year 5, Term 8 (Fall)

- MECH 4010.03 Design Project I
- MECH 4300.03 Stress Analysis
- MECH 4600.03 Engineering Measurements
- MECH 4900.03 Systems II
- Technical Elective I

Year 5, Term 9 (Winter)

- MECH 4020.03 Design Project II
- MECH 4500.03 Vibrations
- MECH 4810.03 Energy Conversion Systems
- Technical Elective II
- Technical Elective III

B. Eight-Term Program

Year 1 follows the common program outlined in the Engineering section of this calendar.

Yr/Term	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	AT4	FREE
Year 3	AT5	AT6	FREE
Year 4	AT7	AT8	

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)

- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II

- ENGM 2032.03 Applied Probability & Statistics
- IENG 2005.03 Engineering Economics
- MECH 2100.03 Engineering Design and Graphics II
- Humanities II

Year 3, Term 5 (Fall)

- CPST 2000.03 Technical Communication
- ENGM 3361.03 Vector Calculus & PDE
- MECH 3010.03 Machine Design I
- MECH 3300.03 Fluid Dynamics
- MECH 3500.03 Dynamics of Machines
- MATL 3500.03 Material Science

Year 3, Term 6 (Winter)

- CPST 3030.03 Engineering in Society II
- ENGM 3352.03 Numerical Methods & Linear Algebra
- MECH 3020.03 Machine Design II
- MECH 3700.03 Heat Transfer I
- MECH 3800.03 Engineering Thermodynamics II
- MECH 3900.03 Systems I

Year 4, Term 7 (Fall)

- MECH 4010.03 Design Project I
- MECH 4300.03 Stress Analysis
- MECH 4600.03 Engineering Measurements
- MECH 4900.03 Systems II
- Technical Elective I
- Technical Elective II

Year 4, Term 8 (Winter)

- CPST 3020.03 Engineering in Society I
- MECH 4020.03 Design Project II
- MECH 4500.03 Vibrations
- MECH 4810.03 Energy Conversion Systems
- Technical Elective III

C. Technical Elective Choices

- MECH 4000.03 Manufacturing
- 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 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 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 4950.03 Advanced Control Engineering
- MECH 4960.03 Computational Methods in Engineering

D. Service Class

For Biological and Industrial Engineering Programs:

- MECH 4330.03 Mechanical Design

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 2100.03: Engineering Design and Graphics II.

This class provides a project-based exercise in the engineering design process. Students work in teams and as individuals on defined projects which utilize knowledge and skills in graphics, statics, computing, and mechanics of materials. The projects encompass conceptual design, detailed analysis, engineering drawings, experimentation, physical model fabrication, laboratory testing, and preparation of professional reports. FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: ENGI 1100.03, ENGI 1400.03, ENGI 2200.03 and ENGM 2081.03
EXCLUSION: ENGI 2101.03

MECH 3010.03: Machine Design I.

(Design for Reliability)
The application of basic 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 and ENGI 2400.03

MECH 3020.03: Machine Design II.

(Machine Components)
The use of engineering principles in the design of machine 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, chains and hydrodynamic drives. FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: MECH 3010.03

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 and ENGI 2800.03

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 and MECH 2100

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 3800.03: Engineering Thermodynamics II.

This class is a continuation of Engineering Thermodynamics I. The basic thermodynamic laws and principles are applied to various engineering problems, with emphasis on non-reacting mixtures, psychrometry, combustion processes, enthalpy of formation, chemical equilibrium, compressible flow, expansion and compression processes,

vapor compression and absorption refrigeration, and heat pumps. Laboratory section includes experiments in psychrometric processes, reciprocating compressors, and vapor refrigeration cycles. FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: ENGI 2800.03 and ENGI 2300.03

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 2 hours
PREREQUISITE: ENGM 2021.03, 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 or MECH 4330.03

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

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 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 theorems, statically indeterminate problems, introduction to the finite element method. FORMAT: Lecture 3 hours, lab/tutorial 2 hours
PREREQUISITE: ENGI 2200.03

MECH 4330.03: Mechanical Design.

This class deals with design of machine elements as well as machines. The class utilizes the background of knowledge in mechanics, properties of materials, and strength of materials. The class is designed to develop sound judgement and practice in design. Emphasis is placed on design and not simply on problem solving or analysis. The class is not intended for Mechanical Engineering students. FORMAT: Lecture 3 hours, lab/tutorial 3 hours

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 2 hours, lab/tutorial 3 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: Lab 3 hours

PREREQUISITE: MECH 3300.03

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 and 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: Lab 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 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 2 hours, lab/tutorial 3 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 2 hours, lab/tutorial 3 hours

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: Approval of instructor

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 or MECH 4330.03

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 3020.03, MECH 3010.03, completed or concurrently taking Auto-CAD class offered by the Dalhousie authorized Auto-CAD Training Centre

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 is 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 2 hours, lab/tutorial 3 hours

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

PREREQUISITE: Permission of the instructor

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 emphasised from the perspective of total joint replacement design.

FORMAT: Lecture

PREREQUISITE: Permission of instructor

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 2 hours, lab/tutorial 3 hours

PREREQUISITE: ENGI 2200.03

CROSS-LISTING: MECH 6660.03

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 3800.03, ENGI 2300.03, MECH 3300.03, MECH 3700.03

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 of consumption of conventional energy forms is investigated. The nature and magnitude of energy consumption world-wide and locally is considered.

FORMAT: Lecture 2 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 3800.03

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

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 2 hours, lab/tutorial 3 hours

PREREQUISITE: MECH 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 3800.03

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 4950.03: Advanced Control Engineering.

The class follows on from MECH 3900.03 and 4900.03 -- Systems I and II, with the objective of continuing to develop the students' capabilities in system simulation and feedforward/feedforward 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 4900.03, or approval of Instructor

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 2 hours, lab/tutorial 3 hours

CROSS-LISTING: MECH 6960.03

Mineral Resource Engineering

Location: G Building, Sexton Campus
1360 Barrington St.
Halifax, N.S. B3J 1Z1
Telephone: (902) 494-3954
Fax: (902) 425-1037
Email: mining.office@dal.ca

Dean

Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head, Civil and Resource Engineering

Zou, D.G., BSc (CUMT, China), PhD (UBC) PEng

Undergraduate Program Co-ordinator

Hill, J.D., BSc, MSc (Acadia), PhD (UWO)

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 MAsC, MEng, and PhD programs for those who would like to specialize in areas of Mineral Resource and Petroleum Engineering at Dalhousie.

II. Curriculum and course descriptions

Refer to sections IIB and IIIB, Mineral Resource Engineering Programs, in the Civil and Resource Engineering section of this calendar, page 268.

Process Engineering and Applied Science

Location: F. Bldg, Sexton Campus
1360 Barrington St.
Halifax, NS B3J 1Z1
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Dean

Leon, L.J., BSc, MSc, PhD (Dal), PEng

Department Head

Pegg, M.J., BSc, PhD (Leeds), PEng

Professors Emeriti

Ackman, R.G., BA (Toronto), MSc (Dal), DIC (Imperial Coll.), PhD (London), LLD (Hon)(Dal)
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
Caley, W.F., BSc (Eng), MSc (Eng)(Queen's), PhD (Toronto), PEng
Fels, M., BEng, MEng (McGill), PhD (Waterloo), PEng
Gill, T.A., BSc, MSc (Guelph), PhD (UBC)
Ghaly, A.E., BScEng, MScEng (Alex), PhD (McGill), PEng (Co-ordinator, Graduate Programs/Co-op Advisor, Environmental Engineering)
Gupta, Y.P., BSc (BHU), MEng (TUNS), PhD (Calgary), PEng
Kipouros, G.J., DipEng (Athens), MAsC, PhD (Toronto), PEng
Paulson, A.T., BSc (Agr), MSc, PhD (UBC)
Pegg, M.J., BSc, PhD (Leeds), PEng
Speers, R.A., BSc (Agr), MSc, PhD (UBC)
Watts, K.C., BSA, MSc (Guelph), PhD (Wat), PEng
Yemenidjian, N.B., BEng, PhD (Concordia), PEng

Associate Professors

Bishop, D.P., MAsC, PhD (TUNS), PEng (Undergraduate Program Co-ordinator, Materials Engineering)
Ghanem, A., BSc, Eng (UNB), PhD (Cornell), PEng (Undergraduate Program Co-ordinator, Biological Engineering)
Hart, W., BSc (Ohio Wesleyan U), PhD (Dal)
Kuzak, S.G., BEng, MEng (McGill), PhD (TUNS), PEng
Plucknett, K.P., BSc, PhD (Warwick)
Truelstrup Hansen, L., Cand. brom., PhD (Royal Vet Agr Univ Denmark)(Undergraduate Program Co-ordinator, Food Science)
Wilkie, K.I., BEng (RMC), MEng (NSTC), PhD (TUNS), PEng (Co-op Advisor, Biological Engineering)
Yuet, P.K., BEng (TUNS), MSc (Queen's), PhD (MIT), PEng (Undergraduate Program Co-ordinator, Environmental Engineering)

Assistant Professors

Bowman, S., BSc, PhD (Warwick)
Brooks, S. L., BTech (Massey), PhD (Cambridge)
Budge, S.M., BSc (Acadia), PhD (MUN)
Farhat, Z., BAsC, MAsC, PhD (Windsor) (Co-op Advisor, Materials Engineering Program)
Jarjoura, G., BEng (TUNS), MAsC, PhD (Dal)
Jamieson, R., BEng (TUNS), MAsC (Dal), PhD (Guelph)
Mazzanti, G., BSc (U de America), MSc, PhD (Guelph)

Adjunct Professors

Al Taweel, A.M., BSc (Alexandria), MSc, PhD (Colorado), PEng
 Chaturvedi, M.C., BSc (Banaras), M Met, PhD (Sheffield)
 Dabros, T., MSc, PhD (Jagiellonian)
 Friesen, W., BSc (Brock), MSc, PhD (UBC)
 Gomaa, H., BSc, MSc (Alexandria), PhD (UNB)
 Gray, A.B., BSc (Bishops), MSc, PhD (McGill)
 Hamza, H.A., BSc (Cairo), PhD (New Castle-upon-Tynes)
 Hollingshead, R.S., BEng, MEng, PhD (TUNS)
 Merritt, J.H., BEng (TUNS), MSc (Birm), PEng, CEng
 Pink, D.A.H., BSc (Hons StFX), PhD (UBC)
 Quilliam, M.A., BSc, PhD (Manitoba)
 Sami, S.M., BScEng, MScA, PhD (Montreal)
 Stratton, G.W., BSc, MSc, PhD (Guelph)
 Thibault, P., BEng (Hon), PhD (McGill)

Adjunct Associate Professors

Chan, J.K-H., BSc (Hong Kong), MSc (Reading), PhD (TUNS)
 Gharghour, M.A., BEngSc (Toronto), PhD (McMaster), PEng
 Gordon, R., BSc, MSc (McGill), PhD (Guelph), PEng, PAg
 Kalmokoff, M., BSc (Guelph), MSc (Saskatchewan), PhD (Queen's)
 Pegg, N., BSc (Guelph), MSc (UBC), PhD (TUNS)
 Schraft, H., Dr. med. vet. (Zürich)
 Stewart, R.J., BSc, MSc, PhD (Toronto)

Adjunct Assistant Professors

Jin, Y., BSc (Yangzhou), MSc, PhD (Dal)
 Patterson, R.N., BSc (RMC), BAsC (UofT), MAsC (TUNS), PhD (Dal)
 Rousseau, D., BSc (Laval), PhD (Guelph)

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 five professional degree programs to meet the needs of the increasing types and numbers of process industries. These degree programs are:

1. BEng in Biological Engineering, co-op and non co-op programs
2. BEng in Chemical Engineering, co-op and non co-op programs
3. BEng in Environmental Engineering, co-op and non co-op programs
4. BAsC in Food Science, non co-op program only
5. 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. Biological Engineering

As can be seen from the syllabus of classes noted below, students in Biological Engineering can choose one of the following four emphases: Agricultural Engineering, Aquacultural Engineering, Biomachines and Robotics, or Food and Bioprocess Engineering. As indicated in the syllabus, the Agricultural and Aquacultural Engineering emphases are given in conjunction with the Nova Scotia Agricultural College (NSAC), in Truro, NS. This gives greater breadth of training in Agriculture and Aquaculture and allows the students to benefit from the expertise and specialized equipment at the Nova Scotia Agricultural College. Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)

- BIOL 1010.03 Principles of General Biology
- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGM 2021.03 Engineering Mathematics III (Differential Equations)
- ENGM 2081.03 Computer Programming
- Humanities

Year 2—Term 4 (Winter)

- BIOL 1011.03 Principles of General Biology
- CHEM 2441.03 Organic Chemistry
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II
- ENGM 2032.03 Applied Probability & Statistics
- IENG 2005.03 Engineering Economics

Year 3—Term 5 (Fall)

- BIOE 3212.03 Measurement and Analysis
- BIOE 3221.03 Applied Thermodynamics
- CPST 2000.03 Technical Communications
- ENGM 3361.03 Engineering Mathematics IVc
- ENVE 3000.03 Fundamentals of Environmental Engineering
- ENVE 3251.03 Environmental & Industrial Microbiology

Year 3—Term 6 (Winter)

- BIOE 3252.03 Heat & Mass Transfer
- BIOE 3342.03 Industrial Biotechnology
- CHEE 3550.03 Process Dynamics and Control
- CPST 3020.03 Engineering in Society I
- ENGM 3352.03 Numerical Methods and Linear Algebra
- MECH 4330.03 Mechanical Design

Year 4—Term 7 (Fall)

- BIOE 3321.03 Properties of Biological Materials
- BIOE 4301.03 Design Project for Biosystems Engineers I
- BIOE 4312.03 Microcomputer Interfacing
- CHEE 4773.03 Industrial Safety and Loss Management
- IENG 4500.03 Operations Research Methods for Systems Engineering
- Technical Elective 1

Year 4—Term 8 (Winter)

- BIOE 4302.03 Design Project for Biosystems Engineers II
- Technical Elective 2
- Technical Elective 3
- Technical Elective 4
- Technical Elective 5
- ion

Technical Electives

- BIOE 4011.03 Robotics
- BIOE 4312.03 Microcomputer Interfacing
- BIOE 4331.03 Design of Biomachines
- BIOE 4341.03 Food Science for Engineers
- BIOE 4351.03 Bioprocess Engineering

- BIOE 4352.03 Food Engineering
- BIOE 4391.03 Polymeric Biomaterials
- ECED 4760.03 Biomedical Engineering
- IENG 3338.03 Ergonomic and Safety Engineering
- IENG 4573.03 Industrial Biomechanics
- MECH 4650.03 Biomechanical Engineering
- MECH 4652.03 Kinematics of Human Motion

Note:

Technical classes from other departments may be selected subject to availability and the approval by the departments concerned.

B. Chemical Engineering

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- IDIS 2000.03 Fundamentals of Environmental Engineering
- Humanities I

Year 2, Term 4 (Winter)

- CHEE 2404.03 Industrial Chemistry
- CHEE 2420.03 Fundamentals of Chemical Engineering
- CHEM 2441.03 Organic Chemistry
- ENGI 2300.03 Fluid Mechanics
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2062.03 Engineering Mathematics IV (a)

Year 3, Work Term 1 (Fall)

Year 3, Term 5 (Winter)

- CPST 2000.03 Technical Communications
- CHEE 3522.03 Mechanical Unit Operations
- CHEE 3525.03 Separation Processes
- CHEE 3530.03 Chemical Engineering Thermodynamics
- CHEE 3544.03 Computer-Aided Process Design
- CHEE 3550.03 Process Dynamics & Control

Year 3, Work Term 2 (Summer)

Year 4, Term 6 (Fall)

- CHEE 3624.03 Heat Transfer
- CHEE 3634.03 Chemical Reaction Engineering
- ENGM 3052.03 Applied Numerical Methods
- IENG 2005.03 Engineering Economics
- MATL 3500.03 Materials Science
- Technical Elective 1

Year 4, Work Term 3 (Winter)

Year 4, Work Term 4 (Summer)

Year 5, Term 7 (Fall)

- CHEE 4726.03 Mass Transfer
- CHEE 4741.03 Process & Plant Design I
- CHEE 4752.03 Process Modelling, Simulation & Control
- CHEE 4773.03 Industrial Safety & Loss Management
- Technical Elective 2

Year 5, Term 8 (Winter)

- CHEE 4720.03 Unit Operations Laboratory
- CHEE 4842.03 Process & Plant Design II
- CPST 3020.03 Engineering in Society I
- MATL 3611.03 Corrosion and its Prevention
- Technical Elective 3

Technical Electives

This list is not exhaustive, nor does it imply that each course 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 courses 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

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. Environmental Engineering

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.

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2—Term 3 (Fall)

- BIOL 1010.03 Principles of Biology I
- ECED 2000.03 Electric Circuits
- ENGM 2021.03 Engineering Mathematics III (Differential Equations)
- ENGM 2081.03 Computer Programming
- EARTH 1080.03 Geology I
- Humanities

Year 2—Term 4 (Winter)

- BIOL 1011.03 Principles of Biology II
- CHEM 2441.03 Organic Chemistry
- ENGI 2300.03 Fluid Mechanics
- ENGM 2032.03 Applied Probability & Statistics
- EARTH 1090.03 Geology II **OR** Environmental Science Elective
- IENG 2005.03 Engineering Economics

Year 3—Term 5 (Fall)

- BIOE 3221.03 Applied Thermodynamics
- CPST 2000.03 Technical Communications
- ENVE 3000.03 Fundamentals of Environmental Engineering
- ENVE 3251.03 Environmental & Industrial Microbiology
- ENVE 3461.03 Environmental Measurements and Analysis
- ENGM 3361.03 Engineering Mathematics IVc

Year 3—Term 6 (Winter)

- BIOE 3252.03 Heat & Mass Transfer
- CPST 3020.03 Engineering in Society I
- ENVE 3412.03 Energy and Environment
- ENVE 3432.03 Waste Management
- ENVE 3452.03 Soil and Water Conservation Engineering
- ENGM 3352.03 Numerical Methods and Linear Algebra

Year 4—Terms 7 & 8

- CHEE 4773.03 Industrial Safety & Loss Management
- CIVL 4440.03 Water and Wastewater Treatment
- ENVE 4401.03 Design Project for Environmental Engineers I
- ENVE 4402.03 Design Project for Environmental Engineers II
- ENVE 4411.03 Indoor Environment Control & Air Quality
- ENVE 4421.03 Biogeochemistry & Bioremediation
- ENVE 4772.03 Environmental Assessment and Management
- IENG 4500.03 Operations Research Methods for Systems Engineering
- 3 Technical Electives classes

Environmental Engineering—Recommended Technical Electives

- BIOE 4312.03 Microcomputer Interfacing
- BIOE 4322.03 Aquacultural Engineering
- BIOE 4351.03 Bioprocess Engineering
- CHEE 4872.03 Air Pollution Control
- CIVL 3451.03 Water Quality and Treatment
- ENVE 4000.03 Small Watershed Hydrology
- ENVE 4612.03 Waste Disposal and Utilization
- ENVE 4621.03 Atmospheric Air Quality
- ENVE 4641.03 Contaminant Fate & Transport
- ENVE 4651.03 Solar Energy Utilization
- ENGM 3032.03 Applied Statistics
- ENGM 4675.03 Risk Assessment & Management **OR**
- IENG 4574.03 Decision and Risk Analysis
- 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.

D. Food Science

This is a 20-credit curriculum leading to the BASc degree in Food Science. Degree programs should be planned in consultation with the program chair or another faculty advisor. Please note that students wishing to include Food Science in other programs are welcomed. All third- and fourth-year level Food Science courses have prerequisites.

Year 1

- BIOL 1010.03 Principles of Biology I
- BIOL 1011.03 Principles of Biology II
- CHEM 1011.03 General Chemistry I
- CHEM 1012.03 General Chemistry II
- FOSC 1000.03 Concepts of Food Science
- MATH 1000.03 Differential and Integral Calculus I
- MATH 1010.03 Differential and Integral Calculus II
- Writing Class
- Elective

Year 2

- BIOL 2004.03 Diversity of Microorganisms **OR**
- MICI 2100.03 Introduction to Microbiology and Immunology
- BIOC 2200.03 Introductory Biochemistry
- CHEM 2201.03 Introductory Analytical Chemistry
- CHEM 2441.03 Foundations of Organic and Biological Chemistry
- FOSC 2010.03 Food Commodities
- PHYC 1300X/Y.06 Physics In and Around You **OR**
- PHYC 1100X/Y.06 Introduction to Physics
- STAT 1060.03 Introductory Statistics for Science and Health Sciences
- Elective

Year 3

- BIOE 3051.03 Principles of Food Engineering
- CPST 2000.03 Technical Communication
- 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
- HPRO 2250.03 Human Nutrition
- Elective

Year 4

- FOSC 4030.03 Food Product Development
- FOSC 4091.03 Food Safety and Biotechnology
- FOSC 4250.03 Food Product Development Project (or FOSC 4750X/Y.06)
- FOSC 4500X/Y.06 Seminar in Food Science
- FOSC 4750X/Y.06 Food Science Research Project (or FOSC 4250.03)
- Electives

Writing classes

The following classes meet the requirement for the writing credit: CLAS 1000.06, CLAS 1010.06, CLAS 1100.06, ENGL 1000.06, GERM 1020.06, PHIL 1010.06, POLI 1103.06, RUSN 1020.03 and RUSN 1070.03, THEA 1000.06, THEA 1300.06 and completion of the Dalhousie Integrated Science Program (DISP), SCIE 1501.27, SCIE 1502.21, SCIE 1504.27, 1510.33

Overview of Minimum Elective Requirements

1. One full credit in the language/humanities or social sciences subject area.
2. One half credit as a technical elective from the Faculty of Engineering.
3. Remaining electives (7 or 8 half credits) are free.

Examples of Electives

- ANAT 1010.03 Basic Human Anatomy
- BIOC 2610.03 Introductory Biochemistry Laboratory
- BIOC 3200.03 Biological Chemistry
- BIOC 3400.03 Nucleic Acid Biochemistry & Molecular Biology
- BIOE 3221.03 Applied Thermodynamics
- BIOE 3241.03 Industrial Biotechnology
- BIOE 3322.03 Properties of Biomaterials
- BIOL 2030.03 Genetics and Molecular Biology
- BIOL 4074.03 Introduction to Animal Nutrition
- CHEE 2430.03 Fundamentals of Chemical Engineering
- CHEM 2303.03 Physical Chemistry for the Life Sciences
- CIVL 3451.03 Water Quality and Treatment
- CPST 3020.03 Engineering in Society I
- CPST 3030.03 Engineering in Society II
- FOSC 4081.03 Brewing Science
- IDIS 2000.03 Fundamentals of Environmental Engineering
- IENG 4529.03 Industrial and Organizational Psychology
- IENG 4578.03 Organizational Aspects of Quality Management
- PHYL 1000.06 Human Physiology
- STAT 2080.03 Statistical Methods for Data Analysis and Inference

E. Materials Engineering

Year 1 follows the common program outlined in the Engineering section of this calendar.

Year 2, Term 3 (Fall)

- ECED 2000.03 Electric Circuits
- ENGI 2200.03 Mechanics of Materials
- ENGI 2800.03 Engineering Thermodynamics I
- ENGM 2021.03 Engineering Mathematics III
- ENGM 2081.03 Computer Programming
- Humanities I

Year 2, Term 4 (Winter)

- CPST 2000.03 Technical Communications
- ENGI 2300.03 Fluid Mechanics
- ENGI 2400.03 Mechanics II **OR**
MECH 2100.03 Engineering Design and Graphics II
- ENGM 2032.03 Applied Probability & Statistics
- ENGM 2062.03 Engineering Mathematics IV (a)
- IENG 2005.03 Engineering Economics

Year 3, Term 5 (Fall)

- CPST 3020.03 Engineering in Society I
- ENGM 3052.03 Applied Numerical Methods
- MATL 3500.03 Materials Engineering
- MATL 3510.03 Extraction of Materials
- MINE 3530.03 Mineral Processing

Year 3, Term 6 (Winter)

- CHEE 3550.03 Process Dynamics and Control
- 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

Year 3, Work Term 1 (Summer)**Year 4, Term 7 (Fall)**

- CHEE 3634.03 Chemical Reaction Engineering
- MATL 4703.03 Non-Metallic Materials
- MATL 4704.03 Materials Design Project
- MATL 4714.03 Hydrometallurgy
- MATL 4722.03 Ferrous Alloys and Joining of Materials
- Technical Elective I
- Graduate Class I (for combined BEng/MASc Students)

Year 4, Work Term 2 (Winter)**Year 4, Work Term 3 (Summer)****Year 5, Term 8 (Fall)**

- CPST 3030.03 Engineering in Society II
- MATL 4802.03 Metallurgical Process Design
- MATL 4804.03 Materials Design Project
- MATL 4815.03 Kinetics of Materials Processing
- Technical Elective II
- Technical Elective III
- Graduate Class II (for combined BEng/MASc Students)

Year 5, Term 9 (Winter) (BEng/MASc; Optional for BEng)

- Technical Elective I
- Technical Elective II
- Technical Elective III
- Graduate Class III (for combined BEng/MASc Students)

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 \$15,000.00.

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 one work term and two academic terms as follows:

Year 5, Work Term 4 (Summer)**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 4823.03 Non-Ferrous Alloys
- MATL 4824.03 Industrial Metallurgy
- 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.

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 1000.03 and MATH 1010.03, or ENGM 1011.03 and ENGM 1012.03, PHYC 1300X/Y.06

BIOE 3211.03: Measurement and Analysis.

The objectives of this class are to cover the principles of measurement with emphasis on data collection, communications, and analysis. Instrumentation terminology and fundamentals of data analysis are emphasized in lectures and laboratory exercises. A term project is assigned which has the students specifying, designing, and building a data collection, presentation, and analysis system. This project includes sensor

selection; design of signal conditioning; implementation of data acquisition and communications hardware and software, and analysis and presentation of the data.

INSTRUCTOR(S): K. Wilkie

FORMAT: Lecture 3 hrs, Lab 3 hrs

PREREQUISITE: ECED 2000.03 and ENGM 2032.03, or the equivalents

BIOE 3212.03: Measurement and Analysis.

The objectives of this class are to cover the principles of measurement with emphasis on data collection, communications, and analysis.

Instrumentation terminology and fundamentals of data analysis are emphasized in lectures and laboratory exercises. A term project is assigned which has the students specifying, designing, and building a data collection, presentation, and analysis system. This project includes sensor selection; design of signal conditioning; implementation of data acquisition and communications hardware and software, and analysis and presentation of the data.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03 and ENGM 2032.03 or equivalent

BIOE 3221.03: Applied Thermodynamics.

The objective of this class is to introduce fundamental concepts and engineering applications of thermodynamics relevant to biological systems. Topics covered include the first and second laws of thermodynamics, entropy, availability, psychrometrics, chemical reactions and phase equilibrium.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: One class (3 credits) in differential and integral calculus and general chemistry

BIOE 3241.03: Industrial Biotechnology.

The objective of this class is to introduce principles of biochemistry, biochemical engineering and industrial and environmental applications of microbiology of interest to engineers. Topics covered include chemistry of biological molecules, microbial stoichiometry and energetics, coordination of microbial activity, enzyme and microbial kinetics, and applied microbiology topics such as production of microbial biomass, aerobic and anaerobic fermentation; and bioremediation.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOE 3251.03 or equivalent and CHEM 2241.03

BIOE 3252.03: Heat and Mass Transfer.

The objective of the class is to introduce the fundamentals of heat and mass transfer of relevance to biosystems and environmental engineering. Topics covered include: steady state conduction in one dimension, conduction in multi-dimensions, unsteady state conditions, convective heat transfer (forced and natural), molecular mass diffusion and convective mass transfer. Radiative heat transfer and transport processes in the atmosphere are also introduced.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: ENGI 2300.03, ENGM 2021.03 and one class in Thermodynamics

BIOE 3312.03: Measurement and Control.

The objectives of this class are to cover the principles of instrumentation and to introduce the subject of automatic controls. Instrumentation terminology and fundamentals of experimental data analysis are emphasized in lectures and laboratory exercises. Measurement of variables such as pressure, flow, temperature, humidity, displacement, force and acceleration are discussed. Automatic controls are introduced from an applied point of view. Control topics covered include, on-off control using programmable logic controllers and proportional -integral-derivative control.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03

BIOE 3321.03: Properties of Biological Materials.

This class provides a knowledge of the physical properties of biological materials and methods for assessing such properties. Understanding and assessment of biological material properties are important to areas such as Biomedical Engineering, Food Science, Bioprocess Engineering and Biotechnology. Topics will include mechanical properties, rheology,

thermal properties, electrical properties, optical and other physical characteristics. The associated lab will feature examples from Biomedical Engineering, Food Science, Bioprocess Engineering and Biotechnology of measurement techniques used to evaluate related properties discussed in class.

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: PHYC 1100.06 and CHEM 1021.03 and CHEM 1022.03 or the equivalents

BIOE 3342.03: Industrial Biotechnology.

This course 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 course 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 4011.03: Robotics.

See class description for MECH 4640.03 in the Mechanical Engineering section of this calendar.

BIOE 4101.03: Introduction to Soil Science.

General principles of soil science relating to the origin, development, and classification of soils; the biological, physical, and chemical properties of soils and their relation to proper soil and crop management, land use, and soil conservation.

FORMAT: Lecture 3 hours, lab 4 hours

BIOE 4111.03: Structures and their Environment.

The objectives of this class are to provide information on planning farm buildings to save labour, to provide conditions for improved productivity of livestock, to maintain the quality of stored crops and to protect machinery. The building materials, functional layouts and electrical requirements are presented for different types of buildings. Planning of the farmstead is discussed. Environmental physiology of domestic animals is also covered.

FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4121.03: Materials Handling and Processing.

This class covers the basic unit operations involved in on-farm processing. Each process studied is described mathematically and discussed in relation to quantities, rates, and energy requirements. Laboratories on each unit operation serve to increase the students' understanding of the basic principles involved. Topics covered include: electric motors, fluid transport (pumps), drying (with emphasis on grain drying), material transport (screw conveyors, bucket elevators, belt conveyors, pneumatic conveyors) and refrigeration.

FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4131.03: Drainage and Irrigation.

This class emphasizes the design of drainage and irrigation systems. Introductory material includes basic hydrology, soil-water-crop relationships and an overview of the theory of confined, unconfined and unsaturated flow of water in soil. Drainage design includes the planning and selection of the most appropriate system and detailed consideration of the design and implementation of surface and subsurface systems. Irrigation design emphasizes supplemental irrigation and includes: crop requirements; water supply and conveyance; and surface, sprinkler, and drip applications.

FORMAT: Lecture 3 hours, lab 4 hours

BIOE 4151.03: Aquatic Environment.

Engineering principles are studied in context of requirements for environmental management of intensive aquaculture of finfish, molluscs, crustaceans, and marine plants of commercial importance. Topics in water habitat management will be emphasized including: water properties in

both fresh and salt water systems, water quality and water purification, fluid dynamics and statics, and control of the aquatic environment.
 FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4161.03: Aquatic Engineering.

Support facilities, equipment and systems for aquaculture operations will be examined. Topics studied will include: selection of component materials and structures suitable for confinement, protection, and support of aquaculture species; selection and application of mechanical/electrical support equipment such as pumps, motors, feeders, aerators, water heating systems, waste management systems and monitoring equipment; and engineering aspects of facilities for harvesting, handling, processing, packaging, and preservation of aquatic production.
 FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4171.03: Physiology of Aquatic Animals.

The form, function, physiological integration, and behaviour of major types of aquatic animals are considered. Emphasis is placed on classes of organisms, using commercially important species as primary examples.
 FORMAT: Lecture 3 hours, lab 3 hours

BIOE 4301.03: Design Project for Biosystems Engineers I.

The objective of the class is to provide students with first hand experience in applying engineering design principles and practices to solve specific problems in the biological world. Students are expected to display a high level of initiative and ingenuity in carrying the project through its various design stages.
 FORMAT: Lecture 1 hour, lab 5 hours
 PREREQUISITE: Senior students only

BIOE 4302.03: Design Project for Biosystems Engineers II.

This is a continuation of BIOE 4301 leading to a final presentation in both oral and written format.
 FORMAT: Lecture 1 hour, lab 5 hours
 PREREQUISITE: BIOE 4301.03

BIOE 4312.03: Microcomputer Interfacing.

This class integrates instrumentation, control and microcomputers to illustrate the formulation and utilization of measurement and control systems. The concept of discrete signals is discussed and the components of a microprocessor based system are presented. Input/output techniques are covered in terms of the interfacing of measurement and control hardware to the microcomputers. Topics covered include analog to digital conversion, digital to analog conversion and digital proportional-integral-derivative control.
 FORMAT: Lecture 3 hours, lab 3 hours
 PREREQUISITE: BIOE: 3312.03

BIOE 4322.03: Aquacultural Engineering.

The general types of aquacultural engineering systems are discussed along with the main species of finfish, molluscs, crustaceans and algae currently cultivated in Canada. Controlling the characteristics of fresh and saline water is examined. Site selection and land impoundments are discussed. The design of marine systems, feeding systems and harvesting systems is developed. A project design is carried out by all students. Field trips are an integral part of the class.
 FORMAT: Lecture 3 hours, lab 3 hours
 PREREQUISITE: ENGI 2300.03, BIOE 3252.03

BIOE 4330.03: Thermal Environmental Control.

The class deals with the design of heating, ventilating, air conditioning and lighting systems for controlled environments such as plant and animal production units and modified atmosphere storages. Topics covered include: animal shelters, greenhouses, horticultural crop storages and rural housing. Methods of energy conservation and recovery are discussed. Completion of an assigned term project is a part of this class.
 FORMAT: Lecture 3 hours, lab 3 hours
 PREREQUISITE: BIOE 3252.03 or equivalent

BIOE 4331.03: Design of Biomachines.

This class extends the design and analysis of machines to components such as belts, gearing, wire ropes, clutches and brakes. Reference is made to appropriate design codes. The Finite Element Methods is introduced for analysis of the machine frame. Design examples are from agricultural, aquacultural, biomedical, fisheries and food engineering fields to demonstrate their special requirements. Detailed design of a machine will be part of the class.
 FORMAT: Lecture 3 hours, lab 2 hours
 PREREQUISITE: MECH 4330.03

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 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
 PREREQUISITE: BIOE 3252.03 or equivalent

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 course 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 1100X/Y.06 and CHEM 1021.03 and CHEM 1022.03, or the equivalents

B. Chemical Engineering Series

CHEE 2404.03: Industrial Chemistry.

This class reviews chemical knowledge as applied to the industrial chemical process industries, with particular emphasis on Canadian applications. An examination of the relationships between kinetics, thermodynamics, unit operations and process design is made.
 FORMAT: Lecture 3 hours, tutorial 1 hour, lab 2 hours

CHEE 2420.03: Fundamentals of Chemical Engineering.

The main objective of this class is to develop the student's ability to perform mass and energy balances on reactive and non-reactive processes. Introductory topics include systems of units and a study of process

variables such as temperature, pressure and flowrate. Also covered are fundamental properties of multiphase systems: phase equilibrium, vapour pressure, phase rule, Raoult's and Henry's Laws, and colligative properties. Emphasis is placed on developing problem solving skills.
FORMAT: Lecture 3 hours, tutorial 2 hours

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: CHEE 2420.03

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: CHEE 2420.03

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
PREREQUISITE: CHEE 2420.03

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: CHEE 2420.03

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
PREREQUISITE: CHEE 2420.03 or departmental approval

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
PREREQUISITE: CHEE 2420.03

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: CHEE 2420.03

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
PREREQUISITE: CHEE 2420.03

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: CHEE 3624.03, CHEE 3522.03, CHEE 3544.03

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
PREREQUISITE: CHEE 2420.03

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
PREREQUISITE: CHEE 2420.03
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

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

PREREQUISITE: CHEE 2420.03

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 3522.03, CHEE 3624.03, CHEE 3544.03, and CHEE 4741.03

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

PREREQUISITE: CHEE 2420.03

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

PREREQUISITE: CHEE 2420.03

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 3000.03: 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, 1022.03

CROSS-LISTING: IDIS 2000.03

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 1000X/Y.06 or equivalent

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 2800.03 or BIOE 3221.03

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: BIOE 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 2300.03, IDIS 2000.03

ENVE 3461.03: Environmental Measurement and Analysis.

The objectives of this class are to cover the principles of measurement with emphasis on collection and analysis of environmental data. A case study format is followed with the students specifying, designing and building an environmental data collection, presentation, and analysis system. The project includes sensor selection; design of signal conditioning; implementation of data acquisition and communications hardware and software; and importation, analysis and presentation of the information of using commercially available software such as spreadsheets.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ECED 2000.03 and ENGM 2032.03

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.

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: BIOE 3252.03 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 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/CIVIL 3310.03, ENVE 3000.03/CIVL3450.03, ENGM 3352.03/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: BIOE 3252.03 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

PREREQUISITE: 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 flavors. 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, BIOC 2200.03

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 2201.03, 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
EXCLUSION: IENG 3443.03

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 or permission of instructor

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.

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 or permission from the instructor

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 or permission from the instructor

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: 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 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: 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 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 2 hours, lab 3 hours

MATL 3601.03: 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

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 4703.03: 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

MATL 4704.03/4804.03: 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

MATL 4714.03: Hydrometallurgy.

Lectures cover the principles of hydrometallurgy including leaching processes, solution purification and metal recovery methods. The laboratory experiments are designed to illustrate the main principles covered in the lecture periods.
FORMAT: Lecture 2 hours, lab 2 hours

MATL 4722.03: 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

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 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 4815.03: Kinetics of Materials Processing.

This class covers the physical, chemical and thermal factors affecting the kinetics of the heterogeneous reactions used in the production of materials by high temperature processes. The principles of physical and mathematical modeling are demonstrated. Problem-solving sessions to illustrate the application of the above concepts to materials processing are given.

FORMAT: Lecture 3 hours, lab 3 hours

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 4823.03: Non-Ferrous Alloys.

A review of special alloy requirements for design of pressure vessels, gas turbines, nuclear applications and airframes is presented. An investigation of mechanics in alloy design, properties of solid solutions, microstructure in alloy design for strength and toughness, and alloys with oxide dispersions and precipitates is included. The design of structural alloys with high temperature corrosion resistance is also covered.

FORMAT: Lecture 2 hours, lab 3 hours

MATL 4824.03: Industrial Metallurgy.

The fundamentals of metalworking in relation to rolling, forging, extrusion and drawing are studied. Casting principles related to pattern design moulding, coremaking, gating and risering are studied. In each field the physical metallurgy principles involved are considered. Laboratory experiments in rolling, casting and powder metallurgy are performed.

FORMAT: Lecture 2 hours, lab 3 hours

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

Software Engineering

I. Introduction

The Bachelor of Software Engineering programme is jointly offered by the Faculty of Computer Science and the Faculty of Engineering.

Software Engineering is about the tools and techniques, theories and practices to make the development, support and evolution of software a viable business.

Software has a role in almost every domain of human endeavor. Software Engineering is not about what the software does - that is the responsibility of the domain - rather software engineering is about how the software should be developed, supported and evolved. This makes Software Engineering quite different from other branches of engineering (e.g. Aeronautical, Petroleum) where the domain of application is central.

While many people with different backgrounds produce software, the study of software engineering concerns how the design, production and support of software can be improved. Moreover, any successful software by definition survives over time, and it is normal for the environment to change during that time, so that well-designed software must meet new expectations, exploit new technology, and satisfy new requirements. Thus for a viable business, good initial design and implementation are not sufficient - better strategies for ongoing maintenance and evolution are also critical.

What does improved and better mean? The practitioner wants to know:

- how to design tractable software that is adaptable to changing business conditions,
- how to improve productivity of software developers thereby reducing costs,
- how to reduce time to market thereby gaining market share while enjoying a revenue stream,
- how to improve quality thereby enhancing reputation and satisfying customers while avoiding rework,
- how to improve product and process predictability thereby facilitating better business decisions, and
- how to design for greater generality, thereby amortizing development costs over a broader customer base while reducing the risks of future requirement changes.

Software Engineering not only has its internal technical basis; it is also fundamentally multidisciplinary. The obvious explanation for this is that any specific piece of software is intended for application in some particular domain. Not only is domain knowledge essential for the software's functionality and architecture, but also the culture of that domain affects the availability of components, the acceptability of user interfaces, the sophistication of users, and the kind of changes that must be accommodated over time. The less widely recognized explanation for software engineering being multidisciplinary is the role that other disciplines play in the process of building and supporting software. Computer science and computer engineering obviously contribute technologies that the software engineer must know. Effective communication between people in written, oral, and visual form is key not just for precision of detail, but to convey broad operational concepts. Software is built by people, and to understand how to help them build it efficiently and with minimal defects, it is important to understand cognitive issues in the psychology of programmers.

Most large software artifacts are developed and supported by large teams that must be sustained over extended periods of time, which can be more effective if the sociology of such groups is taken into account. Testing, sizing, and tuning software, as well as adapting software to conditions in

the field, are fundamentally empirical activities and benefit from statistical knowledge of design and analysis of experiments. The business aspects of the software industry (such as cost estimation) are critical to viability, and management of software products and projects is obviously fundamental - these are traditional management science issues, although in the software context, there are some distinctive wrinkles. Process, tools, and the work environment are the core issues of industrial engineering - however they are also central issues in software engineering. The list goes on and on.

II. Co-operative Programme

Students are encouraged to participate in the work/study co-operative programme. This allows students to work for three terms under the guidance of practicing software engineers, thereby acquiring skills that are complementary to their academic training. Such professional training programs have been well received and supported by industry and government agencies.

A. Work Terms

The university solicits appropriate positions in industry and government. Students compete for positions of their preference by submitting resumes and attending interviews. The employer's preferences and the student's preferences are matched wherever possible. Students should be prepared to work anywhere in Canada.

The University endeavours, but makes no commitment to find a position for every student. A student is at liberty to arrange his or her own employment, but in order to qualify as part of the Co-op work experience, the position must be approved by the Program Committee.

Each work term will be evaluated and academic credit will be granted on the condition that satisfactory evaluations of the various components of the work term are achieved.

Students who have successfully completed the requirements for the degree of Bachelor of Software Engineering and who, in addition, have accumulated three terms of approved work experience, will receive the "Co-op Programme" designation on their degree.

B. Co-op Schedule

The following table shows the layout of study and Co-op (work) terms for the Bachelor of Software Engineering Programme:

Yr/Term	Fall	Winter	Summer
Year 1	AT1	AT2	FREE
Year 2	AT3	AT4	FREE
Year 3	AT5	AT6	WT1
Year 4	WT2	AT7	WT3
Year 5	AT8		

AT = Academic study term

WT = Co-op Workterm

C. Software Engineering Programme

As can be seen from the syllabus of classes below, the Software Engineering programme does not follow the common Year 1 programme outlined in the calendar for the other engineering programmes.

Year 1

	Writing class X/Y
CSCI 1100.03	Programming 1
CSCI 1101.03	Programming 2
ENGI 1100.03	Eng Design & Graphics
IENG 2005.03	Engineering Economics
MATH 1000.03	Calculus 1
MATH 1010.03	Calculus 2
PHYC 1100 X/Y	Intro to Physics
PSYO 1000 X/Y	Intro to Psychology

Year 2

CSCI 2110.03	Data Structures
CSCI 2121.03	Intro Computer Org
CSCI 2132.03	Software Development

CSCI 3130.03	Intro Software Eng
ECED 2000.03	Electric Circuits
ECED 2200.03	Digital Circuits
ECED 2400.03	System Analysis
ENGM 2022.03	Eng. Math. For Software Eng
ENGM 2032.03	Applied Probability & Statistics
ENGM 2041.03	Linear Algebra
MATH 2112.03	Discrete Structures
PSYO 2130.03	Intro to Cognitive Psych

Year 3

CSCI 3110.03	Algorithm Analysis
CSCI 3120.03	Operating Systems
CSCI 4163.03	Human Computer Interaction
CPST 2000.03	Communication
CPST 3020.03	Engineering in Society 1
ECED 3204.03	Microprocessors
ECED 3402.03	Real Time Systems
IENG 3313.03	Analysis and Design of Work
IENG 3443.03	Quality Control & Reliability
IENG 4529.03	Industrial & Organizational Psych
IENG 4547.03	Company Operations & Mgmt
IENG 4558.03	Project Mgmt & Control

Year 4

CSCI 4114.03	Formal Aspects of Software Eng
CSCI 4134.03	Software Architecture
CPST 3030.03	Engineering in Society 2
ECED 4404.03	Computer Nets and Comm
IENG 4574.03	Decision and Risk Analysis
	Software Engineering Project
CSCI 4136.03	Software Testing and Quality Assurance
	Software Processes and Tools
CSCI 4137.03	Software Deployment, Maintenance, and Evolution
CSCI 4138.03	Empirical Performance Modeling

Faculty of Health Professions

Dean

Webster, William G., PhD

Associate Dean (Research and Academic)

Turnbull, G.I., MSCP, DipTP, BPT (Man), MA (Dal), PhD (Rhodes)

Assistant Dean and Academic & Integrity Officer

Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dal)

Assistant Dean (Academic)

McGinn, F., BRec (Dal), MA (Western), PhD (Southern Illinois)

Interprofessional Experience Coordinator

Godden-Webster, A., MSc (Appl.)

Faculty Administrator

Cole, L.J.

Human Resources Consultant

Smith-Gillis, C.E.

Office Manager

Weir, B.L.

Policy & Research Administrator

Officer, S., BEd, MA

I. Introduction

The Faculty of Health Professions consists of the School of Health and Human Performance, School of Health Services 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, including the Diploma in Disability Management, 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 www.dal.ca/fhp:

- Admissions and Readmissions, Appeals Policy
- 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 action is required to increase the number of graduates from under-represented Indigenous minority groups of the Maritime and Atlantic Provinces, particularly Blacks and First Nations people. Therefore, the Faculty, through its constituent units, will develop and implement affirmative action policies that are approved by the Human Rights Commission. Further, the Faculty will work to identify and develop recruitment and support systems that will ensure that members of these under-represented groups apply and graduate.

Policy Statement on Interprofessional Learning

Students in the Faculties of Dentistry, Health Professions and Medicine participate in interprofessional modules to discuss contemporary health and health care issues. The interprofessional modules are part of the curricula of individual programs. Participation is mandatory and the IPL module supersedes all other regularly scheduled classes. The objectives of these modules are to:

- Learn and develop skills and strategies for working effectively to address complex problems and issues with other professionals, colleagues and clients/consumers/ patients.

Develop an awareness of, and respect for, the expertise, roles and values of other professionals, colleagues and clients/consumers/patients.

Topics & Dates for Interprofessional Learning Modules 2008-2009

Palliative Care Module (Senior level)	Wed. Sept. 10, 2008
Working in Interprofessional Teams (Entry level)	Wed. Oct. 15, 2008
Disability (Intermediate level)	Thurs. Nov. 13, 2008
Diversity (Entry level)	Thurs. Jan 22, 2009
From Family Violence to Health (Intermediate level)	Wed. Mar 4, 2009

Please note: Modules are normally planned to run between 1:00-5:00 p.m or 12:00-6:00 p.m in 2 or 3 separate 2- hour sessions depending on student numbers. Group/room/building/ time pre-module reading assignments will be posted on the website under the above module information for students prior to each module. An information desk will be available on site. Check Website for location www.dal.ca/ipl.

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 course 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 course, 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.

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

Health Services Administration

- Preceptor

Human Communication Disorders

- Clinical Educator

Health and Human Performance

- Associate Director, Undergraduate Studies

QEII - Dalhousie School of Health Sciences

- Clinical Education Coordinator

Disability Management

Location: Room 100, 6226 University Ave.
Halifax, NS B3H 1X1
Telephone: (902) 494-2950
Fax: (902) 494-3025
Email: disability.management@dal.ca
Website: www.dal.ca/ddm

Dean

Webster, William G., PhD

Academic Director

McGinn, F., BRec MA, PhD

Program Coordinator

Murphy, J., BComm

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: 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 "Guide to Responsible Computing" 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 2 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 students registered in the DDM program, the first step in a formal appeal involves the matter being sent to the DDM Academic Director who will present the appeal to an appeals committee (Committee on Studies) or the DDM program Advisory Board. Failure to resolve the matter at this level will lead to a formal appeal with the Faculty of Health Professions Committee on Studies (see Academic Regulations).

Note that both the Dalhousie University Calendar and the Faculty of Health Professions policies appear on the Dalhousie University website: <http://www.registrar.dal.ca/calendar/ugrad/>.

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.

Provides a primary introduction to the full program. It 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
RESTRICTION: Restricted to Disability Management students

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

RESTRICTION: Restricted to Disability Management Students

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

RESTRICTION: Restricted to Disability Management students

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 which will be studied in-depth towards the end of the program 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

RESTRICTION: Restricted to Disability Management students

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 Sciences

Location: School of Health Sciences
6th Floor
Bethune Building
VG Site
1278 Tower Road
Halifax, Nova Scotia
B3H 2Y9

Telephone: (902) 473-5510
Fax: (902) 473-5115
Email: health.sciences@dal.ca
Website: www.dal.ca/shs

Dean

Webster, William G., PhD

Director

Hubert, J. BA, MA, PhD(c)

Administrative Staff

Burgess, L., Administrator
Mahalik, A., Clinical Coordinator

Assistant Professors

Gilbert, R., BSc, MSc, PhD (Dal)
Hubert, J., BA, MA, PhD(c)

Adjunct Lecturers

Chauder, S.
Fader, K.
Gillis, C.
Gunn, C.
Hirtle, C.
MacDonald, B.
Martell, R.
McLardie, P.
Munro, P.
Murphy, C.
Pronk, M.
Scott, T.
Sharp, R.
Smith, J.
Spurr, K.

Sessional Lecturers

Butler, C.
Chapman, J.
Hayden, M.
Morrison, D.
Prole, C.
Surette, J.

I. Bachelor of Health Science Degree Program

The BHSc program is a four-year degree program that provides an integrated course 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 3rd year Respiratory Therapy students in required clinical rotations, classes for this group only will begin on August 27, 2008.

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 www.dal.ca/shs (Clinical Education))

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, polio, 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 \$90.00, 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 BLS-HCP current certification prior to entry into the program. BLS-HCP must be recertified annually.

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.

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 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 colour 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 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 4 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 coursework is completed. Students should contact the School for full details.

Diagnostic Cytology

Year 1

- HSCE 1020.03
- HSCE 1030.03
- BIOC 1420.03
- CHEM 1410.03
- DCYT 1000.03
- DCYT 1010.03
- HSCE1000.03
- BIOL 1020.03
- STAT 1060.03
- Elective (3 credit hours)
- DCYT 1500.03

Year 2

- BIOL 2020.03
- DCYT 2000X/Y.06
- DCYT 2010.03
- HSCE 2000.03
- MICI 1100.03
- Electives (3 credit hours)
- HSCE 3010.03
- HESA 4000.03
- HSCE 3000.03
- DCYT 2500.03

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

Year 4

- Required:
- HSCE 4030.03

Choose 9 credit hours:

- HSCE 4200.03
- HLTH 4040.03
- HSCE 4220.03
- Approved elective (3 credit hours)

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 3335.03
- HPRO 3345.03
- HPRO 3397.03
- HPRO 2361.03/LEIS 2361.03
- Approved elective (3 credit hours)

Diagnostic Medical Ultrasound*Year 1*

- DMUT 1000.03
- DMUT 1010.03
- DMUT 1020.03
- HAHP 2000.03
- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- PHYC 1300X/Y.06
- DMUT 1500.03

Year 2

- DMUT 2000.03
- DMUT 2010.03
- DMUT 2020.03
- DMUT 2030.03
- HSCE 2000.03
- HSCE 2010.03
- HSCE 2040.03
- STAT 1060.03
- Electives (3 credit hours)
- HSCE 3000.03
- DMUT 2500.03

Year 3

- DMUT 3000.03
- DMUT 3010.03
- DMUT 3200.03
- DMUT 3210.03
- DMUT 3220.03
- DMUT 3230.03
- DMUT 3240.03
- HSCE 3010.03
- HESA 4000.03
- Elective (3 credit hours)
- DMUT 3500.03

Year 4

Required:

- HSCE 4030.03

Choose 9 Credit hours:

- HSCE 4200.03
- HLTH 4040.03
- HSCE 4220.03
- Approved elective (3 credit hours)

Choose 18 credit hours:

- DMUT 4100.06
- DMUT 4000.12
- 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
- Approved elective (3 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
- NUMT 1000.03
- NUMT 1020.03
- PHYC 1300X/Y.06
- NUMT 1500.03

Year 2

- CHEM 1410.03
- HSCE 2000.03
- STAT 1060.03
- HSCE 2010.03
- NUMT 1010.03
- NUMT 2000.03
- NUMT 2010.03
- NUMT 2020.03
- HSCE 2040.03
- HSCE 3010.03
- NUMT 2500.03

Year 3

- HSCE 3000.03
- NUMT 3000.03
- NUMT 3020.03
- NUMT 3200.03
- NUMT 3220.03
- NUMT 3222.03
- NUMT 3230.03
- HESA 4000.03
- HSCE 4030.03
- Elective (3 credit hours)
- NUMT 3500.03

Year 4

Required:

- NUMT 3210.03
- NUMT 3240.03
- NUMT 4210.03
- NUMT 4220.03

Choose 9 credit hours:

- HSCE 4200.03
- HLTH 4040.03
- HSCE 4220.03
- Approved elective (3 credit hours)

Choose 9 credit hours:

- NUMT 4100.06
- 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
- Approved elective (3 credit hours)

Radiological Technology

Year 1

- HSCE 1000.03
- HSCE 1010.03
- HSCE 1020.03
- HSCE 1030.03
- PHYC 1300X/Y.06
- RADT 1000.03
- RADT 1010.03
- RADT 1020.03
- Elective (3 credit hours)
- RADT 1500.03

Year 2

- HSCE 2000.03
- HSCE 2010.03
- HSCE 2020.03
- HSCE 2030.03
- HSCE 2040.03
- RADT 2000.03
- RADT 2020.03
- RADT 2010.03
- STAT 1060.03
- Elective (3 credit hours)
- RADT 2500.03

Year 3

- HSCE 3000.03
- HSCE 3010.03
- RADT 3000.03
- RADT 3010.03
- RADT 3210.03
- RADT 3220.03
- RADT 3240.06
- HESA 4000.03
- HSCE 4030.03
- RADT 3500.03

Year 4

Required:

- RADT 4200.03 (formerly RADT 3200.03)
- RADT 4220.03

Choose 9 credit hours:

- HSCE 4200.03
- HLTH 4040.03
- HSCE 4220.03
- Approved elective (3 credit hours)

Choose 15 credit hours:

- RADT 4100.06
- RADT 4000.12
- HESA 4001.03
- HESA 4003.03
- HESA 4004.03
- HESA 4005.05
- HESA 4400.03
- HPRO 3335.03
- HPRO 3345.03
- HPRO 3397.03
- HPRO 2361.03/LEIS 2361.03
- Approved elective (3 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
- RSPT 1000.03
- RSPT 1020.03
- RSPT 1030.03
- STAT 1060.03
- RSPT 1500.03

Year 2

- HSCE 2000.03
- RSPT 2070.03
- RSPT 2000.03
- RSPT 2020.03
- RSPT 2030.03
- RSPT 2063.03
- RSPT 2065.03
- RSPT 2050.03
- HSCE 3010.03
- Elective
- RSPT 2500.03

Year 3

- RSPT 3000X/Y.06
- RSPT 3010X/Y.06
- RSPT 3020X/Y.06
- RSPT 3250X/Y.06
- RSPT 3230X/Y.06
- RSPT 3500.03

Note: Fall term start date for RSPT year 3 is August 27, 2008.

Year 4

Required:

- HSCE 4030.03
- HESA 4000.03

Choose 9 credit hours:

- HSCE 4200.03
- HLTH 4040.03
- HSCE 4220.03
- Approved elective (3 credit hours)

Choose 15 credit hours:

- RSPT 4100.06
- RSPT 4000.12
- 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
- Approved elective (3 credit hours)

Note: RSPT 4010, 4020, 4030 are considered “approved electives.”

BHSc Degree Completion Program

This program requires 5 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 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 courses 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 2 years of full time university study (60 credit hours). Courses may be completed in the sequence best suited for the student; however, attention must be paid to the course 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 courses are delivered via BLS. 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 Courses (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 www.dal.ca/shs.

Anaesthesia Assistant Certificate

Fourth year and post-diploma students in Respiratory Therapy may now complete a 21 credit hour Anaesthesia Assistant program leading to an Anaesthesia Assistant Certificate. Working Respiratory Therapists who meet post-diploma entrance requirements may also complete the certificate as a stand-alone credential. The 21 credit hour certificate requires successful completion of:

- RSPT 4010.03: Anaesthesia and Related Equipment
- RSPT 4020.03: Anaesthesia Medication Delivery
- RSPT 4030.03: Clinical Anaesthesia
- RSPT 4000.12: Specialty Practice

Students enrolled in this program must meet School Standards regarding BLS-HCP certification and Standard First Aid. They must also be certified in ACLS.

Contact the School for further details.

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 (5) credits per year (30 credit hours) during the regular academic session (September - April). In addition, an 8 - 10 week clinical practicum worth one half-credit (3 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)	3 credit hours

Normally, only a full-time course of studies (30 credit hours during the regular academic year and a 3 credit-hour practicum in the May-June time period) can be taken in the first three years of the 4-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 courses 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 course selections and course 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 4 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 Courses no additional courses 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 course.

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 course with a course number in the School of Health Sciences (HSCE, DCYT, DMUT, MDLT, NUMT, RADT, RSPT) in order for that course:

- 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 courses 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 course 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 Courses

Clinical education and speciality practice courses are graded on a letter grade basis.

Students who have been removed from any course due to unsafe or unsatisfactory clinical performance will receive a failing (F) grade.

Supplemental Exams

In courses with a class number in the School of Health Sciences, supplemental privileges may be granted (refer to course outlines) only at the discretion of the course professor to a student with a final grade of FM (Regulation 16.5, Dalhousie Undergraduate Calendar). 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 course.

The course professor considers a wide range of factors to determine if a student may be eligible. These factors include (but are not limited to) whether the student has:

- regularly attended class
- participated in class/lab
- demonstrated effort in understanding course content
- sought additional assistance from faculty when appropriate
- demonstrated accountability regarding meeting deadlines and completing course requirements
- demonstrated professional conduct in the lab setting (if applicable) and the classroom
- demonstrated a basic understanding of principles relevant to clinical practice
- participated in respectful interactions with faculty, classmates, and preceptors
- adhered to University, Faculty, School, and course policies

Rationale: There is an expectation that students conduct themselves in an accountable and responsible manner, and demonstrate professional behavior. This is directly related to the behavior appropriate for a health professional.

No more than two (2) supplementals for courses with course numbers in the School of Health Sciences will be allowed in one year. Only one supplemental is allowed per course.

Voluntary Withdrawal

Students who voluntarily withdraw from the School of Health Sciences, having satisfactorily completed courses 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 1 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 courses 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 courses, and the ten-year rule for all other courses.
 8. No academic credit will be granted towards BHSc course 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 courses 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.

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 courses and clinical practica. Clinical education components enable students to integrate theory with practice, master clinical competencies, develop critical reasoning skills and demonstrate professional behaviour 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 courses are required courses 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 courses. In addition, each of the clinical experiences is a prerequisite for further progress in the program. Course outlines provide specific information about criteria for successful completion and opportunities for remediation.

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 behaviours, 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 Courses

These courses 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 behaviour are readily applied at the expected level of performance. Clinical Education Courses are taken in Year 3 at all programs. In addition, Clinical Education Courses are a required part of the Year 4 curriculum for students in Nuclear Medicine Technology and Radiological Technology.

IX. 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 2000X/Y.06: Gynecological Cytopathology II.

This course provides a high level of study of gynecological cytopathology. The purpose of the course is to further develop the diagnostic skills required to integrate, interpret and evaluate the cellular morphology of normal and benign processes of the female reproductive tract. Students will be introduced to the cellular morphology, nomenclature and diagnostic application of abnormal and malignant disease processes of the female reproductive tract. Emphasis will be placed on the critical evaluation of pathologic and cytologic characteristics. The student will be 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 will further allow students to maintain their professional practice in the role of respect towards the patient.

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 3 hours, labs 3 hours.

PREREQUISITE: DCYT 1500.03

RESTRICTION: Restricted to the Bachelor of Health Science students 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 2 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, BIOL 3024.03, BIOL 3430.03

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 3210.03

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 3230.03

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 class 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 health care 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 Obstetrics and Gynecology I.

This course focuses on the normal structure, development, and pathologies of the female genitourinary system in non-gravid and gravid states. Sonographic scanning techniques, presentation and documentation of normal (first and second trimester) obstetrical; abnormal (first trimester) obstetrical and normal and abnormal gynecological ultrasound examinations are covered.

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, 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 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

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

DMUT 3000.03: Sonography in Obstetrics and Gynecology 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 lymphatic system, spleen, 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 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 health care 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 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 3000.03

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Diagnostic Medical Ultrasound

DMUT 3230.03: Superficial Structure Imaging.

This clinical course allows the student to integrate and consolidate knowledge, concepts and skills developed and maintained from previous classes. 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 health care 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 class further expands the student's ability to analyze and process data. Integrating knowledge, concepts and skills developed in previous classes, 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

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 health care 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 health care 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 or by permission of instructor

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, PBL tutorials 2 hours

EXCLUSION: ANAT 1010.03, ANAT 1020.03, PHYL 1000.06, PHYL 1010.06

RESTRICTION: Restricted to Bachelor of Health Science students, or by permission of the instructor

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, PBL tutorials 2 hours

PREREQUISITE: HSCE 1020.03

EXCLUSION: ANAT 1010.03, ANAT 1020.03, PHYL 1000.06, PHYL 1010.06

RESTRICTION: Restricted to Bachelor of Health Science students or by permission of instructor

HSCE 2000.03: Health Care Ethics.

This is an introductory course in health care ethics. Students will be provided with an overview of moral theory and principles; a chance to

reflect upon and discuss contemporary ethical issues in health care; 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

PREREQUISITE: HSCE 1000.03

RESTRICTION: Restricted to Bachelor of Health Science students; other health professions students with permission of instructor

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. In-person tutorial sessions are scheduled throughout the term.

FORMAT: On-line delivery via BLS, five in-person 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

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: Restricted to Bachelor of Health Sciences students; students from other health related disciplines with the permission of instructor

HSCE 3000.03: Culture, Diversity and Health.

Community development, community advocacy, social justice and primary health care 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: Restricted to Bachelor of Health Science students; other Health Professions students with permission of the instructor

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: Lecture 3 hours

PREREQUISITE: HSCE 1000.03

EXCLUSION: HAHP 3100.03

RESTRICTION: Restricted to Bachelor of Health Science students; other Health Profession students with permission of instructor

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 health care system, and will enable students to assess and strengthen their own leadership style. An understanding of current trends and issues in health care 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: Restricted to Bachelor of Health Science students; other health professions students with permission of instructor

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 advisor for approval a minimum of three months prior to the beginning of the term in which they hope to enrol in the course.

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 4th year and Post Diploma students in the Bachelor of Health Science program or by permission of instructor

HSCE 4220.03: Critical Research Appraisal and Practices.

This course will provide an introduction to both contemporary clinical research practices and those strategies used in the critical appraisal of the health research literature. Included within the course will be a discussion of issues pertaining to research conduct and ethics. This course will provide students and practicing professionals with the skill necessary for enabling the career-long process of identifying and evaluating research papers and implementing novel research findings into their practice.

FORMAT: On line delivery via BLS

PREREQUISITE: HAHP 3100 or HSCE 3010 or equivalent

RESTRICTION: Restricted to Bachelor of Health Sciences students or by permission of instructor

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 BHS 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 student with an introduction to Nuclear Medicine technology. The course is divided into six sections. Each component builds on the concepts acquired in the previous section. Concepts taught will include radioactivity and its impact on nuclear medicine, detectors used in measuring radiation, an introduction to scintillation detectors, the gamma camera as well as radiopharmaceuticals and basic imaging techniques.

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 will provide students with the knowledge of the principles and operation of a gamma camera including acquisition parameters, image manipulation and quantitation. The theory and practice of Single Photon Emission Computed Tomography (SPECT) will be explored in detail. Course content also will include computed tomography (CT) and SPECT/CT instrumentation..

FORMAT: Lecture 3 hours lecture, 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 3 hours

PREREQUISITE: NUMT 1000.03, HSCE 1000.03, HSCE 2020.03

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 Nuclear Medicine and the Diagnostic Imaging Department. Students will develop knowledge of departmental procedures and demonstrate health professional practice skills when interacting with patients and health care professionals. Emphasis will be placed on development of clinical skills in skeletal, genitourinary and tumor/inflammatory systems. Students will also have the opportunity to perform images, evaluation, patient management/care, quality control and instrumentation skills.

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 lecture, 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 recognition 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 recognition 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 hour

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. Emphasis will be placed on skill development and practice in the areas of central nervous, gastrointestinal and respiratory imaging and non-imaging 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, 1010.03

RESTRICTION: RESTRICTIONS: Restricted to Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3000.03: Nuclear Medicine Instrumentation II.

This course will enable the student to ensure the quality and clinical value of the results of diagnostic procedures. The principles and concepts of radiation detection, measurement and safety covered in previous nuclear medicine related classes are incorporated into quality control concepts.

FORMAT: Lecture 3 hours, lab 2 hours

PREREQUISITE: NUMT 2500.03

RESTRICTION: 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 class tutorials

PREREQUISITE: or CO-REQUISITE: NUMT 3000.03, NUMT 3220.03

RESTRICTION: Restricted to Bachelor of Health Science students 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, red cell mass and plasma volume, schillings testing, ¹⁴C 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 imaging procedures with emphasis on Genitourinary, Oncology, and Skeletal procedures. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of patients in general imaging procedures 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

RESTRICTION: Bachelor of Health Science students in the professional stream of Nuclear Medicine Technology

NUMT 3222.3: General Imaging II.

Students will apply theory to clinical practice by performing a variety of imaging procedures with emphasis on: Central Nervous System, Endocrinology, Gastrointestinal and Respiratory procedures. Application and evaluation of nuclear medicine procedures relevant to the diagnosis and management of patients in general imaging procedures 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 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.

This clinical practicum will allow the student to continue to develop skills and to complete the competencies required of a Nuclear Medicine Technologist. Integration and application of concepts, theories and skills essential for Nuclear Medicine practice will be emphasized.

FORMAT: Full-time rotations in clinical settings

PREREQUISITE: NUMT 3200.03, 3222.03 3230.03

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 be assigned to a variety of imaging areas. They 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 3500.03

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 health care 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.

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 health care 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 1020.03, 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. The students' knowledge and clinical experiences gained through RADT 1000, RADT 1020 and RADT 1500 are incorporated into the curriculum. Imaging 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 3 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). The course expands upon the information presented in RADT 1000, RADT 1020, RADT 2000, and the skills obtained in RADT 1500. 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 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 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 3 hours

PREREQUISITE: HSCE 2010.03, 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. 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 (formerly RADT 3200).

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.

The 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. 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 diagnostic imaging team.

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 1.5 hours

PREREQUISITE: RSPT 1000.03, HSCE 1000.03, HSCE 1020.03

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

RSPT 1500.03: Clinical Practicum in Respiratory Therapy.

The clinical practicum introduces students to the clinical patient environment. Students will have the opportunity to apply theory to practice and to skills at the defined competency level.

FORMAT: 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

RESTRICTION: Restricted to Bachelor of Health Science students in the professional stream of Respiratory Therapy

RSPT 2000.03: Principles of Mechanical Ventilation.

Students will be introduced to the background knowledge necessary for understanding the terminology associated with the physical principles and physiologic concepts governing the delivery of mechanical ventilation. Equipment operation, function and troubleshooting will be investigated in the lab and clinical setting.

FORMAT: Lecture 3 hours, lab 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 efficient delivery of physician prescribed therapy. Clinical skills testing is required.

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: RSPT 2000.03, 2030.03, 2063.03

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 in preparation for subsequent RSPT specific courses and clinical practicums. 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, BIOC 1420.03

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, health care 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: Combined lecture and lab 6 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 the pharmacology of drugs, 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 the pharmacology of drugs, will be examined.

FORMAT: Lecture 3 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, PALS and NRC.

FORMAT: Lecture 3 hours, one weekend workshop in PALS

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 in Respiratory Therapy.

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, 2065.06, 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 six week seminar/lecture series and the second being a two week 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 will be expected to travel outside the metro area at their own expense.

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 six-week seminar/lecture series 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.

PREREQUISITE: RSPT 2500.03

RESTRICTION: Restricted to Bachelor of Health Science students enrolled in the professional stream Respiratory Therapy

RSPT 3020X/Y.06: Pulmonary Function Testing and Interpretation.

This course will consist of two modules; the first being a six-week seminar/lab series and the second being a three week full-time clinical application program in the adult and pediatric pulmonary function laboratories. Students will integrate and apply theories and skills in a specialized diagnostic environment. Students will be precepted and evaluated by certified Cardio-Pulmonary 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.

PREREQUISITE: RSPT 2500.03

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 six week seminar/lecture series 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 will be expected to travel outside the Metro area at their own expense.

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.

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 in patient populations. Clinical experiences in this course will occur during twelve hour day and night shifts, including weekends.

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 and Related Equipment.

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

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 both the patient and the assistance required by the anaesthetist during different aspects of the anaesthetic process and with special types of anaesthesia.

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

Health Services Administration

School of Health Services Administration

Location 5599 Fenwick Street
Halifax, NS B3H 1R2

Telephone: (902) 494-7097

Fax: (902) 494-6849

Email: Health.Services.Administration@Dal.Ca

Website: <http://www.dal.ca/shsa>

Dean

Webster, William, G., PhD

Director

Byrne, J., BA (St. FX), MA, PhD (Kansas), MHSA (Dal)

Professor Emeritus

Nestman, L.J., BComm (Sask), CA, MHSA (Alta)

Professors

Byrne, J., BA (St. FX), MA, PhD (Kansas), MHSA (Dal)

Grunfeld, E.BA, BSc, MSc, MD, DAcu, DPhil, major appointment in Faculty of Medicine.

Johnston, G., BSc(Hons) (McGill), MHSA (Alta), PhD (Western)

Rathwell, T., BA (Hons) (York), MA, PhD (Dunelm)

Sketris, I., BSc(Pharm) (Toronto), PharmD (Minn), MPA(HSA) (Dal), major appointment in College of Pharmacy

Associate Professors

Persaud, D., MSc (Queen's), MSA (Cntrl Mich), PhD (Toronto)

MacKinnon, N., PhD, RPh, major appointment in College of Pharmacy

Assistant Professors

Kirk, S., BSc, PhD (Leeds)

Luu, S., BS (Taiwan), MPH (Emory), PhD (USA)

Maddalena, V., BN, MHSA, PhD (Dal)

Simms, C., BA (SMU), MPA (Dal), MHSc (Johns Hopkins), DPhil (Sussex)

Lecturers

Abrams, T. MS (Admin), MSc, EMT-D

Cochrane, N. BA, MSW, RSW

Girouard, M., BN (Dal), MSc

Jreige, S., BSc (Hons) (SMU), MHSA (Dal)

Karim, S., BSc (UBC), BSc (Kines), MHSA, MBA (Dal)

Williams, A., BA General Studies (SFU), MHSA (Dal)

The School of Health Services 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 health care at the managerial level. It meets the needs of those currently employed in the health care 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 health care 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 product called BLS. BLS is a distance education computer product. It provides a learning environment where students direct their learning. BLS consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

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 Services Administration, Dalhousie University, 5599 Fenwick Street, Halifax, Nova Scotia, B3H 1R2, (902) 494-7097. Application forms are available from the Office of the Registrar, Dalhousie University or may be downloaded from the Registrar's Office website at: www.registrar.dal.ca

B. Curriculum

The one-year program features both an academic and results-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 4001.03: Management Roles and Competencies
- HESA 4002.03: Health Human Resource Management
- HESA 4004.03: Health Care Planning
- HLTH 4040.03: Health Law for Non-Lawyers

Winter term

- HESA 4003.03: Quality Management
- 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 Services Administration offers an undergraduate diploma program in Emergency Health Services Management. The program meets the need for an educational program 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 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 EHS professionals by EHS professionals drawing on the experience of EHS practitioners, educators, managers and consultants across Canada and in the United States. This program is geared towards developing essential management skills.

The program is conducted through the Internet and Web-based conferencing with a product called BLS. BLS is a distance education computer product. It provides a learning environment where students direct their learning. BLS consists of a suite of tools which provide mechanisms for interactive exercises, such as group discussions, presentations, and information sharing.

A. Application Procedure

Applicants must meet the university's undergraduate admission requirements to be considered for admission into the program. In addition, applicants are required to have worked or volunteered at least 3 years within the Emergency Health Services industry. 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 Services Management program may be obtained from: School of Health Services Administration, Dalhousie University, 5599 Fenwick Street, HALIFAX, NS, B3H 1R2, (902) 494-7097. Application forms are available from the Office of the Registrar, Dalhousie University, or may be downloaded from the Registrar's Office website at: www.registrar.dal.ca. 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
- HLTH 4040.03: Health Law for Non-Lawyers

Winter term

- HESA 4005.03: Health Care Financial Management
- HESA 4020.03: Quality Improvement in EHS
- 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

III. Class Descriptions

HESA 4000.03: Canadian Health Care Delivery System.

The class is designed to provide an overview of health care in Canada, and more specifically in Nova Scotia, where the current health reform process will be the focus. This class is specifically aimed at supervisors, middle management, and administration. The history, legislation, financing and payment systems, health professionals, health promotion and existing trends in health care (e.g. Regionalization, consumerism, primary health care) will be reviewed from a provincial perspective. The goal of this class is to provide the student with a snapshot view of the existing health care system, its past development, and future direction.

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 health care 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 management. Class content will include the traditional models of quality assurance, risk management and utilization management as they are currently practiced in Canadian health care facilities. The concept of Total Quality Management will be discussed to demonstrate how it compares/contrasts with the more traditional models. Approved with Canadian Studies.

PREREQUISITE: HESA 4000.03
CROSS-LISTING: HESA 4020.03

HESA 4004.03: Health Care 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: Health Care 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 health care 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 health care 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 demonstrates that it is possible to "do more with less". However, that possibility requires sensible design tempered by the political realities of the service's area. It also requires the use of CQ1 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. Then the course will consider the legal implementations of different designs or the lack of design. By this stage the political and legal mandate is specified. In the second half of the course the various system components will be presented. Finally, the course will consider future trends and explore the likely impact of these trends on system design. 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 and appreciate 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 in the 5 to 10 year future.

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 Health Care 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, health care; investment appraisal; health care systems and markets; health insurance schemes; rationing health care services; human resource planning; health technology assessment; and, outcome measurement and evaluation. The class evaluation will consist of two rapid economic appraisals, a final take home examination and one major term project.

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 health care context. The first part of the course covers an introduction to the Canadian legal system, the Canadian health care 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 health care services and delivery.

FORMAT: Fall term BLS

RESTRICTION: Health Profession students only

NURS 3310.03: Health Informatics.

Please see class description in the School of Nursing section of the calendar.

Health and Human Performance

School of Health and Human Performance

Location: 6230 South Street
Halifax, NS B3H 3J5

Telephone: (902) 494-2152

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Website: www.hahp.healthprofessions.dal.ca

Dean

Webster, W.G., PhD

Director

Livingston, Lori A., BA-BPHE, MSc (Queen's), PhD (Calgary)

Professor Emeritus

Belzer Jr., E.G., BS (West Chester State Coll), MS (Maryland), PhD (Illinois)

Professors

Campagna, P.D., BPHE (Windsor), BEd (Queen's), MEd (SUNY), PhD (Alberta)

Jackson, L.A., BA, MA, PhD (Toronto)

Kirby, R.L., MD (Dal), FRCP (C), major appointment in the Department of Medicine

Lyons, R.F., BA (Dal), MEd (Xavier), PhD (Oregon)

Maloney, T.L., BPE, BEd (Alberta), MA (Western), PhD (Alberta), Associate Vice-President (Academic)

Singleton, J.F., BA (Waterloo), MS (Penn State), PhD (Maryland)

Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dal)

Associate Professors

Beagan, B., BA, MA (Soc) (DAL), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy.

Blanchard, C., BA Honours (UPEI), MSc, PhD (Alberta). Major appointment in the Department of Medicine.

Gahagan, J., BA (Carleton), BA Honours (Carleton), MA (Univ of Windsor), PhD (Wayne State Univ)

Hutchinson, S.L., BA (Victoria), MA (Dal), PhD (Georgia)

Ipson, N.M., BA, MS, PhD (Brigham Young)

Karabanow, J., BA (Hons), MA (McGill), PhD (U of T). Major appointment in the School of Social Work

Kozey, J.W., BSc, MSc (Waterloo), PhD (TUNS)

Livingston, L.A., BA-BPHE, MSc (Queen's), PhD (Calgary)

MacGregor, L.A., BPE (Dal), MS (Illinois)

McCabe, J.F., BPE, BA (UNB), MSc, EdD (Tenn)

McGinn, F., BRec (DAL), MA (Western Michigan), PhD (Southern Illinois Univ. at Carbondale)

Putnam, C.A., BPE (Man), MS (Wash), PhD (Iowa)

Rehman, L.A., BHK, MA (UBC), PhD (Waterloo)

Robinson, L.M., BSc Honours 1st. class (UVIC), MA, PhD (Simon Fraser)

Savoy, C..A., BPE (UNB), EdM (Boston), PhD (Tenn)

Tirone, S.C., BA (Waterloo), MA (Dal), PhD (Waterloo)

Westwood, D.A., BSc, MA, PhD (Waterloo)

Assistant Professors

Barnes, L.J., BPE, MSc (Dal)

Beagan, B., BA, MA (Soc) (Dal), PhD (Soc) (UBC). Major appointment in the School of Occupational Therapy

Harman, K., BSc (Toronto), MSc (Ottawa), PhD (Carleton Univ.). Major appointment in the School of Physiotherapy.

Hodges, A., BHK (Univ of BC), MA (McGill), PhD (Univ of BC)

Loppie, C., BSc (HEd), MA, PhD (Dal)

Welch, J., BA, BSc Honours (Carleton), MSc (Univ. of Alberta), PhD (Purdue Univ.)

Adjunct Professors

Amaratunga, C., BA (Univ. of Guelph), MSc (Univ. of Alberta), PhD (Univ. of Waterloo)
Ballem, H.C., BPE (UNB), MSc (Dal)
Brannen, C., BA, MA, PhD (UNB)
Brooks, C., MBChB (Manchester Univ.), DAuMed (Univ. of London), MFVM, FFDm (Royal Coll. of Phys)
Comeau, N., BEd (UPEI), MEd (Univ. of Queen'sland), MA, PhD (Dal)
Holt, L.E., BS, MS (Springfield Col.), PhD (Southern Illinois)
MacKenzie, S., BSc (Dal), PhD (Saskatchewan)
MacLeod, D.A., BSc, MSc (Kin) (Dal)
McIntyre, L., MD, MHSc (Toronto), FRCPC
Parks, S., BSc, MSc (Dal), PhD (Queensland)
Saulnier, C., BSc Honours (Univ. Ottawa), MA (Univ. Victoria), PhD (York)
Verabioff, L.J., BA BPHE (Queen's), MS (Michigan), PhD (Ohio State)

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. Applicants should refer to Table II in the Fees section of this calendar, or consult with the School.

C. Interprofessional Learning Requirement

Refer to Policy Statement in Faculty of Health Professions section, page 310.

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 courses) 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 Associate Director (Undergraduate), the Student Services Administrator, or the course 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 course 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 the following services:

- Black Student Advising Centre
- Native Education Counselling Unit
- Advocacy Service
- Awards and Financial Aid Office - Studley/Carleton Campus
- Career Counselling and The Frank G. Lawson Career Information Centre
- Chaplaincy
- Counselling Services
- Health Services - Studley Campus
- Ombudsperson
- Student Accessibility Services
- Academic Success Services
- Student Services - Office of the Vice-President
- Study Skills
- Tutoring Services
- Women's Centre
- Writing Resource Centre
- Learning Connections - Virtual Support for Undergraduate Students

II. School of Health & Human Performance Regulations

1. All students must observe the University and Academic Regulations described in this Calendar.

2. All students must attend the classes of their prescribed course regularly and punctually. When the work of a student becomes unsatisfactory or attendance is irregular, the student may be required to discontinue the course concerned.

3. Grade Point Average Requirements

The grade point average system is described in the Academic Regulations.

4. Supplemental Examinations

The School of Health and Human Performance does not offer supplemental examinations in any of its programs.

5. 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 25.6.

5.a Appeals to School Committee on Undergraduate Studies

A School-wide Committee on Undergraduate Studies 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 Studies.

The student has the right to appear before the Committee on Studies 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 Studies shall be conveyed to the student, in writing, by the Chair, Committee on Studies within 72 hours 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 Studies of the Faculty of Health Professions (see Academic Regulation 25.6). It should be noted that this appeal to the Faculty Committee on Studies must be presented within 30 days of notification from the School of the disputed academic decision.

6. 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 six undergraduate degree programs:

- BSc (Health Promotion)
- BSc (Health Promotion) with Honours*
- BSc (Kinesiology)
- BSc (Kinesiology) with Honours*
- BSc (Recreation)**
- BSc (Recreation)/Bachelor of Management***

* Application is made to the Honours Coordinator by April 1st 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 B term.

A. School of Health and Human Performance Core Classes

All students in the School, regardless of the degree program in which they are registered, must complete the following core classes for graduation:

• HAHP 1000.03*	3
• HAHP 1200.03*	3
• HAHP 2000.03	3
• HAHP 3000.03*	3
• HAHP 3100.03	3
Total 15	

* Not required for Kinesiology students.

Core 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 health care 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 health care system.

FORMAT: Lecture/seminar

RESTRICTION: Restricted to incoming students in the School of Health and Human Performance and Bachelor of Health Science students, and Bachelor of Health Informatics Program students.

HAHP 1100.03: Personal Health.

The focus of this course will be on providing an individual decision-making approach to personal health; a practical means of assessing and managing personal health behaviours of importance to students from a variety of social backgrounds.

RESTRICTION: Open to all students except BSc (Kinesiology), BSc (Recreation), BSc (Recreation)/Bachelor of Management, and BSc (Health Promotion).

HAHP 1200.03: Communications.

As all of the undergraduate degrees are considered professional degrees, it is recognized that graduates will require certain skills, abilities and knowledge about the process of communication to ensure successful delivery of programs and successful interaction with other professionals and clients. Communication skills, presentation skills, small group skills, and writing skills will receive attention in this class.

FORMAT: Lecture/seminar

RESTRICTION: Restricted to incoming students in the School of Health and Human Performance and Bachelor of Health Science students and Bachelor of Health Informatics Program students.

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: HSC 3010.03

RESTRICTION: Restricted to students in the School of Health and Human Performance, and Bachelor of Health Science students.

B. 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 behaviours.

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
HAHP 1200.03	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

Community Health Promotion Stream

Year Two

HAHP 2000.03	3
HPRO 2110.03	3
HPRO 2361.03	3
One of***:	
(HPRO 2255.03, HPRO 4412.03, HPRO 4365.03)	3
PSYO 1011/1012 or 1021/1022	6
Language and Humanities Elective*	3
Open Electives**	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
HPRO 4495.15	15
Open Elective(s)**	6

Research and Policy Stream

Year Two

HAHP 2000.03	3
HPRO 2110.03	3
HPRO 2361.03	3
HPRO 2120.03	3
PSYO 1011/1012 or 1021/1022	6
Language & 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
One of:	
(HPRO 3360.03, HPRO 3370.03)	3
Open Elective**	3
Health Related Electives****	15

Year Four

HPRO 4100.06	6
Health Related Elective****	3
HPRO 4495	15
Open Elective(s)**	6

* Language/Humanities Elective - see list under Degree Requirements Section in the Academic Calendar.

** Open Electives can be chosen from any available course at Dalhousie

***HPRO A, B, C (as per program of study form available from the School of Health and Human Performance).

**** Health Related Electives - list available from the School of Health and Human Performance.

HPRO students must have a 6 credit hour writing requirement course (list of courses available under Degree Requirements on page 65).

***** See list of writing requirement courses under Degree Requirements Section in the Academic Calendar. If students take SOSA 1050 in Year One, the Writing Requirement becomes 6 credit hours of open electives.

At graduation, valid First Aid and CPR Certification are required.

C. 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.
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 course 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 April 1st of the student's third year.

NOTE:

Students accepted into the Honours program must complete HPRO 4900.06.

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 courses.

Students accepted into the Honours program are required to attend an Honours seminar weekly for the first two months, and then monthly.

¹ 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.

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

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

CROSSLISTING: 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 1021.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1012.03, 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 4100.06: Advanced Topics in Applied Research Methods in Health Promotion and Policy.

The purpose of this course is to provide students with an opportunity to apply their theoretical and practical understanding of research methodologies and methods to a specific health promotion research or policy topic. In particular, students will engage in activities which require them to consider and/or utilize various paradigmatic and theoretical perspectives related to research design, issues related to methodological rigor, community-based research and research ethics, various methods of data collection and analysis techniques, as well as strategies for disseminating research findings and informing health promotion policy. The emphasis of student projects will be to address a health promotion issue that has been identified by the community. Consequently, students will work closely with a community group or organization throughout the proposal preparation process.

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 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

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

RESTRICTION: Restricted to Health Promotion students in their final year of study.

HPRO 4495.15: Health Promotion Internship.

During the first 12 weeks of this class students will intern in community health promotion settings on a full-time basis. The students will work on a major project, as well as gain workplace experience. Details of the goals and procedures for demonstrating community health promotion skills and competencies are contained in the Internship Program Handbook. During the concluding week of the term, students will return to the campus for a debriefing, sharing of their internship experience, doing a formal presentation to their peers, and preparing for entry into the work force.

FORMAT: Field Placement/seminar

PREREQUISITE: Completion of all program requirements and approval of advisor

RESTRICTION: Restricted to Health Promotion majors in the Fall or Winter term of their final year

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

HPRO 4900.06: 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: HAHP 3100.03 with a grade of B or better

RESTRICTION: Restricted to Health Promotion students in their final year of study who have a minimum GPA of 3.5 over the last 60 credit hours; completed a 3000-level or higher HPRO course in the area of intended research; and agreement from a faculty member to serve as Honours Thesis advisor.

D. 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, neurophysiology, 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)

Required Health and Human Performance Classes

• HAHP 2000.03	3
• HAHP 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 1060.03	3

Kinesiology Electives 18

Science Electives* 24

Open Electives** 21

(PHYC 1320.03 strongly recommended for students considering the Ergonomics stream)

Science Electives

* Science electives must be from the Faculty of Computer Science, Engineering, Science, or Medicine.

Twelve credit hours of science electives must be selected from the following list:

• BIOL 1010 (03)	Principles of General Biology I
• BIOL 1011 (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
or	
• CHEM 1041 (03)	General Chemistry for the Life and Health Sciences - Part I: Chemical form and function
• CHEM 1042 (03)	General Chemistry for the Life and Health Sciences - Part II: Chemical reactivity
• 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 fifteen 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 twelve credit hours of those Science electives at the 2000 level or above by the end of their final year. Students are urged to consult the Honours Guidelines outlined in the Undergraduate Student Handbook.

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.

A stream can be completed within the context of the BSc (Kinesiology) or the BSc (Kinesiology) with Honours programs. Eighteen (18) credit hours of Kinesiology electives in the third and fourth years, plus 3 credit hours of open electives (i.e., a total of 21 credit hours in the third and fourth years) must be used for the classes listed below.

For the Coaching Science stream, the 18 credit hours of Kinesiology electives in the third and fourth years, plus 12 credit hours of open electives (i.e., a total of 30 credit hours in the third and fourth years) must be used for the classes indicated below:

Ergonomics Stream:

• KINE 3414.03	Physical Fitness Assessment & 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 & Program Design
- KINE 3419.03 Application of Physiological Principles to Human Performance
- KINE 3485.03 Psychology of Sport and Physical Activity
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 & 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 and Physical Activity
- 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

E. Bachelor of Science (Kinesiology) with Honours

Students who wish to complete their 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 a minimum of 24 credit hours of science electives, including MATH/STAT 1060 and three other credit hours of MATH other than MATH 1001.03, 1002.03, 1003.03 1110.03, 1120.03, or 1115.03. At least 6 credit hours of Science electives must be at the 2000 level or above;
2. 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;
3. Obtained an overall GPA of 3.5 on the previous 60 credit hours of work;
4. 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; 6 credit hours of which may be taken in the 4th year. Twelve 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 6 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 courses concurrently with KINE 4900. 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/lab

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; tutorial 2 hours

RESTRICTION: Restricted to Kinesiology students only

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/tutorial

KINE 1108.03: Psychology and Physical Activity.

This introductory course will provide students with knowledge and procedures in examining the psychology of physical activity. The content will consist of two distinct sections. The first section includes an introduction to general motor behaviour concepts, including motor performance and motor development. The second section contains elements of exercise psychology and group dynamics in physical activity. The laboratory component of the course will focus on measurement techniques to examine psychological aspects of human movement.

FORMAT: Lecture/lab

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/lab 3 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/lab 3 hours

RESTRICTION: Restricted to Kinesiology student

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/lab 3 hours

PREREQUISITE: PHYC 1300.06 or PHYC 1310.03

EXCLUSION: PHYC 2610.03

RESTRICTION: Restricted to Kinesiology students

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, lab 1 hour

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

KINE 3414.03: Physical Fitness Assessment & 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 Fitness Consultant (CFC) 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 and group learning.

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/lab, 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. Other 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/field work

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: Care and Prevention of Injuries.

An introduction into the fields of Sports Medicine and work-related musculo-skeletal 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/lab 3 hours

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 and Physical Activity.

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 1021.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1012.03, KINE 2430.03 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/lab 3 hours

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 Program (NCCP).

FORMAT: Lecture/group activities, 3 hours

PREREQUISITE: First and second year HAHF Core and required Kinesiology classes

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) health care 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 4410.03: Environmental Impact on Human Physiology and Performance.

The consequences of both the desire and need to live and to perform sport or work activities in potentially hazardous environments require an understanding of the physiological responses and adaptability of the human. This class will explore the general concepts (e.g. Homeostatic mechanisms, performance limiters, research methodology and limitations, acclimation, counter-measures, protective clothing) applicable to human

endeavour in extreme environments by investigating one environmental scenario (e.g. High altitude, diving, microgravity, thermal stress) in detail. Students will produce a peer-reviewed text on the scenario.

Supplementary lectures and laboratories will expose the students to current research being performed in environmental physiology and ergonomics.

FORMAT: Lecture/lab 3 hours

PREREQUISITE: KINE 3419.03 AND KINE 3476.03

RESTRICTION: Restricted to 4th year BScK students

KINE 4412X/Y.06: Advanced Fitness Assessment, Exercise Prescription and Lifestyle Counseling.

The objective of this class is to provide the student with advanced techniques to assess physical fitness, design physical activity/exercise programs and lifestyle counseling skills. In addition, this class will prepare the student to write the Canadian Society for Exercise Physiology's National Professional Fitness and Lifestyle Consultant (PFLC) examination.

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: Lecture/lab 3 hours

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, Certified Fitness Consultant (CFC)

RESTRICTION: Restricted to Kinesiology students. Others by permission of instructor, with priority to Health Professions students.

KINE 4416.03: Neuromuscular Principles of Human Movement.

This class uses Problem Based Learning to study neuromuscular physiology as it relates to the control of human movement. Both central and peripheral nervous systems are studied, but the emphasis is on the peripheral. Students are presented with a problem related to abnormal gait in a child with Cerebral Palsy. Students are divided into groups and attempt to solve the problem by applying kinesiological principles.

FORMAT: Tutorial 4 hours; 2 hour lab bi-weekly

PREREQUISITE: KINE 2310.03, KINE 2320.03, KINE 2465.03, KINE 3419.03

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; bi-weekly 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/lab 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/assignments, 3 hours

PREREQUISITE: STAT 1060.03, 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/assignments 3 hours

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: Case Studies in Kinesiological Assessment.

This is an advanced level class that provides students with the opportunity of putting into practice much of the theory that they developed over the preceding three years. Students will apply kinesiological methods of measurement to solve applied problems related to human performance. This may include the fields of sport, ergonomics, movement disabilities and motor control.

FORMAT: Group projects, tutorials

PREREQUISITE: KINE 1104.03, KINE 2310.03, KINE 2320.03, KINE 2430.03, KINE 2465.03, HAHP 1000.03, HAHP 1200.03, 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. Others by permission of instructor.

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 Program (NCCP).

FORMAT: Lecture/group activities, 3 hours

PREREQUISITE: KINE 3740.03 and KINE 3741.03, Level 1 Technical, National Coaching Certification Program. (Students are required, at their own expense, to pursue this class 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: Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed.

FORMAT: Independent research.

PREREQUISITE: A minimum GPA of 3.5 based on the previous 60 credit hours of work. Completed HAHP 3100.03 with a minimum grade of B, and a minimum of 24 credit hours of science electives, including MATH/STAT 1060 and three other credit hours of MATH other than MATH 1001.03, 1002.03, 1003.03, 1110.03, 1120.03 or 1115.03. Attained a grade of B or better in an advanced Kinesiology class most related to the area of proposed research and approval of the Honours Coordinator.

RESTRICTION: Restricted to Kinesiology students in their final year of study.

F. Bachelor of Science (Recreation) - Therapeutic Recreation

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.

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, associations for community living, schools, Boys and Girls Clubs, etc.

Required Classes BSc (Recreation) - Therapeutic Recreation

Required Health and Human Performance Classes

• HAHP 1000.03	3
• HAHP 1200.03	3
• HAHP 2000.03	3
• HAHP 3000.03	3
• HAHP 3100.03	3
• ANAT 1020.03 or 1010.03	3
• PHYL 1010.06 or 1000.06 or 2030.06	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	3
• LEIS 3492.03	3
• LEIS 4365.03	3
• LEIS 4597.15	15

Required Arts & Social Science Classes

• PSYO 1021.03 and PSYO 1022.03 or PSYO 1011.03 and PSYO 1012.03	6
• PSYO 2220.03	3
• SOSA 1000.06 or SOSA 1050.06 or SOSA 1100.06 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**	21

* Designated electives can be chosen from the courses in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions or Interdisciplinary Health Professions, Health Services Admin. or Social Sciences.

**12 of the 21 credit hours of the open electives must be 2000 level or above.

NOTE: Students should consult the NCTRC website (www.NCTRC.org) for CTRS Certification requirements.

G. Bachelor of Science (Recreation)/Bachelor of Management

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.

Program Description

The curriculum of this new 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), of which 18 full credits (36 half credits) are required core classes, 3.5 full credits (seven half credits) are open electives, 1 full credit (2 half credits) are designated electives and 2.5 credits (5 half credits) are an internship (work term). Upon completion of this program, the successful student graduates with a Bachelor of Science (Recreation) degree and a Bachelor of Management degree.

Required Classes - Bachelor of Science (Recreation)/Bachelor of Management

Required Health and Human Performance Classes

• HAHP 1000.03	3
• HAHP 1200.03	3
• 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
• INFO 1601.03	3
• INFO 1602.03	3
• MGMT 2101.03	3
• MGMT 2102.03	3
• MGMT 2303.03	3
• MGMT 2304.03	3
• MGMT 2401.03	3
• MGMT 2501.03	3
• MGMT 2502.03	3
• PUAD 2801.03	3
• PUAD 2803.03	3
• MGMT 3201.03	3
• MGMT 3501.03	3
• MGMT 4001.03	3

NOTE: Management courses require a credit in MATH 0010 if one has not completed high school math.

Other Required Classes

• ECON 1101.03
• ECON 1102.03
• ENVI 1100.06
• SOSA 1000.06 or SOSA 1050.06 or SOSA 1100.06 or SOSA 1200.06
• Designated Elective (6)*
• Open Electives (21)**

*Designated electives can be chosen from courses in the Language/Humanities list (under Degree Requirements at the front of the calendar), Health Professions, or Interdisciplinary Health Professions, Health Services Admin., or Social Sciences.

**The equivalent of 21 credit hours chosen from all classes offered in the University. Twelve of the 21 credit hours must be 2000 level or above.

Internship Requirement (LEIS 4597.15)

The equivalent of 2.5 (five half credits) fulfills the internship requirement during the student's final year.

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 labour 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 students in the Bachelor of Science (Recreation) program.

LEIS 2127.03: 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.

NOTE: Please note that the summer session of this class does not require a prerequisite however a departmental signature is required.

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, MGMT 2102.03

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, LIBS 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 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 Therapeutic 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: Therapeutic 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 Therapeutic 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 Therapeutic 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 Therapeutic Recreation students in their final two years of study. Others by permission of instructor, with priority to Health Professions students.

LEIS 4597.15: Education Practicum Placement.

This class is an extended professional development placement during the final year of study. It requires the completion of a minimum 12 week, 40 hours per week placement in a recreation service delivery agency. In addition, the placement involves an in-depth agency analysis and the completion of a service project for the agency.

FORMAT: Placement 12 weeks winter. January-April term always

available; other term with permission of Internship Coordinator

PREREQUISITE: Completion of all course requirements; approval of advisor

RESTRICTION: Restricted to Bachelor of Science (recreation), Bachelor of Science (recreation)/Bachelor of Management students

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.

Kinesiology

See School of Health and Human Performance (page 334).

Nursing

School of Nursing

Location: Forrest Building
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Telephone: (902) 494-2535
1-800-500-0912
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Website: www.dal.ca/nursing

Dean

Webster, William G., PhD

Director

Sullivan, P.L., BScN (MSV), MSc (Boston), PhD (Alberta), RN

Associate Director Graduate Programs

Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

Associate Director Undergraduate Program Planning and Development

Foster, S., BN (MUN), MN (Dal), RN

Associate Director Undergraduate Program Student Affairs

Wittstock, L., BScN (StFX), MN (Dal), RN

Coordinator, Nurse Practitioner Program

Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary), NP, RN

Coordinator, BScN (Arctic Nursing)

Edgecombe, N., BN (Lethbridge), MN, PhD (Alberta), RN

Professors

Downe-Wamboldt, B.L., BN, MEd, Dip.PH (Dal), PhD (U Texas-Austin), RN
Sullivan, P.L., BScN (MSV), MSc (Boston), PhD (Alberta), RN
Tomblin Murphy, G., BN, MN (Dal), PhD (UofT), RN

Associate Professors

Etowa, J., BScN, MN (Dal), PhD (Calgary), RN
Hughes, J.M., BN (Dal), MS (Boston), PhD (McGill), RN
McFetridge, J., BN, MN (Dal), PhD (Florida), RN
Meagher-Stewart, D.M., BScN (MSVU), MS (McMaster), PhD (UofT), RN
Melanson, P., BScN (Ottawa), MN (Dal), RN

Associate Professor (Research)

Breau, L., BA (MountA), PhD (Dal)

Assistant Professors

Aston, M., BNSc, MEd (Queen's), PhD (UofT), RN
Chircop, A., BScN, MN (Dal), RN
Doucet, S., BScN (MSVU), MScN (UofT), RN
Edgecombe, N., BN (Lethbridge), MN (Alberta), PhD (Alberta), RN
Foster, S., BN (MUN), MN (Dal), RN
Gilbert, L., BS, MBA (S. Illinois), MSN (Western), RN
Goldberg, L., BA (UCCB), MA (Dal), PhD (Alberta), RN
Hayward, K., BScN (Dal), RN
Helpard, H., BN (UNB), MN (Dal), RN
Kiberd, C., BN, MN (Dal), MEd (Queen's), RN
Latimer, M., BA (MVU), BScN, MN (Dal), PhD (McGill), RN
Macdonald, M., BN (UNB), MSN (S. Maine), PhD (San Diego), RN
McLeod, D., BN, MN (Dal), PhD (Calgary), RN
Martin-Misener, R., DOCHN, BScN, MN (Dal), PhD (Calgary) NP, RN

Mercer, M., BN (UNB), MN (Dal)
 Murphy, A., BSc(Pharm) (Dal), PharmD (UBC),
 Murphy, N.J., BN (Dal), MScN (UBC), RN
 Richardson, H., BScN, MA (Dal), RN
 Sheppard-LeMoine, D., BN, MN (Dal), RN
 Snelgrove-Clarke, E., BN (MUN), MN (Dal), RN
 Sabo, B., BA (Manitoba), MA (Dal), RN
 Steenbeek, A., BScN (McMaster), MSN, PhD (UBC), RN
 Thibeault, C., BScN (MSVU), MN (MUN), RN
 Vukic, A.R., BN, MN (Dal), RN
 White, M., BN (UNB), MN (Dal), RN
 Wight Moffatt, C.F., BN (MUN), MS (Boston), RN
 Wittstock, L., BScN (StFX), MN (Dal), RN
 Youden, S., BN (Dal), MSc Applied (Nsg) (McGill), RN

Lecturers

Barkhouse-MacKeen, C., BN (Dal), MSc (Texas-Austin), RN
 Burke, D., BN (UNB), MN (Dal), RN
 Gilfoy, H., BN, MN (Dal), RN
 Houk, S., BScN (Sask), RN
 MacDearmid, A., BScN (Dal), RN
 MacIsaac, B., BScN (Alberta), RN
 O'Leary, S., BScN (Dal), MSc(N) (North Dakota), NP, RN
 Sheffer, C., BN, MN (Dal), RN

Senior Instructors - Skills Laboratory

Bethune, E., BScN (MSVU), RN
 Bleasdale, B., BN (Dal), RN

Adjunct Appointments

Allen, K., MScN (U of T), BN (Post RN) (Dal), RN
 Baker, C., BA(McGill), MA(London), MN(Dal), PhD (Texas), RN
 Bainbridge, R., BA (Manitoba), BEd (UWO), MEd (UofT), RN
 Banfield, V., BScN (St. Fx), MN (Dal), RN
 Banoub-Baddour, S., BScN, MScN, DNSc(Egypt), RN
 Bayer, M.J., BN (Dal), MEd (Acadia), PhD (Dal)
 Bowes, D., BN, MN (Dal), RN
 Bradley, L., BN (Dal), MScN (Boston), RN
 Braunstein, J., BScN (Cornell), MPH (Minn)
 Brown, T., BScN (McMaster), MN (Athabasca), RN
 Browne, G., BScN (Kentucky), MS (Boston), MEd, PhD (UofT), RN
 Bruce, B., BScN (MSVU), MN (Dal), RN
 Campbell, M., BN, MSN (Yale), RN
 Campbell, T., BScN (UPEI), MN (Dal), RN
 Campbell, T., PhD (McGill), BA (Concordia)
 Carson, G., BN, MN (Dal), RN
 Christie, S., MN, BN (Dal), RN
 Cobbett, S., BN (Dal), MN (Dal), EdD (Australia), RN
 Cooper, E., BN, MN (Dal), RN
 Coulter, L., BN, MN (Dal), RN
 Cruickshank, C., BN, MN (Dal) SNP, RN
 Doherty, A., BScN (Boston College), MA (U of Massachusetts), RN
 Edwards, N., BScN(Windsor), MSc(McMaster), PhD(McGill), RN
 Evans, J., BN, MN, PhD (Dal), RN
 Fillatre, T., BSW, MHSA (Dal), RN
 Forgeron, P., BScN (St.Fx), MN (Dal), RN
 Frank, B., BEd, BA, MEd(Acadia), PhD(Dal)
 Garden-Jayasinghe, J., BN, MN (Dal), RN
 Gaudine, A., BSc, MScN (McGill), PhD(Concordia), RN
 Gillis, A., BScN, MAEd (StFX), PhD (Texas-Austin), RN
 Graham, K., BScN, MN (UofA), RN
 Gregory, D., BScN (Ottawa), MN (Man), PhD (U of Arizona), RN
 Gurnham, M.E., BN, MN (Dal), RN
 Hamilton, J., BN (Dal), MSN (McGill), RN
 Hartigan-Rogers, J., BN, MN (Dal), RN
 Hawley, P., BScN(StFX), MN(Dal), PhD(c)(Alberta), RN
 Hirsch, G., BN (Dal), MSN (Yale) SNP, RN
 Jarvie, L., MM (Glasgow), BSc (Glasgow), RN
 Johnston, C., BN (McGill), MSN (Boston), DEd (McGill), RN
 Keays-White, D., BA, BN (UNB), MSc (Edinburgh), RN
 Knox, J., BN (UNB), MN (Dal), MBA (SMU), RN

Krieger-Frost, S., MN, BN (Dal), RN
 Lackie, K., BScN, MN (Dal), RN
 Laschinger, H., BN (UNB), MAEd, PhD (Ottawa), RN
 Lawlor, D., BScN, MN (Dal), RN
 LeBlanc, A., BN, MN (Dal), RN
 LeFort, S., BA(Trent), BN, MN (Mem), PhD(McGill), RN
 Leiter, M., BA (Duke), MA (Tenn), PhD (Oregon)
 Luciani, A., BScN (Ryerson), RN
 MacConnell, G., BScN (StFX), MN (Dal), RN
 MacDonald, R., BSc (Acadia), MHScN (Australia), RN
 MacRury-Sweet, K., BN, MEd, MN (Dal), RN
 McLaughlin, H., BN (Dal), RN
 McLean, L., BA (MtA), BScN (McMaster), MN (Dal), RN
 McGuire, A., BN (McGill), MHSA (Dal), RN
 McNamara, C., BN (UNB), MN (Dal), RN
 Miller, C.A., BSc (Queen's), MSc (McGill), RN
 Moore, C., BScN (MSVU), MScN (UofT), RN
 Morrison, D., BScN (St. Fx), MN (Dal), SNP, RN
 Muise-Davis, M., BN, MN (Dal), RN
 Muxlow, J., PostRN/BN (Dal), MScN (Boston), RN
 Naphan, S., MA, BA (Ontario), RN
 Newell, J., BN, MN (Dal), RN
 Nichols, N., MN (Dal), BScN (St.FX), RN
 O'Neill, N., BN, MN (Dal) SNP, RN
 Olford, D., BN, MN (Dal) SNP, RN
 Phinney, C., MA, BScN, BA (Dal), BSc (Acadia), RN
 Price, S., BScN, MN (Dal), RN
 Redmond, S., BN, MN (Dal), RN
 Rintoul, A., DipNurs (Algonquin), RN
 Shaw, J., BScN, MSc (Texas), MA, PhD(Arizona), RN
 Solberg, S., BN(Mem), MN(Alberta), BA(Mem), PhD(Alberta) RN
 Svendsen, A., BScN (Dal), MS (Baltimore) SNP, RN
 Tamlyn, D., BN (McGill), MEd (Ottawa), PhD (Dal), RN
 Taylor, P., MN, BN, BA (Dal), RN
 Thibeau, M., BScN (Dal), RN
 Vandewater, D., BN, MN (Dal), RN
 Walls, C., BN, MN (Dal), RN
 Whelan, R., BN, MN (Dal), RN
 Whitehorn, D., BSc (Mich), MScN (Yale), PhD (Wash), RN
 Wuest, J., BScN (UofT), MN (Dal), PhD (Wayne)
 Yates, G., BN, MN (Dal), SNP, RN
 Young, L., BSc(Acadia), MPA(Dal)
 Youssef, D., BSc (Leganon), MSc, PhD (France)
 Zevenhuizen, J., BN, MN (Dal), RN

Cross Appointments

Beagan, B., MA(Dal), PhD (UBC)
 Brown, C., BA, MA (Manitoba), MSW (Carleton), PhD (Toronto)
 Fenety, A., BSc (UnB), DipPT (Man), MscPT (Alberta), PhD (Dal)
 Gahagan, J., BA Honours (Carleton), MA (Windsor), PhD (Wayne State)
 Harbison, J., BA, BSS (Trinity Coll), Grad DipSW (Edinburgh), PhD (UofT)
 Jackson, L.A., BA, MA, PhD (Toronto)
 Laidlaw, T., BA, MEd (Calgary), PhD (Alberta)
 Livingston, L., BA-BPHE, MSc (Queen), PhD (Calgary)
 Lyons, R.F., BA (Dal), MEd (St. Fx), PhD (Oregon)
 Mann, K., BScN, MSc, PhD (Dal), Associate Dean, Faculty of Medicine
 Rathwell, T., BA (Hons) (York), MA, PhD (Dunelm)
 Sherwin, S., BA (York), PhD (Stanford), FRSC (Munro Chair in Phil)
 Singleton, J., BA (Waterloo), MS (Penn State), PhD (Maryland), Associate
 Professor, School of Recreation, Physical & Health Education
 Sketris, I., BscPhm (Toronto), MPA (Dal), PharmD (Minnesota)
 Thiessen, V., BA (Man), MA, PhD (Wis)
 Thomas-Bernard, W., BA (MSVU), MSW (Dal), PhD (Sheffield)
 Townsend, E., BSc (Toronto), MadEd (StFX), PhD (Dal)

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 Associate Director of Undergraduate 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 given course in the BScN program only once. A second failure in a given course will result in dismissal from the nursing program.
8. Failure in any two courses in the BScN program will result in dismissal from the nursing program.
9. 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 Manual.
10. Supplemental exams will not be available in clinical courses.
11. 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 Associate Director (Undergraduate Student Affairs) of any new criminal conviction which could affect the student's suitability for practice.
12. Once enrolled in the Nursing Program it is the students' continuing responsibility to inform the Associate 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 Committee on Studies and at Senate level by the Senate Academic Appeals Committee.

C. Procedure for Undergraduate Appeals

Undergraduate appeals are heard by the Committee on Studies of the School of Nursing. Procedures for Undergraduate Appeal Procedures are available from the School.

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.

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

Students with a prior degree and/or sufficient number of relevant university credits may complete the BScN program in a minimum of two or three years. To qualify, students must have a GPA of at least 3.0. **NOTE:** This advanced placement option is available for Basic students only. For more information contact the Undergraduate Program Secretary.

B. Bachelor of Science (Nursing) for Registered Nurses

1. Degree Requirements

Students must: obtain a minimum cumulative GPA of 2.00 throughout the entire undergraduate program; accumulate a minimum of 60 credit hours and successfully complete all compulsory classes, as well as the required number of elective classes; and complete the degree within six years of commencing nursing classes. Note: Credit will be given for non-nursing classes that are up to ten years old by the date the degree is completed.

2. Other Regulations

Students must submit proof of an active practicing nursing registration form in Nova Scotia or the province/country of residence for each year that they are enrolled at the School of Nursing. All other regulations are as outlined in the BScN Basic stream in the University Calendar, including Immunization, and Grades.

The CRNNS recognizes university credit hours as transferable practice hours (e.g., a half-credit class [three credit hours], is equivalent to 180 practice hours in total). Full-time student status in a BScN (Post-RN) degree program constitutes 1,725 practice hours, the equivalent of working full-time. The 60 credit hours of study may be completed over two academic years of full-time study and one academic year of part-time study.

3. Clinical Major Option

A clinical major option for Registered Nurses in oncology nursing may be available as a component of the BScN (RN) degree program. Classes selected for this option have been adapted to meet the learning needs of practicing nurses, and are designed to give nurses the opportunity to significantly enhance their knowledge and skill in this speciality.

On completion of the clinical major option classes, students receive a certificate and may continue in the BScN (RN) program to complete the requirements for the BScN degree.

C. Bachelor of Science (Nursing) (Arctic Nursing)

The School of Nursing, in collaboration with Nunavut Arctic College in Iqaluit, offers a BScN program to prepare Inuit nurses for practice in the remote northern communities of Nunavut. Information about this program is available from the School of Nursing.

D. Graduate Programs

For details of the Master of Nursing, the joint Master of Nursing/Master of Health Services 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.

The School of Nursing offers the Post-RN Program through distance delivery.

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, and rubella. Access to clinical agencies will be denied if immunizations are not current and complete.

A 2-step Mantoux test (for tuberculosis) is required before students will be permitted to practice in clinical agencies. Immunization against Hepatitis B is also mandatory.

2. CPR, (BCLS) & Standard First Aid Certification

Students must have CPR (Health Care Provider Level) and Standard First Aid certification before entering the clinical area. 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. Course 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 1060.03
- NURS 1240.03 (a five-week clinical class starting in late April or early May with annual variations)
- 9 credit hours at the 1000 level from Biology, Chemistry, Philosophy, Psychology and/or Sociology.

Second Year

- MICI 1100.03
- NURS 2000.03
- NURS 2050.03
- NURS 2080.03
- NURS 2090.03
- NURS 2200.03
- NURS 2240.03
- NURS 2280.03
- NURS 2220.06 (a six-week clinical nursing class taken in May/June or July/August)
- STAT 1060.03

Third Year

- NURS 3030.03
- NURS 3040.03
- NURS 3260.03
- NURS 3270.03
- NURS 3280.03
- NURS 3290.06 (a six-week clinical nursing class, 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 (3 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 (3 credit hours)
- NURS 4240.06 (10 week internship beginning in February)

B. Bachelor of Science (Nursing) for Registered Nurses

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 (Sept. - 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 (6 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 (9 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 6 credit hours of nursing electives. Post RN students must complete 6 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 2350.03: Fundamentals of Oncology Nursing
- NURS 2360.03: The Phenomenon of Pain: Assessment and Management.
- NURS 3310.03: Health Informatics.
- NURS 3320.03: Acute Care Specialty Nursing
- 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 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 health care 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, lab 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 2 hours/week; 3 two-hour seminars

PREREQUISITE: NURS 1000.03

NURS 1060.03: Legal and Ethical Issues in Nursing Practice.

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 1000.03 for Basic Students

NURS 1240.03: Introduction to Nursing Practice.

(Intersession) Students are introduced to health care 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 1000.03, 1030.03, 1060.03

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 analyse 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

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/week, lab 2 hours/week

PREREQUISITE: NURS 1240.03

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 analyse 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 health care system.

FORMAT: 3 hours/week

PREREQUISITE: NURS 1240.03

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 I.

Students are introduced to theoretical bases of nursing to evaluate health behaviours and outcomes. Students develop 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 health care 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, 2200.03, 2280.03, 2050.03, 2080.03, 2090.03, 2240.03, MICI 1100.03

NURS 2240.03: Knowledge and Process in Nursing Practice II.

Students develop competence in the use of the nursing assessment skills learned in NURS 2200.03. 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 2050.03, 2090.03, 2200.03, 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 health care 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, clinical 6 hours

PREREQUISITE: NURS 2080.03, 2090.03, 2200.03, MICI 1100.03

NURS 2350.03: 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 2 hours and 60 hours clinical practice.

PREREQUISITE: NURS 2220.06

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, analyse 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

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 health care system. Sharing new knowledge resulting from the synthesis and transfer of evidence across disciplines and health care 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 for Basic students;
STAT 1060.03 for Post-Diploma students

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 1240.03

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, clinical 6 hours

PREREQUISITE: NURS 2220.06

NURS 3270.03: Nursing Practice: Caring for Families.

Guided by the principles of primary health care, 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, clinical 6 hours

PREREQUISITE: NURS 2220.06 for Basic students; 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 health care. Students are guided to incorporate theoretical bases into their clinical practice.

FORMAT: Lecture 2 hours, clinical 6 hours

PREREQUISITE: NURS 2220.06

NURS 3290.06: Nursing Practice III.

(Intersession) This is an opportunity to apply the principles of primary health care 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, and 3280.03

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 Basics - third-year students; none for Post-RNs; open to students from other departments

NURS 3320.03: Acute Care Specialty Nursing.

This nursing elective is a clinical course that incorporates theory, laboratory practice and direct client care opportunities in clinically relevant nursing units (intermediate care and/or emergency nursing settings). Teaching methods include, but are not limited to, case studies, demonstration, and lab practice. Client care is under the direct supervision of the assigned Registered Nurse with the faculty member providing clinical teaching and evaluation. Six clinical days in the second half of the twelve weeks provide an opportunity to apply the theoretical content previously taught.

FORMAT: Lecture/Lab/Clinical

PREREQUISITE: NURS 3280.03

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 2 hours, clinical 6 hours

PREREQUISITE: NURS 2220.06

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 for Basic students; Second and third year

Nursing classes are strongly recommended for Post-Diploma students

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 for Basic 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 health care, 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 for Basic Students; NURS 2250.03 for Post-RN's

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 health care and the Canadian health care system.

FORMAT: Campus/distance offering, 3 hours

PREREQUISITE: Health professions students at least 1 year of study at professional school/college or by faculty permission

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 health care 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, clinical 6 hours

PREREQUISITE: NURS 3290.06

NURS 4220.03: Mental Health Nursing Practice.

Integrating a holistic perspective within a primary health care 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, clinical 6 hours

PREREQUISITE: NURS 3290.06

NURS 4240.06: Nursing Practice IV Internship.

Nursing 4240, a ten (10) week 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 health care systems. Collaboration and advocacy with clients, other health care professionals and peers are emphasized. In this ten (10) 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 40 hours/week for 10 weeks

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 health care. The focus of this class is on the integration of community assessment theory and nursing practice in health promotion and illness prevention. Primary health care and population-focused health strategies are used as students collaborate with individuals, families, groups, communities and other health care 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

PREREQUISITE: NURS 3290.06 for Basic students; Post-Diploma students NURS 2250.03, 3030.03, and 3270.03

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 health care 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

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

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.

PREREQUISITE: NURS 2350.03 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 health care 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: SOSA 1000.06, 1100.06, 1200.06, or two classes in Gender and Gender and Women's Studies

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 health care 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.

PREREQUISITE: NURS 2050.03, NURS 2220.06, NURS 2250.03 (for Post RNs)

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
Halifax, NS B3H 3J5

Telephone: (902) 494-8804

Fax: (902) 494-1229

Email: occupational.therapy@dal.ca

Websites: www.occupationaltherapy.dal.ca

www.dal.ca/occscience (Canadian Society of Occupational Scientists)

Dean

Webster, William G., PhD

Director

Townsend, E., DipP & OT (Toronto), BSc (OT) (Toronto) MAdEd (St.FX), PhD (Dal)

MSc(Occupational Therapy) Graduate Coordinator

Merritt, B., BS (Psychology), MS (OT), PhD (Colorado State)

MSc(Occupational Therapy - Post-Professional) Graduate Coordinator

Versnel, J., BSc(OT) (Toronto), MSc(OT) (Western), PhD (Queen's)

Professor Emeritus

O'Shea, B., DipP & OT (Toronto), BSc (Queen's), MS (Colorado State), LLD (Dal)

Professor

Townsend, E., DipP & OT (Toronto), BSc (OT) (Toronto) MAdEd (St.FX), PhD (Dal)

Associate Professors

Beagan, B., BA, MA (Dal), PhD (UBC)

Carswell, A., Dip(OT) (McGill), BSc(OT) (McGill), MSc(OT) (McGill), PhD (Toronto)

Doble, S., BSc (OT) (Western), MS (Boston), PhD (Dal)

Assistant Professors

Banks, S., BSc (Dal), Cert.Occ.Ther. (Columbia), MA (Dal)

Brown, J., BSc (OT) (Toronto), MSc (OT) (Dalhousie).

Grass, C., BSc (OT) (Western), MSc (Queen's), PhD Candidate (Queen's)

MacKenzie, D.E., BSc Physical Education (Saskatchewan), BSc(OT)

(Alberta), MA (Ed) (MSVU)

Merritt, B., BS (Psychology), MS (OT), PhD (Colorado State)

Saunders, J. BSc (OT) (Dal), 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)

Warner, G., Ph.D (Epidemiology) (Case West Reserve University)

School Fieldwork Education Coordinator

Banks, S., BSc, Cert.Occ.Ther. (Columbia), MA (Dal)

International Fieldwork Education Coordinator

Saunders, J., BSc (OT) (Dal), MBA (St. Mary's)

Provincial Fieldwork Education Coordinators

New Brunswick: Roussel, M., DipHS (S-L Maillet), BSc, MA (Montreal)

Newfoundland: Head, B., BSc (OT) (Alberta), MSc (OT-Post-Professional) (Dal)

Nova Scotia: Saunders, J., BSc (OT) (Dal), MBA (St. Mary's)

Prince Edward Island: Cutcliffe, H., Dip (OT) (Man)

Adjunct Appointments

Academic

Bassett, B.R., BA Honours, MA (New Zealand), PhD (UBC)
 Do Rozario, L., BOT (Queensland), DTS (Brisbane), MTP (California), PhD (Queensland)
 Dubouloz, C.J., BSc en ergotherapie (Montreal), MSc en sciences cliniques (Montreal), PhD (UQAM)
 Egan, M., BSc(OT) (Western), MSc(OT) (Alberta), PhD (McGill)
 Etcheverry, E., BSc(OT) (Manitoba), MEd (Manitoba), PhD (Manitoba)
 Fisher, A.G., BSc(OT) (Western Michigan), MSc (Boston), Sc.D. (Boston)
 Law, M., BSc(OT) (Queen's), MHS (McMaster), PhD (Waterloo)
 Manojlovich, M., BSc(OT) (Western), MEd (Western)
 Mitcham, M., Dip (OT) (Northampton), BSc(OT) (Georgia), MHE (Georgia), 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)
 Whiteford, G., BSc(OT) (Curtin), MHS(OT), PhD (South Australia)
 Wicks, A., BAS(OT) (Curtin), MHS (OT) (South Australia), PhD (Charles Sturt)
 Wilcock, A. DipCOT(UK), BappScOT(SAIT), GradDipPublic Health (Adel), PhD (Adel)

Professional

Cutcliffe, H., Dip(OT) (Manitoba)
 Head, B., BSc(OT) Alberta, MSc (OT - Post-Professional) (Dal)
 Roussel, M., DipHS (S-L Maillet), BSc (Montreal), MA (Montreal)
 Spindler, M., DipP & OT (Toronto)

Cross Appointments

Manuel, P., BA (Carleton), MSc (McGill), PhD (Dal)
 Unruh, A., BSc (OT) (Western), MSW (Carleton), PhD (Dal)

I. Mandate

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.

II. What is Occupational Therapy?

Occupational Therapy is a health profession concerned with enhancing the occupational performance, 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 life with meaningful occupations in supportive environments.

What do occupational therapists do?

Occupational therapists use their understanding of occupation, enabling processes, justice and systems to enable individuals, organizations, and communities 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, social disadvantage, cultural, and physical barriers in the home, community and workplace.

People's "occupational performance" may be limited by illness, injury, developmental delay, aging, social conditions and/or physical barriers. Using a "partnership" approach, occupational therapists can work with individuals, groups, communities, organizations, businesses or governments. The focus can be either on enabling individual change, or

enabling change in physical and social environments, policies or legislation to enhance occupational performance. 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 performance problems are never the same because no two people or environments are ever exactly the same. The challenge of occupational therapy is to plan and implement the "just right" program or strategy for each and every client so that everyone can achieve an optimal level of occupational performance and just opportunities to participate in societies.

A. Degrees Offered

1. Undergraduate Program to Enter the Profession

a. BSc(OT) Final class accepted into the program in September 2004

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.

2. Master of Science (Occupational Therapy) - MSc (OT): Masters Program to Enter the Profession

a. MSc (OT) First class accepted into the program in September 2006.

3. Master of Science (Occupational Therapy-Post-Professional): Post Professional Masters program for qualified occupational therapists.

- a. MSc Thesis
- b. MSc Coursework
- c. Single graduate classes (with instructor's permission)

4. 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 courses 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 course offerings.

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.

FORMAT: 3 lecture hours/discussion

PREREQUISITE: None

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: None

OCCU 2209.03: Enabling Principles and Processes.

Students will develop introductory knowledge and skills in 'enabling' with individuals, groups, agencies, and organizations. Upon successful completion of this course, students will be able to identify and discuss the principles and processes of enabling and client-centred practice in occupational therapy; describe the educational foundations of enabling; describe the social and psychological foundations of enabling; discuss professional dominance, privilege, and power dynamics with respect to enabling; identify and discuss the opportunities or possibilities and challenges for enabling; and educate others in enabling.

PREREQUISITE: None

OCCU 3324.03: Research II, Designs for Occupational Science and Occupational Therapy.

This course is an introductory overview of the theories and practice of research in occupational therapy, and more broadly in the health professions. Emphasis is on understanding the components of basic methodologies in experimental/quantitative and naturalistic/qualitative research. The primary focus is on research design, rather than data analysis.

PREREQUISITE: Instructor permission

OCCU 4401.03: Research III, Evidence-Based Practice.

This course builds on OCCU 2203.03, Research I: Critical appraisal of Statistics in Occupational Therapy Research and OCCU 3324.03, Research II: Designs for Occupational Science and Occupational Therapy Research by exposing students to the principles and processes of critical appraisal and their application to evidence-based occupational therapy. A basic level understanding of statistics; qualitative and quantitative research design; reliability; validity and utility of measures; and common occupational therapy interventions, is an essential prerequisite for this course. Students will complete a major assignment in pairs, or on their own, examining the evidence pertaining to a specific occupational therapy intervention of their own choice.

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
Halifax, NS B3H 3J5
Telephone: (902) 494-2378
Fax: (902) 494-1396
Website: www.pharmacy.dal.ca

Dean

Webster, William G., PhD

Academic Staff, 2007/2008

Director

Caldwell, R.K., BSc(Pharm), MHSA (Dal)

Associate Directors

Research: MacKinnon, N., BSc (Pharm), MS (U of Wisconsin), PhD (U of Florida)

Undergraduate Education: Mansour, S. A., BSc (Pharm), MBA (Dal), PhD

Professors Emeriti

Duff, J.G., BSP, MSc (Sask), PhD (Fla)

Yung, D.K., BA, BSP, MSc (Sask), PhD (Alta)

Professors

Sketris, I.S., BSc (Pharm) (Toronto), PharmD (Minn), MPHA(HSA) (Dal)

Yeung, P.K.F., BSc(Pharm), MSc (Man), PhD (Sask)

Post-Retirement, Appointment

Farmer, P.S., BSP, MSc (Sask), PhD (Portsmouth)

Associate Professors

Bowles, S.K., BScPhm (Toronto), PharmD (SUNY)

Caldwell, R.K., BSc(Pharm), MHSA (Dal)

Gardner, D., BSc(Pharm), PharmD (UBC)

Jakeman, D.L., BSc, PhD (Sheffield)

Jurgens, T., BSc(Pharm), MSc (Dal), PhD (Miss)

MacCara, M.E., BSc(Pharm) (Dal), PharmD (Minn)

MacKinnon, N.J., BSc(Pharm), MS (U of Wisconsin), PhD (U of Florida)

Whelan, A.M., BSc(Pharm) (Dal), PharmD (MUSC)

Zed, P. J., BSc (Chem) (Dal), BSc (Pharm) (MUN), PharmD (UBC)

Assistant Professors

Agu, R., BPharm, MPharm (Pharmacology) (U Nigeria), MPharm (Pharmaceutics), PhD (Biopharmaceutics) (Katholieke Universiteit, Belgium)

Banh, H.L., BSc(Pharm) (Philadelphia), PharmD (Oklahoma)

Goralski, K., BSc Hon (Biochem/Micro), PhD (Pharmacology and Therapeutics) (U Manitoba)

Mansour, S.A., BSc(Pharm), MBA (Dal), PhD

Wilson, J., BSc(Pharm) (Dal), PharmD (SC)

Lecturers

Deal, H., BSc (Chem) (Acadia), BSc (Pharm) (Dal)

Rodrigues, G., BSc (Chem/Biochem), BSc (Pharm) (Dal)

Sponagle, K., Diploma Engineering (Saint Mary's), BSc (Pharm) (Dal)

Walsh, K., BSc (Pharm) (Memorial)

Coordinator of Clinical Education/Regional

Residency Coordinator

Davies, H., BSc (Hons) (Biology) (Acadia), BSc (Pharm) (Dal), CDE

Coordinator, Community Experience Program

Harris, N., BSc(Pharm) (Dal)

Joint Appointment

Foy, E.A., Professional Information Officer, College of Pharmacy,
Pharmacy Subject Specialist and Information Officer, W.K. Kellogg
Health Sciences Library.

Adjunct Appointments

Arsenault-Thompkins, D., BSc (Biology) (UPEI), BSc (Pharm) (Dal),
PharmD (U of T)

Broadfield, L., BSc (Pharm) (UofT), MHSc (Health Care) (McMaster)

Graham, S., BSc (Math) (U Manitoba), BSc (Pharm) (Dal), PhD (U Florida)

Groves, Kent, BSc (Hon) (Guelph), MSc (USask), PhD (Dal)

Kent, A., BSc (Pharm) (Dal), PharmD (Idaho State)

Lummis, Heather, BSc (Pharm), MSc (CH&E)(Dal)

MacDonald, T., BSc (Biology), BSc (Honors) (Marine Biology), BSc (Pharm)
(Memorial), PharmD (Florida)

Ryan, Jennifer, BA (HonEng) (UNB), BSc (Pharm) (Dal), PharmD
(UFlorida)

West Breau, D., BSc (Pharm) (Dal), PharmD (Duquesne University)

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 honor 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 recognized as a leader in Pharmacy education for our:

Excellence in undergraduate, graduate and continuing education opportunities.

Dynamic, integrated and innovative curriculum responsive to the changing professional and health-care environment.

Research achievement.

Preceptors, who are a vital and valued part of our program.

Alumni, who always remain an active part of the College.

Mutually beneficial relationships with stakeholders.

Having all the resources necessary to fulfil this vision.

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, 2004-2010.

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-course 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

See Academic Regulations section 21.2, page 40 of this calendar.

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 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 in academic difficulty may meet with the Promotions Committee at the end of the academic year to discuss their standing and request special consideration if exceptional circumstances have affected their performance. Exceptional circumstances affecting academic performance should be made known to the Associate Director, Undergraduate Education, at the time of their occurrence.
6. 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 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

1. A student who receives a grade of FM is eligible for remedial work and supplemental assessment.
2. 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.
3. 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.
4. 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.
5. 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

1. Subject to eligibility, a student will be required to repeat the year if:
 - a) the student has failed any two classes (PBL or non-PBL classes) or
 - b) the student has failed one class and has not successfully completed the prescribed remedial work and supplemental assessment.
2. 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.

3. Application to repeat the year must be made in writing to the Associate Director, Undergraduate Education by a predetermined date.
4. 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.
5. 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

1. 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.
2. 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.
3. 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 15 days of the alleged unfairness or irregularity. If no resolution arises from this (these) meeting(s), the student may initiate a formal appeal.

Students with an exceptional circumstance should meet with the Promotions Committee as described in C(5) prior to consideration of a formal appeal.

Students wishing to initiate a formal appeal should follow the appeals procedures as set out by the 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, Committee on Studies within 30 days of the matter giving rise to the appeal.

IV. General Information

A. Library

The Pharmacy Library, housed on the first floor of the Burbidge Building, is the only branch library of the W.K. Kellogg Health Sciences Library which is located next door in the Sir Charles Tupper Medical Building. In addition to traditional library resources, users enjoy increasing access to electronic journals, books and bibliographic databases that can be accessed remotely. Students have on-site access to computer workstations, photocopying, computer printing and document delivery services. For more information, see the Kellogg Library website at <http://www.library.dal.ca/Kellogg/>.

B. 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.

C. 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.

In a self-reporting poll, 99% of 2007 graduates were employed upon graduation.

D. 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 Pharmaceutical Chemist (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 #B, 373 - Urquhart Avenue, Moncton, NB E1H 2R4; Prince Edward Island Pharmacy Board, PO Box 89, Crapaud, PEI, C0A 1J0; Nova Scotia College of Pharmacists, 1464 Dresden Row, Halifax, NS, B3J 3T5.

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.

The current PEBC pass rate for the College of Pharmacy is 97%.

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.

E. 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, pharmaceuticals 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, South East Regional Health Authority, Moncton, NB and Atlantic Health Sciences Corporation, Saint John, NB in providing a 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 rotations 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 laboratories help students develop skills such as compounding, sterile technique, use of devices such as glucose monitors and ostomy aids, computer skills, written and verbal communications and responding to drug information requests.

A cardiopulmonary resuscitation (CPR) class and standard first-aid class are the student's responsibilities 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 (2 consecutive weeks)
- PHAR 2082.03 - Community Rotation (2 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 (4 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 (6 consecutive weeks)
- PHAR 4085.045 - Community Rotation (6 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

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 will be outlined in lectures, with some topics of

particular interest being studied further in the laboratory. Tutorials aim to develop students' ability to learn biochemistry on their own and in small groups.

INSTRUCTOR(S): B.H. Lesser

FORMAT: Lecture 4 hours/ lab 3 hours/ tutorial 6 hours; 7 weeks

EXCLUSION: This class is restricted to students in the BSc (Pharm) program.

CO-REQUISITE: CHEM 2442.03

CHEM 2442.03: Organic Chemistry for Pharmacy Students.

This class will cover aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy. This class does not serve as a prerequisite for any other chemistry class.

FORMAT: Lecture 3 hours

RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

MICR 1050.03: Basic Microbiology and Immunology for Pharmacy.

This class is strictly for students in pharmacy. Microbiology is learned over a three-week period by way of PBL tutorials, lectures and laboratory sessions. It addresses some basic principles of microbial structure, physiology and genetics in relation to microbial pathogenesis. General concepts of antibiotics and immunity are also discussed. Laboratory sessions using demonstrations and exercises are designed to complement the lectures and to provide a practical appreciation of the isolation, identification, cultivation and control of microorganisms.

INSTRUCTOR(S): L. Murray

FORMAT: Lecture 3 hours, tutorial 6 hours; 3 weeks

PREREQUISITE: BIOL 1000X/Y.06 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: M. Kelly

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: N. MacKinnon, C. Tobin

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: K. Walsh

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.

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, the Regional Drug Information Service and the pharmaceutical manufacturer. They gain experience in evaluating and using these resources efficiently and effectively through assignments. Second term focuses on the fundamentals of clinical research methodology, evaluating a research paper and biostatistics.

COORDINATOR: M. MacCara

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 3-4 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 3-4 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 3-4 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 is limited to gastrointestinal ailments, and their management. Topics include acid-pepsin disease, diarrhea, constipation, and inflammatory bowel disease.

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 3 hours, tutorial 6 hours

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. Goralski

FORMAT: lecture 27 hours; 3 weeks

PREREQUISITE: Successful completion of all first year classes

PHAR 2060.015: Medication Use Management.

This problem-based learning class focuses on the following: (1) the medication use process in today's healthcare system, (2) an overview of the problems with the current medication use process; (3) philosophies and programs that can/may improve the effectiveness and safety of the current medication use process, (4) and methods to measure improvement with medication use and patient outcomes. Each tutorial group is assigned to a local pharmacy to develop a disease management program tailored to the specific needs of that pharmacy.

COORDINATOR: N. MacKinnon

FORMAT: Lecture 3 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all first year pharmacy.

PHAR 2070.03: Pharmacy Skills Lab II.

Second year skills labs reinforce and expand upon the skills learned in first year. Subject matter learned in the second year problem-based learning curriculum will be applied and practiced in this class. Patient and Pharmaceutical Care is introduced with an emphasis on appropriate therapy selection and patient counseling. Second year focuses on non-prescription medication counseling and recommendations in select areas. There is also an emphasis on prescription and patient counseling for select medical conditions.

COORDINATOR: G. Rodriques

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 health care team, sterile procedures and IV admixtures, medication safety, and interdisciplinary educational 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: P. J. Zed

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. Pharmacy administration is also integrated. PHAR

3020.03 deals with common women's health issues such as contraception, osteoporosis and menopause and the management of these problems.

COORDINATOR: P. Farmer

FORMAT: lecture 3-4 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

PHAR 3030.03: Infectious Diseases.

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 3030.03 is devoted to miscellaneous infectious diseases.

COORDINATOR: P. Farmer

FORMAT: Lecture 3 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

PHAR 3040.06: Cardiovascular Diseases.

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. PHAR 3040.06 addresses cardiovascular diseases such as hypertension, stroke, ischemic heart disease, congestive heart failure and thromboembolism, and the pharmacologic management of these conditions.

COORDINATOR: P. Farmer

FORMAT: Lecture 3-4 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

PHAR 3050.03: Pain and Rheumatology.

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 3050.03 deals with the understanding and management of acute and chronic pain of various origins.

COORDINATOR: P. Farmer

FORMAT: Lecture 3-4 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, 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. PHAR 3055.06 involves the study of an array of conditions ranging from depression to seizure disorders.

COORDINATOR: P. Farmer

FORMAT: Lecture 3-4 hours, tutorial 6 hours

PREREQUISITE: Successful completion of all second year classes

PHAR 3060.03: Endocrine 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. PHAR 3060.03 looks primarily at such disorders as diabetes and thyroid conditions.

COORDINATOR: P. Farmer

FORMAT: Lecture 3-4 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 skills and concepts learned in skills laboratory I and II. These include professional communications, computer skills, prescription processing and patient care. Emphasis is on the application of knowledge acquired in PBL tutorials, and class content is geared at complementing information covered in tutorials.

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

PREREQUISITES: PHAR 3010.03 or consent of instructor

FORMAT: Lecture, small group – 2 hours

PHAR 4025.06: Pathocytologic 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 administration is also integrated. This class deals with the pharmacotherapy of common cancers and includes issues such as pain control.

COORDINATOR: P. Farmer

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, 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. This class deals with hepatitis, various other liver disorders, renal disease and men's health issues related to the genitourinary tract.

COORDINATOR: P. Farmer

FORMAT: Lecture 3-4 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 health care system and pharmacy benefit management; (2) pharmacoeconomics and formulary decision making; and (3) human resource management and leadership. In this third section, we will discuss (a) human resource management principles in pharmacy, including the relevant theories and the practical application of these theories (b) financial management in pharmacy, (c) management implications of pharmacy technology, (d) professional leadership, and (e) time management.

COORDINATOR: N. MacKinnon

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 gained via PBL modules to provide patient care. Specific activities include but are not be limited to: computer prescription processing, patient interviewing and counseling, and application of the pharmaceutical care process to simulated patient situations. Patient scenarios are more complicated with the introduction of patients with multiple medications and disease states.

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 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 health care team incorporating professionalism, ethical principles, drug information, patient education and health promotion in the application of pharmaceutical 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 health care 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 health care team and incorporate professionalism, ethical principles, drug information, patient education and health promotion in the application of pharmaceutical care. Students will be required to complete full pharmaceutical 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

Recreation

See School of Health and Human Performance (page 334).

Social Work

The School of Social Work

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Lecturer

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Agency Field Supervisors

Many individuals throughout the municipality and the province contribute to the education of Social Work students in two levels of field placements. Their invaluable assistance is gratefully acknowledged.

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 School was founded in 1941 to meet a need for professionally qualified social workers in the Atlantic region. The School amalgamated with Dalhousie University in 1969 to become one of the nine constituents of the Faculty of Health Professions. The Undergraduate program leading to a Bachelor of Social Work degree (BSW) was introduced in the late 1970s to provide basic professional education in Social Work. Liberal arts classes in the humanities and social sciences and more specialized courses in professional social work equip students with the knowledge and skills essential to employment in a wide range of human services.

The BSW degree program is accredited by the Canadian Associations of Schools of Social work. 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. Campus study may be full time or part time while distance study is available on a part time basis. Both delivery methods include 700 hours of field placement experience. The application deadline is February 15th of each year.

B. Relationship to the MSW Program

The School also offers a Master's degree program for advanced specialized study in Social Work practice. The BSW is the academic prerequisite for graduate study in Social Work. The MSW program at the School of Social Work also has a social work practice prerequisite, which requires two years of post BSW full-time social work experience (or the part-time equivalent prorated) in the preferred area of graduate study concentration.

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, followed by an examination established by the Board of Examiners, NSASW.

II. Bachelor of Social Work Degree Program

Admission

Information on academic preparation, admission and application procedures is contained in the Admission Requirements sections 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 course of study.

A. Affirmative Action

In accordance with Human Rights legislation, the School of Social Work has an affirmative action policy for applicants who are Acadian, Aboriginal, Black/African Canadian, members of other racially-visible groups, and for persons with disabilities. 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 Personal 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 acquired the knowledge base which enables them to understand human development and social conditions and the skills to analyse policies and political forces that influence human lives, including their own and those of users of social services, and which also shape health and social welfare services. This includes an understanding of systemic inequality in resources and power rooted in diverse factors such as class, gender, sexual orientation, race, ethnicity, disability, age and regional underdevelopment.
2. Be aware of a range of social work theories and practice methods
3. Be able to practice in accordance with social work values and ethics
4. Use their knowledge, analytical abilities and values to develop a beginning competence in social work interventions which are effective and which demonstrate accountability to users and providers of services and to professional standards and ethics
5. Have integrated theories, values, analytical and practice methods into a framework or approach to social work practice which they can articulate and use as a foundation for ongoing learning and professional development
6. Be prepared for generic social work practice that incorporates fundamental concerns for social justice.

C. Program Requirements

The five admission credits that form the basic BSW academic prerequisite reduces the 20 degree requirement to the following 15 credits for all students.

Required Courses

- SLWK 2001.03: Historical and Ethical Foundations of Social Work Practice
- SLWK 2002.03: Beginning Social Work Practice
- SLWK 2010.03: Introduction to Community Social Work
- SLWK 3011.03: Perspectives on Social Welfare Policy I
- SLWK 3012.03: Perspectives on Social Welfare Policy II
- SLWK 3020.06: Field Instruction I. (or equivalent)
- SLWK 3030X/Y.06: Theoretical Foundations of Social Work
- SLWK 3070.03: Social Service Delivery Analysis
- SLWK 3083.03: Introduction to Research Methods and Statistics in Social Work
- SLWK 3084.03: Understanding Research and Research Methods in Social Work
- SLWK 3220.03: Cross-Cultural Issues and Social Work Practice
- SLWK 4010X/Y.06: Advanced Social Work Practice
- SLWK 4030.12: Field Instruction II
- SLWK Social Work Elective
- SLWK Social Work Elective

Electives

Electives may be chosen from those offered by the School of Social Work (or other social problem electives offered by other university departments).

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 Courses and then to Required Courses within the BSW curriculum.
- c. Transfer credit for university Social Work courses taken prior to a student's admission to the SSW may be assigned to required courses within the BSW curriculum. For this to occur students are required to submit the course outlines for these courses (calendar descriptions are not sufficient).
- d. No matter where transfer credit is assigned all students must complete at least ten credits offered by 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 course 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. Course 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 ten 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 register on a part time basis for three years of study.

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 fifteen 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.

2. On-Campus Delivery

- Course load and sequencing may vary from student to student depending upon the number of transfer credits and full or part-time status.
- 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 course load may be as minimal as one .03 credit class per term.
- The only Social Work courses offered in the Spring semester consist of one Social Work elective and Field I and II.
- It is important to pay close attention to the pre or co-requisites for each course. These are indicated in the course descriptions in the next section of the calendar.
- Some students are eligible for the Field I Equivalency Option described in the Course Descriptions.

Generally, a full-time, two-year course of study would be:

Year 1: Fall term

- SLWK 2001.03: Historical and Ethical Foundations of Social Work Practice
- SLWK 2002.03: Beginning Social Work Practice
- SLWK 3030.06X: Theoretical Foundations of Social Work
- 2 other .03 credits from the list of required courses

Year 1: Winter term

- SLWK 3030.06Y: Theoretical Foundations of Social Work
- SLWK 3020.06: Field Instruction I.
- 2 other .03 credits from the list of required courses

Year 2: Fall term

- SLWK 4010.06X: Advanced Social Work Practice
- SLWK 4030.12: Field Instruction II
- 2 other .03 credits from the list of required courses

Year 2: Winter term

- SLWK 4010.06Y: Advanced Social Work Practice
- SLWK 4030.12: Field Instruction II
- 2 other .03 credits from the list of required courses

For part-time, on-campus study, students have some flexibility in designing their program. However, SLWK 2001 and SLWK 2002 are prerequisites for many courses and should therefore be taken in the Fall term of the first year. If one is doing a three-year program it is suggested that SLWK 3030 be done in year two and SLWK 4010 in year three

3. Distance Delivery

Distance Students are strongly encouraged to maintain the three-year schedule which follows. Research has shown a positive correlation between the length of time in the program and the drop out rate - that is, the shorter time students remain in a program the more likely they are to graduate. Any change from the three-year schedule must be in accordance with pre- and co-requisites as outlined in the calendar and are dependent upon availability of course offerings, especially electives. Any student wishing to complete the program in a different time frame should discuss their situation with the Distance Education Coordinator.

Students studying by distance follow the following three-year schedule:

Year 1: Fall Term

- SLWK 2001.03 Historical and Ethical Foundations of Social Work
- SLWK 3220.03 Cross-Cultural Issues and Social Work Practice

Year 1: Winter Term

- SLWK 2002.03 Beginning Social Work Practice
- SLWK 3011.03 Perspectives on Social Welfare Policy

Year 1: Spring/Summer Term

- SLWK 3020.06 Field Instruction I
- Elective¹

Year 2: Fall Term

- SLWK 3030.03X Theoretical Foundations of Social Work Practice
- SLWK 2010.03 Introduction to Community Social Work

Year 2: Winter Term

- SLWK 3030.03Y Theoretical Foundations of Social Work Practice
- SLWK 3083.03 Introduction to Research Methods and Statistics in Social Work

Year 2: Spring/Summer Term

- SLWK 4010.06 Advanced Social Work Practice (Residential Component)¹
- Elective¹

Year 3: Fall Term

- SLWK 3070.03 Social Service Delivery Analysis
- SLWK 3084.03 Understanding Research and Research Methods in Social Work

Year 3: Winter Term

- SLWK 3012.03 Perspectives on Social Welfare Policy II

- SLWK 4030.12 or 4031.06 Field Instruction II (If students register for SLWK 4031.06 they are required to complete SLWK 4032.06 in the summer semester.)

Year 3: Spring/Summer Term

- SLWK 4032.06 Field Instruction II

¹ Students choose from four electives offered each Spring and/or Summer.

Students who have additional courses to complete may need to take more electives.

Students are required to complete a two-week residency onsite at the Dalhousie University campus in the Spring/Summer of the second year, to complete one full credit of study SLWK 4010X/Y Advanced Social Work Practice. In addition to tuition (2 x tuition) and distance delivery fee (2 x ddf), students are responsible for the cost of travel, meals and accommodation during the two weeks on-campus. Pre/co-req: SLWK 2001, SLWK 2002, SLWK 3020, SLWK 3030X/Y.

E. Registration

Registration is completed online for all students (regardless of delivery method). For more information, go to www.registrar.dal.ca/regguide and 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 core classes other than those which apply to the delivery method for which the student has been accepted.

The fee schedule for the new academic year is available at this time, and comes into effect in September. International students are required to pay an additional "differential fee", and a health insurance fee. Students studying by distance are charged a distance delivery fee (ddf) of \$204.00 per half credit course. Fees are paid by the term in relation to the number of classes in which the student enrolls.

F. Field Placement

1. List Of Available Field Placement Information

For further information about Field Placements you may pick up the appropriate manuals and forms from the SSW office or the following web link: <http://socialwork.dal.ca/bsintro.html>.

2. Field Instruction

All students are required to undertake the two field placements (SLWK 3020X/Y.06 and 4030X/Y.12) normally during regular working hours of the agency, institution or government department. The field component of the program is organized by the Field Coordinator of the School of Social Work. There is provision for seminars, workshops and consultations in order to assist the students with applying content from academic classes.

G. New Student Advising Sessions

New on campus students are expected to attend Orientation which is scheduled prior to the commencement of classes. Students studying by distance will receive online orientation. 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 should contact the Distance Education Coordinator regarding their program schedule.

H. Tri-IPAAC

Students in the Faculties of Dentistry, Health Professions and Medicine participate in interprofessional modules to discuss contemporary health and health care issues. The interprofessional modules are part of the curricula of individual programs. Participation is mandatory. The objectives of these modules for students and faculty are to:

- Learn and develop skills and strategies for working effectively to address complex problems and issues with other professionals, colleagues, and clients/consumers/patients;
- Develop an awareness of, and respect for, the expertise, roles, values of other professionals, colleagues and clients/consumers/patients.

BSW students need to attend four of the five modules to be determined by the School. Each module is assigned to a particular course for the purpose of integrating the learning. Students attend these modules 'in Lieu' of class time, and therefore, will be given equivalent time off by their professor. The professor will determine the most appropriate time to compensate the class. In addition, if students have other classes scheduled for the afternoon of any of the modules, the Calendar regulations stipulate that the Tri-IPAC modules take priority and professors must excuse students from their classes with no penalty. More information can be found on the Tri-IPAC website at: www.dal.ca/ipac.

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 which are set forth in the annual Undergraduate Calendar, which is available to all registered students without cost. The website location is 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 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. Grade Requirements for Field Instruction Class

Field Practice classes SLWK 3020.06 - Field I and SLWK 4030.12 - Field II are graded on a pass/fail system. A student who receives a failing grade in SLWK 3020.06 - Field I, must repeat the field instruction/placement and obtain a passing grade in order to be eligible to proceed in the program. Field II cannot be repeated.

4. 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 twelve months. (Please refer to Academic Regulations - Good Standing, Probation and Academic Dismissal, Dalhousie Undergraduate Calendar).
- A student who fails a repeated academic class or who fails a repeat of SLWK 3020.06 - Field I, must normally withdraw from the School.
- A student who fails SLWK 4030.12 - Field II is required to withdraw from the School.

5. 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 (page 29).

6. Readmission

Because of the relation of the BSW program to the attainment of professional qualifications the BSW Committee evaluates each application separately, and informs the student by letter of its decision. Due to the competitive nature of the enrolment process, readmission of students is not guaranteed. Program requirements for reaccepted students may be adjusted effective from the date of readmission.

7. Readmission After Required Withdrawal

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 twelve month's absence from the School. Since enrolment in the program is limited, applicants must understand that readmission is not automatic.

8. Readmission After Voluntary Withdrawal

Students in good standing who have not registered in the program for two years or less and who wish to be reinstated are required to submit a new application form, to be returned with a letter to the Chairperson, BSW Committee, requesting re-entry to resume their BSW degree studies.

Students who have not registered in the program for three years or more and who wish to be reinstated are required to reapply, normally by the February 15 admission deadline date. The application and supporting documentation must be accompanied by a letter explaining the reasons for the interruption in the student's studies and the decision to resume the BSW degree program. Former students who have less than the five general admissions credits, which are now required prior to BSW admission, must complete these before reapplying. (See Admissions Requirement Faculty of Health Professions - School of Social Work (page 13) of this calendar.

9. Appeals

A student wishing to appeal a decision based on School regulations, should consult with the Chairperson of the Academic Appeals Committee for advice on appeal procedures.

10. 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 page 33).

11. Workload Regular Academic Year

Five (5) 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 Chair, BSW Committee, School of Social Work, 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.

In addition to the regular timetable, field seminars, labs and/or workshops may be offered throughout the term.

12. Workload Summer Session (includes May-June and July-August parts of term)

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 placements 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 courses in the summer sessions. Consult the timetable for current course offerings.

Special permission is required to exceed the two-credit limit for the two summer terms.

13. 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 non-restricted Social Work classes, specifically SLWK 3011.03, 3012.03, 3083.03, 3084.03 and certain Special 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 classes 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."

14. 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. Further information may be obtained from the Student Services Coordinator.

15. Requirements for Award of Dalhousie Degree

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.

16. 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, and normally 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 BSW Program Committee.

17. 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, page 32.

18. Tuition Fees

Tuition fees are reviewed annually and increases are effective in September. Regular tuition applies to both campus and distance courses. For students studying by distance, in addition to the tuition fee there is a distance delivery fee of \$204.00 per each half-credit course.

The first field placement, is one full credit. The cost for this placement will be 2x tuition plus 2x distance delivery fee. The second field placement, is two full credits. The cost for this placement is 4x tuition plus 2x the delivery fee. The distance delivery fee remains constant for the duration of the program.

Students are advised to consult the following website for current tuition fees: <http://as01.ucis.dal.ca/stdacct/fees.cfm>.

IV. Course Descriptions

SLWK 2001.03: Historical and Ethical Foundations of Social Work.

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. As the first required class in the BSW program, SLWK 2001.03 introduces students to the history, values, and the ethical and political context of social work. The course also examines current social work practice locations, grounding this examination in an anti-oppressive approach to practice. Finally, the course encourages the development of a critical and reflective stance, as such a stance is integral to a practice that incorporates fundamental concerns for social justice. (BSW Program Objectives, SSW).

FORMAT: Lecture, discussion and group

RESTRICTION: Restricted to Social Work students

SLWK 2002.03: Beginning Social Work Practice.

This introductory social work practice class provides students with an opportunity to develop a beginning competency in the skills of interviewing, assessment and counseling. This class encourages the development of a critical and reflective stance towards practice as such a stance is integral to a practice that incorporates fundamental concerns for social justice. In addition to scheduled classroom time, students are expected to participate in a minimum of 15 hours of lab time during the term.

FORMAT: Lecture, discussions, group exercises, and participation in skill development training.

PREREQUISITE/CO-REQUISITE: SLWK 2001.03

RESTRICTION: 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. Using lectures, case studies, and relevant web sites, this class will discuss various elements of the change process and examine specific change strategies.

FORMAT: Lecture, discussion and group exercises

PREREQUISITE/CO-REQUISITES: SLWK 2001.03 and 2002.03

RESTRICTION: Restricted to Social Work students

SLWK 3011.03: Perspectives on Social Welfare Policy I.

This course provides a history of the development of social welfare in Canada and the context in which that development occurred. The focus is on historical understandings of social welfare. In some respects, the historic understandings are different from today; in other respects, they influence how we think today. The course does not address current policies. Perspectives on Social Welfare Policy II deals with policy issues in a contemporary context.

FORMAT: Lecture and discussions

SLWK 3012.03: Perspectives on Social Welfare Policy II.

As an introduction to social policy analysis, this class provides a survey of a variety of perspectives on social problems and social policy issues, with a focus on contemporary debates.

FORMAT: Lecture and discussions

PREREQUISITE/CO-REQUISITES: None, although it is recommended that SLWK 3011.03 be taken before SLWK 3012.03

SLWK 3020.06: Field Instruction I.

This initial field placement provides an opportunity for beginning social work practice under supervision of social workers within the Agency in liaison with School faculty. Please note some exceptions apply and are considered on a case-by-case basis, but there must always be a qualified social worker involved in every placement. The student develops beginning competence in direct practice situations, working with individuals, small groups, and community practice settings. Use of agency and community resources, policies and services are studied. Approximate length: 200 hours. Students must indicate their intent to register for Field I to the Field Co-ordinator. Field I should be completed early in the student's program.

NOTE: A Field 1 Equivalency Option exists for those students who have considerable social work practice experience and who would benefit from taking additional courses. Applications for the “Equivalency Option” are due October 30 of the first year of a student's program. If approved the student does not complete Field 1 but completes two other half credits in lieu of Field 1.

FORMAT: Practice Placement

PREREQUISITE/CO-REQUISITES: SLWK 2001.03 and 2002.03

RESTRICTION: Restricted to Social Work students

SLWK 3030X/Y.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. Case applications are explored from a variety of practice situations and problem definitions. The first term consists of the theoretical foundations of social work, understanding their relation to social work practice from a social, political, economic and historical position. The second term explores issues of oppression and domination, followed by the examination of substantive areas of conceptual practice, including community advocacy work, group work, gender/sexuality, depression, grief and violence toward women. The dynamics of ethics relating to practice are woven throughout the course.

NOTE: Students taking this class must register in both X and Y terms; credit will be given only if both are completed consecutively.

FORMAT: Lecture, discussions, and group exercises

PREREQUISITE/CO-REQUISITES: SLWK 2001.03 and SLWK 2002.03

RESTRICTION: Restricted to Social Work students

SLWK 3070.03: Social Service Delivery Analysis.

The class develops an appreciation of the social worker's role and responsibility in planning and delivery of social services, an understanding of the ability to apply selected theoretical models of service delivery, proficiency in analyzing and influencing service delivery systems in which social workers participate, and familiarity with some of the recent service delivery innovations in various provinces of Canada.

FORMAT: Lecture, discussions, and group exercises

RESTRICTION: Restricted to Social Work students

SLWK 3083.03: Introduction to Research Methods and Statistics in Social Work.

This class provides an introduction to research methods and statistics, with particular attention to examples from social work research. Through the use of examples, 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.

FORMAT: Lecture, discussions, and group exercises

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. Being competent in the evaluation of social work research allows social workers to meet their ethical and professional obligations to evaluate interventions, contribute to social work knowledge and to use social work literature in decision-making.

FORMAT: Lecture, discussions, and group exercises

PREREQUISITE: SLWK 3083.03 is recommended

SLWK 3220.03: Cross-Cultural Issues and Social Work Practice.

This class 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 social policies as they relate to them.

FORMAT: Lecture, discussions, and group Exercises

RESTRICTION: Restricted to Social Work students

SLWK 4010X/Y.06: Advanced Social Work Practice.

The purpose of SLWK 4010 is to help students further develop and become skilled in applying a critical social work practice framework at the beginning practitioners level.

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, discussions, and group exercises

PREREQUISITE: SLWK 2001.03, 2002.03, 3020X/Y.06, 3030X/Y.06

RESTRICTION: Restricted to Social Work students

SLWK 4030.12: Field Instruction II.

The Field II course includes agency based practice experience, an integrative seminar and the development of a model of social work practice. There is an opportunity, under agency and faculty supervision, to develop a broad range of practice knowledge and skills in research, social policy, individual and group work and community organization sufficient to meet the requirements of an entry level professional position. The student becomes proficient in service situations requiring intervention, and can recognize the need for influencing policy, program or process within the placement agency in order to carry out professional responsibilities.

The Field II practicum is done at or near the end of a student's program.

Minimum requirement: 500 hours of agency based practice, 12 integrative seminars and a paper on the student's model of practice.

FORMAT: Practice Placement

PREREQUISITE: SLWK 2001.03, 2002.03, 3020X/Y.06, 3030X/Y.06, SLWK 4010.06

RESTRICTION: Restricted to Social Work students

V. Electives

In keeping with the overall program goals of the BSW program of SSW, all elective courses are designed to help students develop a critical analysis of the major themes and current issues related to the course 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 Special Field of Practice Electives. The format is generally a combination of lecture, discussions and small group activities. Participation of non-social work students dependent upon approval of their home School/Department, course enrollment and the permission of the instructor. Not all electives are offered every year - check the calendar 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 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
Halifax, NS B3H 3J5
Telephone: (902) 494-2582
Fax: (902) 494-1195
Website: <http://management.dal.ca>

Dean

Wheeler, D., BSc (Hons) (Surrey), PhD (Surrey)
Suite 3050
Telephone: 494-2582

Directors

School of Business Administration

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Telephone: 494-7080

School of Information Management

Black, F.A., BEd (Aberdeen), MLIS (Dalhousie), PhD (Loughborough)
Suite 4010
Telephone: 494-3656

School of Public Administration

Siddiq, F.S., BA (Dhaka), MA (Dhaka), PhD (Dalhousie)
Suite 3010
Telephone: 494-3742

School for Resource and Environmental Studies

Beazley, K.F., AADipl (Fanshawe College of Applied Arts and Technology), BLA (Ontario Agricultural College), MA (Waterloo), PhD (Dalhousie)
Suite 5010
Telephone: 494-3632

The Faculty of Management includes four schools - School of Business Administration, 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 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 Program Office at 494-2659.

Commerce

School of Business Administration

Location: 6100 University Avenue
Halifax, NS B3H 3J5
Telephone: (902) 494-7080
Fax: (902) 494-1107

The Dalhousie School of Business Administration 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

Dean, Faculty of Management

Wheeler, D.

Director, School of Business Administration

Klapstein, R.E.

Director, Commerce Program

Sheehan, L.

Commerce Program Manager

MacInnis, A.J.

Commerce Program Academic Advisor

TBA.

Director, Centre for International Business Studies

Hebb, G.

Coordinator, International Student Exchange Program

Richard, T.

Director, Management Career Services

Akerboom, J.

Career Services Professional Staff

Cranston, A.
Howard, A.
Jones, M.
MacLeod, A.
MacLeod, J.
Richard, D.

Academic Staff

Professors Emeriti

George, R.E., BSc (London), MA (Bristol), PhD (London)
Parker, J.R.E., BComm (Dal), MBA (Wash), CPhil (Mich), FCA

Professors

Brooks, M.R., BOT (McGill), MBA (Dal), PhD (Wales) Chairholder -
William A. Black Chair of Commerce
Carroll, R., BBA, BEd (StFX), MBA (Dal), PhD (Dal), FCGA
Chowdhury, S., BComm, MC (Dhaka), PhD (Kentucky)
Conrod, J.E.D., BComm (Dal), MBA (Toronto), FCA
Duffy, J.F., BS, MS, PhD (Iowa State)
Fooladi, I., BSc (Iran), MA (Tehran), MS, PhD (Oregon) Chairholder -
Douglas C. MacKay Chair in Finance
MacLean, L.C., BA, BEd (StFX), MA, PhD (Dal) Chairholder - Herbert S.
Lam Chair in Business Education
Marche, S., BA (Royal Military College), Professional Diploma (Alberta),
Med (Alberta), PhD (London School of Economics)
McLarney, C., BComm, MBA (Windsor), PhD (York)
Mealiea, L.W., BA, MBA (Rutgers), PhD (Mass)
Oppong, A., BSc (Ghana), MBA (Chicago), PhD (Iowa), CGA
Schellinck, D.A., BSc, MBA (Dal), PhD (Ill) Chairholder - F.C. Manning
Chair in Economics and Business

Associate Professors

Archibald, B.C., BA (Queen's), MSc (Stanford), PhD (Waterloo)
Blunden, R.G., BComm (Dal), MM (Northwestern), PhD (Western)
Curri, G., MA (Carleton), PhD (Bradford)
Dirksen, C.J., MBA (Oregon), BS (Santa Clara), PhD (Oregon)
Gassmann, H.L., (Director, Commerce Program) Vordiplom (Stuttgart), MS
(Oregon State), PhD (UBC)
Hebb, G., BA (McGill), MBA (Queen's), MA (Dal), PhD (Texas A&M)
Klapstein, R.E., (Director) BSc (Calg), BA (Alta), MBA, LLB (Dal), LLM
(Osgoode Hall), CMA
Nason, R., CFA, BSc, (McMurray), MSc (Pittsburgh), PhD (Richard Ivey
School of Business, Western)
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)
Trifts, V., BBA (UPEI), MBA (St. Mary's), PhD (Univ. of Alberta)
Zhao, Y., BSc (Anhui), MSc (Kentucky), PhD (UBC)

Assistant Professors

Bliemel, M., BSc (Queen's), MMS (Carleton)
Foster, M., BA (Dal), PhD (Dal)
Grise, M.L., BComm, PhD (Queen's)
Kelley, E., BA MBA (St. Mary's), MLS (Toronto), PhD (St. Mary's)
MacLean, B.W., BComm, MBA (Dal), CA
Manderson, J., BA (PEI), MA (Dalhousie), PhD (Alberta)
Myers, J., BA (Keele), MSc (Nottingham Trent)
Pacurar, M., BA (Babes - Bolyai, Romania), MBA (Univ. of Nantes) IFAG,
(France)
Sy, D., DUESI - DUESII (UCAD), BAA (HEC - Montreal), MSc (HEC-
Montreal), PhD (McGill)

Lecturers

Baird, M., BComm (UBC), CGA, PhD (c) (Queen's)
Van Berkel, E., BA (King's), MA (Dal), BJournalism (King's)
Clory, N., BBA (StFX), MBA (Dal and Toronto)
Crowell, T., BComm, MBA (St. Mary's), CA
Leach, E., BComm (Dal), CMA (NS), MBA (Western)
Riaz, S., BSc (A.M.U.), MBA (India), ABD (Western)
Shaw, D., BA (Queen's), MA (Edinburgh)
Tetreault, B., BA (Cornell), MA (Chicago)

I. Bachelor of Commerce Program

The School of Business Administration offers a four-year, Bachelor of Commerce (Co-operative Education) Program that is accredited by the Canadian Association for Co-operative Education (CAFCE). It is one of only two mandatory co-op business degree programs in Canada. Co-operative 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 College 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 - 7 academic terms and 3 work-terms
- Total credits required - 20
- Required GPA for graduation 2.00
- Required core area classes - 10 1/2 credits.

Note: Some suitable replacements for MATH 1115.03 are MATH 1000.03 and MATH 1010.03

- Commerce electives - 4 credits;
- Work-terms - 1 ½ credits
- COMM 1010.03
- COMM 1502.03
- COMM 1701.03
- COMM 1702.03
- COMM 2101.03
- 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 - 4 full credits (of which 1½ credits must be above the 1000 level) selected from all classes offered in the University other than commerce, management and business.

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 School of Business, Commerce Program Manager, 6100 University Ave., (902) 494-1811. Email: amita.macinnis@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
- ECON 1101.03: Principles of Microeconomics
- COMM 1502.03: Core Business Applications
- COMM 1701.03: Communications I
- One non-Commerce elective

Academic Term Two

- COMM 1702.03: Communications II
- COMM 2101.03: Financial Accounting
- ECON 1102.03: Principles of Macroeconomics
- MATH 1115.03: Mathematics for Commerce
- One non-Commerce elective

Academic Term Three

- COMM 2102.03: Managerial Accounting
- COMM 2202.03: Managerial Finance
- COMM 2401.03: Intro to Marketing
- COMM 2501.03: Statistics I
- One non-Commerce elective

Work Term I

Academic Term Four

- COMM 2203.03: Intermediate Finance
- COMM 2303.03: Introduction to Managing People
- COMM 2502.03: Statistics II
- COMM 2603.03: Legal Aspects of Business
- COMM 3511.03: Management Information Systems

Work Term II

Academic Term Five

- COMM 3501.03: Operations Management
- PHIL 2081.03: Business Ethics
- Three commerce electives
- One non-commerce elective

Work Term III

Academic Terms Six and Seven

- COMM 4351.03 and 4352.03
- Five commerce electives
- Four non-commerce electives

During their fifth, sixth and seventh academic terms, students can either pursue a general 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 2110.03
- COMM 3105.03
- COMM 3111.03
- COMM 3114.03
- COMM 3116.03
- COMM 4101.03

Plus two of:

- COMM 3203.03
- COMM 3207.03
- COMM 4102.03
- COMM 4114.03
- COMM 4120.03
- COMM 4201.03

The professional accounting bodies allow certain exemptions in respect of classes taken in the School of Business Administration. 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.

Major in Business Management

Students **must** complete the following four classes:

- SOSA 1000.06
- COMM 3303.03
- COMM 3309.03
- COMM 4306.03

Plus two of:

- COMM 3308.03
- COMM 4315.03
- COMM 3310.03

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

Either the second (COMM 3801) or third (COMM 3802) work term must be an “entrepreneurial work term”, as defined by the Norman Newman Centre for Entrepreneurship; 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 4250.03

Plus three of:

- COMM 3207.03
- COMM 4201.03
- COMM 4202.03
- COMM 4203.03
- COMM 3100.03 (recommended) or COMM 3105.03 or ECON 2200.03 or ECON 2201.03

Major in International Business

Students **must** complete the following non-Commerce electives:

- POLI 1100 or 1103 X/Y; 6 credit hours or 2 of POLI 1010, POLI 1015, POLI 1020, POLI 1025, POLI 1030, POLI 1035. Note: not all courses are offered every year.
- Language Requirement; 6 credit hours (at a level appropriate to knowledge, as determined by Dept. concerned)

Plus the following:

- COMM 3405.03
- COMM 4201.03
- COMM 4315.03
- COMM 4701.03
- ECON 2200.03
- ECON 3330.03

Students must also do either an approved work term or academic term abroad, in order to major in International Business.

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 3402.03
- COMM 3409.03
- COMM 4413.03

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 4413.03

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/commcoop>)

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 Educators conduct work site visits 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 online with the Registrar office.
2. Students must also register electronically on Placepro 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. Each week of a work term must be a minimum of 35 hours.
4. All jobs, including self-found jobs must be approved by a career educator within Management Career Services (MCS).
5. Students are responsible for finding suitable employment and students sign a Co-op Work Term Agreement prior to the first work term accepting this responsibility. (Aid in the job search is provided by the career coordinators at the MCS and some job opportunities are posted through MCS on PlacePro.)
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 and Three only: Students must submit an acceptable analytical work term report pertaining to a student's area of study or employment.
9. Work term report guidelines and policies are available online at www.commerce.management.dal.ca.

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-op Fees

Students are required to register for their work terms and are charged a co-operative education fee. Co-op fees are divided into seven equal instalments attached to the academic terms in an effort to balance the cost. These fees are **non-refundable**. Students who transfer into the program from another department or another institution are responsible for back payments.

1. Students taking a term on a letter of Permission are also responsible for payment of co-op fees.
2. Payment of all seven installments are required to obtain a Bachelor of Commerce Degree. Consult the **Fees** section of this calendar for details.

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 colour scanner available free of charge.

E. Exchange Programs

Dalhousie offers Commerce and MBA students the opportunity to study abroad in a variety of countries. Students participating in exchanges gain valuable cultural insights and understanding through their studies, structured for a different global perspective. Exchanges are normally available in approximately 20 countries, including Sweden, Denmark, Finland, the U.K., Korea, Germany, New Zealand, the Netherlands, France, the US, England, Norway and Wales. For more information, contact the School of Business Administration International Student Exchange Office at (902) 494-2224, or email international.exchange@dal.ca.

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 course 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, labor 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 course 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.

FORMAT: Lecture 3 hours.

EXCLUSION: COMM 1000.03

COMM 1502.03: Core Business Applications: Introduction to Computers.

The course focuses on how business applications, notably word processors and spread sheets, contribute to the management and analysis of data with respect to business processes. This class begins with an overview of how computers work before proceeding through several modules that involve data-to-document transformations. We use spreadsheets to perform, to automate routine business calculations, and to visualize the data. The analyses are then collated and summarized using features of word processors to produce a final report. Each successive module increases the complexity of the analyses and reports. 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 1701.03: Communications I.

While the primary goal of this class is to teach students how to properly prepare written business correspondence, first-year students will also learn about academic writing (the concept of intellectual property, library resources, essay writing, and critical thinking). Additionally, they will learn about communication theory and the importance of communication in the workplace so that they will become strategic writers. By the end of the course, students will be able to write business memos, email messages, letters, reports, and proposals.

FORMAT: Lecture 3 hours.

EXCLUSION: COMM 2701, INFO 1002, ENGL 2100, HAFP 1200, CSCI 2100.03 (Students taking COMM 1701 cannot receive credit for these classes)

COMM 1702.03: Communications II.

This class follows Comm 1701. Students are now well acquainted with communication theory and strategic writing. Now they 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 cover a variety of topics such as interviewing, formal and informal presentations, listening, team dynamics, and conducting meetings. Students will have the opportunity to practice their skills and analyze the skills of others.

FORMAT: Lecture 3 hours
 EXCLUSION: INFO 1003, ENGL 2100, HAHF 1200, CSCI 2100.03
 (Students taking COMM 1702 cannot receive credit for these classes)

COMM 2101.03: Introductory Accounting I.

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:

1. To introduce the theoretical framework upon which financial statements are based, and examine the major underlying concepts and principles;
2. To demonstrate basic financial accounting methodologies, and develop the analytical and procedural skills related thereto;
3. 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

PREREQUISITE: COMM 1010.03

EXCLUSION: MGMT 2101.03

COMM 2102.03: Introductory Accounting II.

An introduction to the use of accounting information by managers, within the organization. Emphasis is on management accounting and analysis, with the following objectives:

1. To develop an understanding of the kinds of accounting information managers need;
2. To examine managerial accounting methodologies and develop the analytical and procedural skills related thereto;
3. To prepare accounting reports which are useful for management planning, control and decision-making;
4. 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 2101.03

EXCLUSION: MGMT 2102.03

COMM 2110.03: Accounting Database Analysis and Design.

This class provides a basic understanding of information systems, especially accounting information systems. The class emphasizes the topics of systems analysis, design, control and evaluation, and topics related to database systems. The class emphasizes instruction in, and the use of databases.

FORMAT: Lecture 3 hours; students must complete a major database design project.

PREREQUISITE: COMM 2101.03 or 2102.03, 1501.03 or 1502.03; or permission of the instructor.

EXCLUSION: COMM 3516.03

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 ratio analysis, 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 2101.03; ECON 1101.03 and 1102.03

CO-REQUISITE: COMM 2102.03

EXCLUSION: MGMT 3201.03

COMM 2203.03: Finance II.

This course provides students with an overview of the theory of corporate finance and its application to the problems faced by financial managers. This course covers an in-depth study of capital budgeting and long term investment decisions in national and international contexts, risk and return, 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 Managing People.

This course 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 and COMM 1501.03

EXCLUSION: COMM 2301.03, MGMT 2303.03 and MGMT 2304.03

EXCLUSION: MGMT 3201.03

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. 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).

CROSS-LISTED: MGMT 2401

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 1010.03, 1501.03; ECON 1101.03 and 1102.03; or permission of the instructor.

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 1501.03; ECON 1101.03 and 1102.03; MATH 1115.03

CROSS-LISTING: MGMT 2501.03

EXCLUSION: MATH 1060.03 or 2060.03; STAT 1060.03 or 2060.03; ECON 2260.03; ENGM 2032

COMM 2502.03: Statistics for Business II.

This course is a follow-up to COMM 2501. 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 course for statistical computations.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2501.03 or MATH 1060.03 or 2060.03 or STAT 1060.03 or 2060.03 or ECON 2260.03

CROSS-LISTING: MGMT 2502.03

EXCLUSION: 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 Program Manager, this must be done in the Winter term of the second year.
PREREQUISITE: Successful completion of at least 6 1/2 full credits, of which at least 5 credits must be in the Core Area (Commerce, Economics, Mathematics)

COMM 3100.03: Financial Reporting and Statement Analysis.

This class is intended for non-accounting students. The approach to the class is analytical rather than procedural, with an emphasis on a user perspective. Topics include an in-depth treatment of liquidity risk, and profitability analysis, and valuation as well as accounting topics such as pensions, leases, earnings per share, and cashflow.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2101.03 and 2102.03

EXCLUSION: COMM 3105.03, COMM 3111.03 and COMM 3113.03

COMM 3101.03: Managerial Accounting and Decision Making.

This course focuses on cost and management accounting analysis to support the formulation and implementation of different business strategies. These include analysis of the entire value chain (from R&D to customer service), analysis of underlying cost drivers, and customer profitability analysis. modern costing approaches for enhancing an organization's competitive position (such as target costing and life-cycle costing) are also considered. A combination of case studies and problem-solving techniques are used to demonstrate the concepts and techniques.
NOTE: While this course is intended primarily for non-accounting majors, accounting majors who are considering professional certification in management accounting will also find it useful.

FORMAT: Lecture/case discussions 3 hours

PREREQUISITE: COMM 2101.03 and COMM 2102.03

COMM 3105.03: Intermediate Financial Accounting I.

This class and its follow-up, Commerce 3111.03, are meant to provide a solid understanding of the corporate financial reporting model and related conceptual issues. The course 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, 3113.03

COMM 3111.03: Intermediate Financial Accounting II.

In conjunction with its predecessor, Commerce 3105.03, this class is intended to provide an understanding of the corporate financial reporting model and related conceptual issues. The course 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, accounting changes 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 class covers the theory and practice of public auditing according to generally accepted auditing standards (GAAS). The first half of the class considers the forces impacting on the setting of standards and the current level of standards. This part includes pronouncements of the accounting profession, reporting standards, professional ethics, statute laws, legal liability and responsibilities, 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 second part of the class considers typical audit programs for examination of balance sheet and income statement accounts.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2110.03 and COMM 3105.03 or permission of the instructor.

CROSS-LISTING: BUSI 6101.03

COMM 3116.03: Cost Management.

The major objective of this class 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, profit planning under uncertainty, value of information, management control structures, differentiated controls, performance evaluation and incentives. This class is intended primarily for students who plan to major in the accounting area. Students who wish to take a class in cost/managerial accounting beyond the introductory level, but do not plan a career in accounting, should consider taking COMM 3101.03 instead of this class.

FORMAT: Lectures/case discussions 3 hours

PREREQUISITE: COMM 2101.03 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 2203.03

COMM 3206.03: Portfolio and Money Management.

This course is designed to provide the students with an overview of the Modern Portfolio Theory and its 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 developed through various theories. 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 2203.03

COMM 3207.03: Canadian Securities.

The topics covered in this course 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

PREREQUISITE: COMM 2202, COMM 2203

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, selection, training, performance appraisal, compensation, labor relations, safety and health, and team building. Knowledge of 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 2301.03. Cases simulate work environments.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 2301.03 or 2303.03

EXCLUSION: MGMT 2303.03 and 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 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.

FORMAT: Lecture

PREREQUISITE: COMM 2102.03, 2203.03, and 2401.03, or permission of instructor

RESTRICTION: MGMT 3907.03

COMM 3308.03: Managing the Family Enterprise.

Family enterprises dominate the business landscape of Atlantic Canada with business such as Sobey's, Irving, and McCains. In addition, a large number of smaller businesses are family-owned and operated too. With over 65% of all businesses in Canada being family firms, the likelihood of your encountering a family firm (as a family member that owns the business, or as an employee, a customer, or a supplier) is extremely high. While these firms are similar to non-family firms in some respects, they are quite unique in others. This class provides you with a state-of-the-art treatment of critical issues that confront these firms. It addresses issues such as challenges and strengths of family firms, inter-generational dynamics, sibling relationships, managing of conflict, succession planning and transfer of power from one family member to another, professionalization and strategic management of family firms. The class provides you with an opportunity for extensive interaction and discussion in class, as well as to view a family firm closely through a field project. In addition, you are exposed to some professionals who deal with family firms.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 2101.03 (or MGMT 2101.03) and COMM 2401.03 (or MGMT 2401.03) 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 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: COMM 2301.03 or COMM 2303.03, or permission of the instructor

EXCLUSION: MGMT 3309.03

COMM 3310.03: Leadership and Strategic Change.

Course focuses on six major approaches to the study of leadership. Some major ethical traditions will be linked to managerial excellence, corporate culture, motivation, human personality, core values, decision making and visionary leadership. New perspectives on mentoring, coaching and empowerment will also be emphasized in this course. In view of the crisis in ethics in most professions, the major parameters of ethical leadership will be analyzed.

PREREQUISITE: COMM 2303.03

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.

The communication tools of advertising, sales promotion, and public relations are presented as part of the overall marketing mix. Positioning, segmentation, and other marketing concerns will be studied as they relate to the firm's communications strategy. Challenges of the product manager will be presented to help students appreciate those factors which affect marketing communication decisions.

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 course 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, STAT 2080.03 or MATH 2080.03 or ECON 2280

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.

FORMAT: Lecture/discussion 3 hours

PREREQUISITE: COMM 2102.03, 2401.03; ECON 1101.03 and 1102.03

COMM 3407.03: Logistics Management.

An examination of the decision problems faced by managers within the supply chain: the channels of distribution, the transportation and storage of products, and the communications and data processing system, 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 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 plan.

PREREQUISITE: COMM 3801.03

CROSS-LISTING: BUSI 6407.03

CO-REQUISITE: COMM 3501.03

COMM 3408.03: Transportation Modes and Policy.

This course 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 course 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 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 compliment the Marketing Informatics class that focuses more on the total information needs, acquisition and usage within a firm for purposes of marketing.

PREREQUISITE: COMM 2301.03 and COMM 2401.03

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 scheduling, control, materials management and quality assurance. It concludes by examining production planning and strategy.

FORMAT: Two 1.5 hour lectures (or case discussions)

PREREQUISITE: COMM 2203.03, 2301.03, 2401.03, 2501.03, or STAT

1060.03 or MATH 1060.03

EXCLUSION: MGMT 3501.03

COMM 3511.03: Management Information Systems.

Information is a key resource for businesses, other organizations and professionals in today's world, and innovative uses of information are often keys to survival in an increasingly competitive economy. Your ability to harness information and information technologies demands understanding of a broad range of concepts, terms and challenging issues in a constantly changing context.

This class is designed to help you acquire the basic skills and conceptual background to become an effective client and user of management information systems. It will help you 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' competitive positions.

This is an on-line class (offered in winter and summer sessions) designed to meet the needs of Commerce students both on campus and in Co-op placement. Much of it is self-paced, and this will place a demand on you for self discipline and hard work. The course web page, and the pages linked to it, are designed to support you in this adventure in learning.

CLASS PAGE: <http://www.dal.ca/ilo/>

FORMAT: Delivered ON-LINE, using Blackboard Learning Systems, the World Wide Web and electronic mail. You are required to have daily access to a high-end computer with Internet access. Weekly participation in online activities and assignments is required, starting in the first week.

PREREQUISITE: COMM 1000.03 or COMM 1010.03 and COMM 1501.03 or COMM 1502.03

CROSS-LISTING: BUSI 5511.03, INFO 5505.03, PUAD 6925.03

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, Economics, and Mathematics).

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 12 full credits earned, including COMM 3801.03 and at least 10 other credits in the Core Area (Commerce, Economics, and Mathematics)

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 Commerce Program Manager.

COMM 4101.03: Advanced Topics in Accounting I.

This class provides a theoretical framework for the study of accounting policy. Case analysis is an integral part of the course. Topics covered include partnerships, standard setting, not-for-profit accounting, fund accounting, various practical and theoretical topics, and current topics, as appropriate.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and 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 course also covers segmented reporting and bankruptcy.

FORMAT: Lecture 3 hours

PREREQUISITE: COMM 3105.03 and 3111.03, or permission of the instructor

CROSS-LISTING: BUSI 6109.03

COMM 4114.03: Computer Security, Controls and Auditing.

This course covers the principles of establishing control and security over the acquisition, development and maintenance of systems, software, databases, facilities, hardware, and applications. It also covers some of the techniques for assessing the adequacy of such controls. Controls may be at the organization structure level, policy level, standard operating procedures or built into the hardware, software and applications. We are concerned with the avoidance of errors, and also with the deliberate damage to systems caused by viruses, employee action, accident and computer crime. This course covers threats to computer security, risk analysis, techniques to prevent, detect and correct computer fraud, destruction and errors. The course covers the structural and organizational considerations for security control, the roles of key individuals, control and security techniques at the boundary, for input, output, processing communication and data storage. We will use software to protect your computer and your network. We will relate the course materials to the COBIT Control Objectives for IT a world recognized standard. The course covers most of the material to write external exams for certification as a Security Auditor. It covers the computer auditing portion of the Atlantic Provinces School of Accountancy Audit II. It provides exemptions for the Computer auditing courses in the CA program in Ontario and Quebec as well as similar courses offered by the CGA's and the CMA's.

FORMAT: Lecture 2 hours/lab 1 hour

PREREQUISITE: COMM 2110.03

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 2101.03 or MGMT 2101.03; ECON 1101.03 and 1102.03

CROSS-LISTING: BUSI 6102.03

COMM 4201.03: International Financial Management.

The focus is how to manage a set of cash flows of different currencies. Topics include international accounts, balance of trade, currency exchange rate forecasting, capital budgeting, and assessing and hedging foreign exchange risk.

PREREQUISITE: COMM 2102.03, 2203.03

COMM 4202.03: Derivatives.

This course is an introduction to derivatives and the main applications of derivatives for both investment purposes and corporate finance use. As an introductory or first course 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 course 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 and COMM 2203

COMM 4203.03: Mergers and Acquisitions.

This course is designed for students who have completed the basic finance course. It will cover topics related to all types of corporate restructuring decisions including mergers and acquisitions, divestitures, leveraged buyouts (LBOs) and reverse LBOs, initial public offerings (IPOs), and corporate bankruptcy. Topics will be examined from both a theoretical and a practical viewpoint, with an emphasis on the practical side. We will discuss how to choose an appropriate restructuring vehicle, valuation techniques, strategic issues, how to finance the restructuring, tax implications, and how to estimate the impact of the restructuring decision on stock price, and how to determine whether or not the restructuring decision was successful. We will also discuss a number of recent restructuring decisions which have been reported in the financial press.

FORMAT: Lectures and case studies so that students can practice the techniques covered in the course; 3 hours

PREREQUISITE: COMM 2202.03 and 2203.03

COMM 4250.03: Theory of Finance.

This course is intended to enhance students' understanding of the theory of finance to a level which enables them to critique current research published in journals and to apply selected research to financial management issues. This course is designed with the assumption that students have a background in financial economics. In addition to the main text, selected journal articles will be reviewed in each area. Seminar style classes will feature discussion and student participation.

FORMAT: Seminar 3 hours

PREREQUISITE: COMM 2202 and COMM 2203

CROSS-LISTING: BUSI 6250.03

COMM 4301.03: 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.

PREREQUISITE: COMM 3307.03 or MGMT 3907, or permission of instructor

CROSS-LISTING: MGMT 4901.03

COMM 4306.03: Organizational Change, Theory and Design.

This course 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 course 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 and COMM 3309.03

EXCLUSION: COMM 3302.03, COMM 4305.03, COMM 4302.03

COMM 4315.03: International and Intercultural Management.

This senior level course 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, differences in management and leadership styles, training for international assignments, cross-cultural staffing, inter-cultural negotiations, ethics and social responsibility, expatriation and repatriation management, and designing global structure.

RECOMMENDED: COMM 3303.03 and 3309.03

FORMAT: Lecture 3 hours/cases/exercises

PREREQUISITE: COMM 2301.03 or COMM 2303.03

EXCLUSION: MGMT 4001.03

COMM 4351.03: Competitive Strategy.

Competitive Strategy is the first of the two required classes in strategic management in the Bachelor of Commerce Program. The focus in both classes is on decision-making from the viewpoint of senior and middle managers.

In COMM 4351, students examine the competitive environment faced by organizations. This includes understanding the prevailing economic, social, ethical, demographic, political, and technological trends, as well as the competitive forces prevailing in different industries. Various pedagogical methods are used to develop and enhance the analytical, writing, and presentation skills required in today's business environment. Students are exposed to a wide variety of organizations and contexts through case studies, and have an opportunity to examine a particular industry in detail through their field projects.

PREREQUISITE: At least 12.5 credits earned, including COMM 3802.03

and at least 9 other credits in the Core area

EXCLUSION: 4001.03

COMM 4352.03: Strategic Management.

Strategic Management builds on COMM 4351: Competitive Strategy. After conducting a brief review of the external environment faced by the organizations, the focus of this capstone course turns to the examination of the internal workings of an organization. More specifically, this course is about the general manager's task of implementing competitive strategy and managing strategic changes. This course is integrative, as it deals with the organization as a holistic entity.

In COMM 4352, 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 your expertise and skills at developing judgments to help guide managerial actions in the face of uncertainty and complexity. Therefore,

you 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 course 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 course 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 and COMM 3407 with an average of at least B-.

Prerequisite for Major in Marketing Management: COMM 2401 and COMM

3404 with an average of at least B-.

Others: COMM 2401.03 and three other marketing courses

COMM 4404.03: Applied Business Strategy.

The primary objective of this course is to develop and empower Commerce graduates with leading edge managerial/competitive skills required to adequately prepare them to compete in the "real world" of business. The emphasis in this course is decidedly on how to prepare future managers to effectively compete in today's competitive business environment. To do this, the course consists of a mixture of in-class discussions, readings, hands-on marketing simulation activities, and group situational analysis. Additionally, the class is responsible for designing and implementing a fund-raising budget, and raising sufficient funds to take the team to one of North America's premiere intercollegiate marketing competitions in Winnipeg in January.

Evaluations are based on competitive performance, design and implementation of a fundraising campaign, team presentation, and the development of a study/implementation guide incorporating learnings for subsequent teams.

PREREQUISITE: COMM 2401.03

COMM 4413.03: Marketing Informatics.

Marketing Informatics is an applications, not theoretical based course 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 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 4501.03: Operations Research.

The goal of this course is an understanding of the major O.R. techniques and how to apply them, not their theoretical development. Topics include: linear programming formulation, simplex method, sensitivity, integer variables, transportation, network problems, and simulation. Excel and cases are used to illustrate the main topics.

FORMAT: Two 1.5 hour lectures

PREREQUISITE: COMM 1501.03 and 2502.03, or permission of the instructor

CROSS-LISTING: BUSI 6501.03

COMM 4523.03: Information Technology Project Management.

This course will cover the principles of management for Information Technology Projects. The history of project management is rooted in Civil Engineering and manufacturing. Information technology projects have several notable differences. Students will learn those differences as well as generic principles of project management. Through case studies and field investigations of actual IT projects, students will gain a real-world understanding of the field of information technology.

PREREQUISITE: COMM 1501.03, COMM 3501.03

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 course 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 1501.03, MATH 1110.03 or MATH 1115.03 and COMM 2502.03, STAT 2080.03 or ECON 2280.03 or permission of instructor

CROSS-LISTING: BUSI 6504.03

COMM 4701.03: International Business Strategy.

This course critically examines the generic functional, business-level and corporate strategies available to transnational enterprises competing on the world stage. Classes comprise case analyses, lectures, simulation and role-playing, as well as independent research, class presentations and guest speakers to help prepare students for top management in successful international operations.

PREREQUISITE: COMM 3801.03

EXCLUSION: COMM 3701.03

Management

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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 345 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 - 12 credits:
 - ECON 1101.03
 - ECON 1102.03
 - ENVI 1100.06
 - MGMT 1000.03
 - MGMT 1001.03
 - INFO 1002.03
 - INFO 1003.03
 - INFO 1601.03
 - INFO 1602.03
 - MGMT 2101.03
 - MGMT 2102.03
 - MGMT 2303.03
 - MGMT 2304.03
 - MGMT 2401.03
 - MGMT 2402.03
 - MGMT 2501.03
 - MGMT 2502.03
 - PUAD 2801.03
 - PUAD 2803.03
 - MGMT 3201.03
 - MGMT 3501.03
 - MGMT 4001.03
 - MGMT 4002.03
- Open electives
 - 8 full credits, chosen from all classes offered in the University
 - A maximum of 4 full credits (eight half credits) classes at the 1000 level is permitted
 - A maximum of 3 full credits (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*	ENVI 1100X.03 ECON 1101.03 MGMT 1000.03 INFO 1002.03 INFO 1601.03	ENVI 1100Y.03 ECON 1102.03 MGMT 1001.03 INFO 1003.03 INFO 1602.03
Year 2	MGMT 2101.03 MGMT 2303.03 MGMT 2501.03 PUAD 2801.03 MGMT 2401.03	MGMT 2102.03 MGMT 2304.03 MGMT 2502.03 PUAD 2803.03 MGMT 2402.03
Year 3	MGMT 3201.03 Open Elective .03 Open Elective .03 Open Elective .03 Open Elective .03	MGMT 3501.03 Open Elective .03 Open Elective .03 Open Elective .03 Open Elective .03
Year 4	MGMT 4001.03 Open 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

* In the first year, if the student does not have grade 12 Math or equivalent, s/he is required to take non-credit Nova Scotia Grade 12 Math or equivalent, such as Math 0009 or 0010, and attain a 65% in the class before their second year of study.

C. 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 345) for more information.

D. Informal Areas of Concentration

Informal areas of concentration are available to students who focus their electives in areas of entrepreneurship, environment, or public sector management. Opportunities also exist for students to focus their electives on other areas. Interested students should contact the Program Manager. These informal areas of concentration are not reflected on your transcript, however, a reference letter is available from the Program Manager, B. Management program if the conditions as described below are fulfilled.

Entrepreneurship: Students should follow the requirements for the Major in Entrepreneurship in the Commerce program. (See page 376.)

Environment: Students should take 5 courses above the 1000 level from the approved electives list in environmental studies including 2 courses above the 2000 level. (See page 385.)

Public Sector: Students should take a total of 5 courses either from political science or economics (or a combination of both) above the 1000 level, including 2 courses above the 2000 level. (See pages 198 and 437 respectively.)

International Development Studies: Students should take INTD 2001, 2002, 3001, 3002 and two full credits (4 half credits) from the list of approved international development studies classes starting on page 161. One credit must be at the 2000 level and one credit at the 3000 level.

For all other areas, the student must bring their informal area of concentration to the attention of the Program Manager one month before graduation in order to obtain a letter of reference about the area of concentration.

III. Class Descriptions

NOTE: Students enrolled in the Bachelor of Management must register for cross-listed classes under the MGMT designation.

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: COMM 1000.03, 1010.03, 2001.03, 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

INFO 1002.03: Effective Written Communications.

Improving writing skills allows managers to save time, to make their correspondence more effective, to communicate their ideas more clearly, and to build goodwill. This course will introduce students to a broad range of writing skills, including how to adapt a document for a particular audience and purpose, how to select an effective method of organization for any document, how to make effective use of graphics, how to work effectively as part of a collaborative writing team, and how to write clearly, correctly and concisely.

EXCLUSION: COMM 2701.03, CPST 2000.03, MGMT 1002.03, INFO 1002.03, COMM 1701.03

INFO 1003.03: Effective Oral Communications.

This course will introduce students to the broad range of oral communication skills needed by managers. As such, the course is very practical in its approach, covering a variety of applied topics including giving clear instructions, improving listening, interpreting and using nonverbal communication, participating in meetings as well as delivering formal oral presentations. Students will have the opportunity to practice their communication skills and techniques in pairs, small groups, and in formal presentations before the whole class.

NOTE: Students who have completed ASSC 2100.03 and ASSC 3100X/Y.06 are exempt from registering for INFO 1002.03 and 1003.03.

PREREQUISITE: LIBS 1002.03 or INFO 1002.03 or MGMT 1002.03

EXCLUSION: HAHF 1200.03, COMM 1702.03, INFO 1003.03, MGMT 1003.03

ENVI 1100X/Y.06: Introduction to Environmental and Resource Management.

An introduction to resource and environmental problems and the range of solutions to be considered in addressing them. Key forces driving environmental change are discussed, and means for reducing their negative effects explored. Lectures are complemented with tutorials in which students debate issues and undertake hands-on exercises.

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): Bush, P.

EXCLUSION: ENVS 1000X/Y.06, SOSA 2100X/Y.06

INFO 1601.03: Electronic Information Management.

Successful completion of this class will provide students with a clear understanding of computers and how they may be incorporated into a management environment, as well as a proficiency with an integrated Windows-based word processing, spreadsheet and database software suite. It is strongly recommended that students complete this class in their first year of study.

EXCLUSION: COMM 1501.03. ASSC 1000 and CSCI 1200 are exclusions up to 1998. After 1998, they are an open elective in the BMgmt Program.

INFO 1602.03: Critical Information Skills.

Topics dealt with in the class include understanding information and knowledge management, communications, information-seeking behaviour, use of information systems, the formal search process, the ethics of information handling, evaluation of information sources, resources for professional applications, understanding the structure of information and access tools to information and the process of building a subject/topical pathfinder. Practical tutorials are built into the classes to allow students to develop their searching skills and use of electronic systems and services. Assignments are designed to be practical so as to develop the students' skills in (a) the use of institutional libraries and Online Public Access Systems (OPACs), (b) the formation of effective search statements for use in electronic databases and the web and (c) the understanding of their personal information needs and of how to match these with existing print and electronic resources.

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 coverage includes an examination of the accounting process, the financial statement disclosure requirements in business, government and not-for-profit settings, and some techniques for analyzing the financial statements useful to both the external users and internal management.

PREREQUISITE: MGMT 1000.03, 1001.03, or professor approval

EXCLUSION: COMM 2101.03

MGMT 2102.03: Managerial Accounting.

This class examines how accounting can provide internal financial and other information to assist management in their planning, decision-making and performance evaluation activities -- whether for businesses, governments, not-for-profit organizations or special projects. Main 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 BMgmt students who have been granted exemption for MGMT 2101 and MGMT 2102. It covers the components that are covered in the MGMT classes and missing from typical private sector accounting classes.

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*, COMM 3301 and MGMT 2301

*Students who have taken COMM 2303 Introduction to Managing People are currently required to take MGMT 3309 Management Development Skills for full exclusion to MGMT 2303 and 2304.

MGMT 2304.03: People, Work and Organizations: Macro Aspects of Organizational Behaviour.

Mgmt 2304 builds on the concepts and principles identified in Mgmt 2303. 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: MGMT 2304.03 is a continuation of MGMT 2303

EXCLUSION: COMM 2301/2302, COMM 2303*, COMM 3301 and MGMT 2301

* Please note: where a student is transferring from Commerce to Management and has taken COMM 2303, they will need to take the complementary course MGMT 3309 (Management Skills Development) to receive full credit for MGMT 2303 and 2304.

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. 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).

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 fulfil 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 2501.03: 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, decision theory, estimation, hypothesis testing and statistical software.

NOTE: Students enrolled in the Bachelor of Management must register for this class. Only students enrolled in the Bachelor of Management are permitted to take MGMT 2501.03

PREREQUISITE: LIBS 1601.03 or INFO 1601.03

CROSS-LISTING: COMM 2501.03

EXCLUSION: COMM 2501.03, MATH 1060.03 or 2060.03, STAT 1060.03 or 2060.03, ECON 2260.03, ECON 2222.03

MGMT 2502.03: Statistics for Managers II.

A continuation of MGMT 2501.03. Topics covered include ANOVA, chi-square, non-parametric statistics, regression and correlation, time series, index numbers, an introduction to the use of statistical packages on the computer, and management uses of statistical data.

NOTE: Students enrolled in the Bachelor of Management must register for this class. Only students enrolled in the Bachelor of Management are permitted to take MGMT 2502.03

PREREQUISITE: MGMT 2501.03

CROSS-LISTING: COMM 2502.03

EXCLUSION: COMM 2502.03, MATH 1080.03 or 2080.03, STAT 1080.03 or 2080.03, ECON 2280.03, ECON 2223

PUAD 2801.03: Government Structure.

This class introduces students to the structures of the three levels of Canadian governments; federal, provincial and municipal. The focus is particularly directed at the permanent public service of governments with topics including human resource management, amalgamations, interface with politicians and information management.

PREREQUISITE: Second-year student

EXCLUSION: PUAD 2249.03

PUAD 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: PUAD 2801 or any Political Science course with focus on Canada, or instructor 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 2501.03

EXCLUSION: COMM 2201, COMM 2202.03/2203.03

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, counseling 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 and MGMT 2304

CROSS-LISTING: COMM 3309

MGMT 3501.03: Operations Management.

This class introduces the student to some of the standard techniques used in managing operations. It starts with examples from the manufacturing sector. This knowledge is of use in itself, and also because the general approach can be applied to managing any type of operation. It continues with examples of service operations. General techniques are applied, new "service" techniques introduced. Standard topics in operations are covered. Cases are used throughout to build general problem solving skills, illustrate the application of techniques in the manufacturing and service sector, public sector and with an environmental concern, and introduce new techniques.

PREREQUISITE: INFO 1601.03 or LIBS 1601.03, MGMT 1000.03, MGMT 1001.03, MGMT 2303.03, MGMT 2304.03, MGMT 2401.03, MGMT 2501.03, MGMT 3201.03

EXCLUSION: COMM 3501.03

PUAD 3802.03: Public Policy.

No one can escape the impact of public policy, and every one in 3802 Public Policy will, sooner rather than later, be exposed to or participate in the public policy process. This course provides an introduction to public policy for those headed for, or at least interested in, careers in management. Its objective is to increase participants' knowledge about the policy process and to better equip them to participate in the policy process. Emphasis is placed on understanding the interplay between public policy and the four thematic areas of study and professional practice on which the Faculty of Management is built—business, the environment, the public sector, and information technology.

FORMAT: Lecture

PREREQUISITE: MGMT 1000.03, PUAD 2801.03, or any Political Science course with focus on Canada, or instructor permission.

PUAD 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.

FORMAT: Lecture/Seminar

PREREQUISITE: Second year course in Public Administration, ECON 1101, ECON 1102 or equivalent

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.

INSTRUCTOR(S): E. Leach

PREREQUISITE: MGMT 1000.03 and MGMT 1001.03 or COMM 1000.03/COMM 1010.03

CROSS-LISTING: COMM 3307.03

EXCLUSION: COMM 3307.03

MGMT 4001.03: Strategy Formulation.

This class exposes the student to the perspective and role of the manager within an organization. The nature of effective strategies and developing students' skills in both formulating and evaluation of potential strategies is the focus. This class includes examination of examples from a variety of institutional settings.

PREREQUISITE: All required first, second, and third year core classes for the Bachelor of Management.

EXCLUSION: COMM 4351.03

MGMT 4002.03: Strategy Implementation.

This class is a continuation of MGMT 4001.03 and follows on to the implementation phase within the organization. This class includes case examples from a variety of institutional settings and a major project that provides direct exposure to the complexity and uncertainty provided by "real world" issues and constraints.

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 Program Committee for approval. Guidelines are available from the Bachelor of Management Program Administrator.

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.

INSTRUCTOR(S): Leach, E.

PREREQUISITE: MGMT 1000.03 or COMM 1000.03 or COMM 1010.03, MGMT 1001.03, MGMT 3907.03, COMM 3307.03 or permission of instructor

CROSS-LISTING: COMM 4301

Faculty of Medicine

Faculty of Medicine

Office of the Dean of Medicine

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Telephone (902) 494-6592
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Admissions and Student Affairs Office

Location: Room C-132, Lower Level, Clinical Research Centre
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Associate Deans

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Gardner, M., MD, FRCP (c), FACC, Post-graduate Medical Education
Johnston, G.C., PhD (York), Research
Sinclair, D.E. MD (Dal), FRCP, CCFP (EM), Continuing Medical Education
Spence Wach, S., MHSA, Health Systems & Policy

Assistant Deans

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McMaster, C., PhD (Manitoba), Graduate & Postdoctoral Studies
Sutton, E., MD (Dal), Admission in Student Affairs

Academic Directors

Sinha, G., Director, Student Advisor Program
Zitner, D., BA (Sir George Williams University), MA (Dal), MD (Dal),
CCFPC, FCFPC, Medical Informatics

Administrative Directors/Staff

Gaudet, C., BA, APR, Communications
Graham, S.D., BComm (SMU), Admissions and Student Affairs
Holmes, B., BSc (Acadia), MEd (Dal), Curriculum and Faculty Development
Paterson, G.I., BSc (UBC), MSc (Dal), ISP, Medical Informatics Coordinator
Power, L., BSc (Dal), BEd (MSVU), MEd (MSVU), Human Resources
Radford, M.S., BComm (Dal), Finance
Ross, C., Research Coordinator
Silver Smith, C., Postgraduate Medical Education Coordinator
Weeden, A., Cert. BA (UNBSJ), BA (Dal), Administrative Services

Dalhousie Medical Research Foundation

Sloan, J., BA(French), BPR (MSVU) Administrator/Executive Director
Teixeira, D., Administrative Assistant

Faculty Council

Abbass, A.
Anderson, P.
Brisseau, G. (Chair)
Carr, B.
Cervin, C.

Downie, J.
Faulkner, G.
Gratzer, P.
Greer, W.
Morgunov, N.
O'Neill, B.
Rheume, D.

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

The Faculty of Medicine, Dalhousie University, strives to benefit society through equal commitment to exemplary patient care, education and the discovery and advancement of knowledge. We aim to create and maintain a learning and research environment of national and international stature to enable our graduates and us to serve the health needs of the Maritime Provinces and the rest of Canada.

Anatomy and Neurobiology

Location: Sir Charles Tupper Medical Building
12th, 13th, and 14th Floors
Halifax, NS B3H 4H7
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Dr. D.G.J. Campbell Professor and Head of Department

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Professors

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Bance, M., MSc, BSc, M.B., Ch.B., F.R.C.S. (c) (Manchester)
Brownstone, R.M., BSc, MD, PhD (Manitoba), FRCS (c)
Currie, R.W., BSA, MSc, PhD (Man)
Hopkins, D.A., BSc (Alta), MA, PhD (McMaster)
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)
Rutherford, J.G., BA (Cornell), MS (Syracuse), PhD (SUNY)
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Associate Professors

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Darvesh, S. MD (Dal), PhD (UNB)
Kablar, B., MD, PhD (Zagreb, PISA)
Rafuse, V.F., BSc (Acadia), PhD (Alberta)
Sinha, G., MBBS (Banaras)
Smith, F.M., BSc, MSc, PhD (UBC)

Assistant Professors

Awatramani, G., BSc (Rochester), PhD (NY at Buffalo)
Marsh, D.R. BSc (Guelph), MSc (Guelph), PhD (Alberta)
Perrot-Sinal, T.S., BSc, PhD (Western)
Schmidt, M., BSc (Toronto), MD (Toronto), FRCPC (UPEI)

The Department of Anatomy and Neurobiology 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) and during the Summer Term. 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. However, mandatory virtual Anatomy laboratory will be provided throughout the year for independent study.
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) and the Summer Term. 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. There are no formal laboratory sessions. However, a mandatory virtual anatomy laboratory will be provided throughout the year for independent study.
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 course complements studies in anatomy, cell biology, physiology, and biochemistry, broadening the understanding of how organisms function.
INSTRUCTOR(S): F. Smith, B. Kablar (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
CROSS-LISTING: BIOL 3421.03

Pharmacology

Location: Sir Charles Tupper Medical Building
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Dean

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Professors Emeriti

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Vohra, M.M., BPhm, MPhm, PhD (Banaras)
White, T. D., BSc, MSc (UWO), PhD (Bristol)

Professor and Head of Department

Sawynok, J., BSc, MSc (Melb), PhD (Queen's)

Professors

Blay, J., BSc (Brad), PhD (Cantab)
Downie, J.W., BSc, PhD (Manitoba)
Howlett, S.E., BSc (Concordia), MSc, PhD (Memorial)
Kelly, M.E.M., BSc, PhD (Southampton)
Robertson, G.S., BSc, PhD (Dal)
Robertson, H.A., BA, MSc (Western), PhD (Cantab)

Associate Professors

Denovan-Wright, E.M., BSc, PhD (Dal)
Nachtigal, M., BSc, PhD (Manitoba)
Sinal, C., BSc, (McMaster), PhD (Western)

Assistant Professors

Dupré, D.J., BSc, PhD (Sherbrooke)
Fawcett, J., BSc, MSc, MSc (T) (McMaster), PhD (McGill)
Pasumarthi, K.B.S., DVM (India), PhD (Manitoba)

Cross Appointments

Abu, R., BPharm, MPharm (Nigeria Nsukka U.), MPharm, PhD
(Katholieke U., Belgium)
Acott, P., Bc (UNB), MD (Dal) Appointment in Pediatrics
Gajewski, J.B., MD (Poznan), FRCS(C), Urology, Major Appointment in
Department of Urology
Gardner, D.M., BScPharm (Toronto), PharmD (BC), Major Appointment in
Department of Psychiatry
Goralski, K., BSc, PhD (Manitoba), Major Appointment in College of
Pharmacy
Hall, R.I., BSc Pharm, MD (Dal), FRCP(C), FCC, Major Appointment in
Department of Anesthesia
Hung, O.R., BSc Pharm, MD (Dal) FRCP(C), Major Appointment in
Department of Anesthesia
Lehmann, C., MD (Humboldt U., Berlin)
Lynch, M.E., BSc, MD (Dal), FRCP(C), Major Appointment in Department of
Psychiatry
Peterson, T.C., BSc (SMU), MSc, PhD (Dal), Major Appointment in
Department of Medicine
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.

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 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: S.E. Howlett
FORMAT: Lecture 3 hours

PREREQUISITE: A previous class in physiology and biochemistry is recommended. Extra readings may be required for 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, 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 over-the-counter drugs, herbal medication, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

COORDINATOR: H.A. Robertson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 4404.03 (with a grade of B or better).

CROSS-LISTING: PHAC 5409.03, BIOC 4806.03, NESC 4376.03

EXCLUSION: BIOL 4405.03

BIOL 4408.03: Introduction to Pharmacology III.

The course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g. unknowns) or as written exercises (literature-based problems, computer simulations). The course will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

COORDINATOR: J.W. Downie

FORMAT: Lab

PREREQUISITE: BIOL 4404.03 or BIOC 4804.03 or NESC 4374.03 (with a grade of B or better) and permission of instructor

CROSS-LISTING: BIOC 4807.03, NESC 4377.03, PHAC 5410.03

CO-REQUISITE: BIOL 4407.03 or BIOC 4806.03 or NESC 4376.03

Physiology and Biophysics

Location: Sir Charles Tupper Building, Third Floor
Halifax, NS B3H 1X5
Telephone: (902) 494-3517
Fax: (902) 494-1685

Dean

Cook, H.W., PhD

Head of Department

Murphy, P.R., MSc, PhD

Undergraduate Coordinator

Morgunov, N.

Professors

Barnes, S.A., PhD (Berkeley)
Brown, R.E., BSc (Victoria), MA, PhD (Dal), 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)
Guernsey, D., BA (Lehigh), MS (Bridgeport), PhD (Hawaii), Major appointment - Dept. of Pathology
McDonald, T.F., BSc (Alta), PhD (Dal), DIC (Imperial College)
Meinertzhagen, I.A., BSc (Aberdeen), PhD (St. Andrews), Major appointment - Dept. of Psychology
Murphy, P.R., MSc, PhD (Dal)
Pelzer, D., MD (Heidelberg), Graduate Student Coordinator
Rasmusson, D., BA (Colo C), MA, PhD (Dal)
Torkkeli, P.H., BSc, MSc, LcSc (Oulu), PhD (Alberta)
Wilkinson, M., BSc (Southampton), PhD (London), Major appointment - Dept. of Obstetrics/Gynecology

Associate Professors

Carrey, N., MD (Toronto), Major appointment - Dept. of Psychiatry
Holland, J.G., BSc, MD (Dal)
Linsdell, P., BSc (London), PhD (Leicester)
Morgunov, N., BSc, MSc, PhD (Toronto), Undergraduate Coordinator
Murphy, M.G., BSc, MSc, PhD (Dal)
Pelzer, S., BSc, MSc, PhD (Freiburg)
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

Ali, I.S., BSc, MD (Dalhousie), FRCSC, Major appointment - Dept. of Surgery
Anini, Y., BSc (Agadir), MSc, PhD (Pierre & Marie Curie University, France)
Chappe, V., Licence Maîtrise (Université de la Méditerranée-Marseille), Diplôme d'Etudes Approfondies, PhD (Université de Provence-Marseille, France)
Chen, R., BSc, MD (Dalhousie), FRCP (C), Major appointment - Dept. of Pediatrics
Cowley, E.A., BSc (London), PhD (Leicester)
Krueger, S., PhD (Zurich)
Li, A., BSc (UBC), PhD (Dal), Major appointment - Dept. of Medicine
O'Blenes, S., BSc (Mount Allison), MSc (Toronto), MD (Dal), FRCS (C), Major appointment - Dept. of Surgery

Instructor

Penney, C., BSc, PhD (Dal)

Adjunct Professor

Rittmaster, R., BA (Brown), MD (Tufts Med Sch), Glaxo-SmithKline.

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 is the recommended prerequisite for science students interested in taking higher level physiology courses. 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 studies. The class is based on a selected textbook and is supported by extensive WebCT 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: Students must register in, and pass, both PHYL 1000X and PHYL 1000Y. Credit will only be given upon the successful completion of both halves.

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 and it 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).

DIRECTOR: C. Penney

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: Lectures 3 hours/weekly assignments and readings/virtual labs, and WebCT

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 2030X/Y.06: Human Physiology.

The function of organs and body systems is presented through lectures and some laboratory work. Special emphasis is on the integration of function in the whole organism. This is a prerequisite course for 3rd and 4th year physiology courses, and a co-requisite for PHYL 2570.03 (Cellular Neurophysiology).

DIRECTOR: N. Morgunov

NOTE: Students must register in, and pass, both PHYL 2030X and PHYL 2030Y. Credit will only be given upon the successful completion of both halves.

FORMAT: 4 hours of lectures/tutorials per week; 4 labs

PREREQUISITE: Two classes from Biology, Physics, or Chemistry, or permission of the class director

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 G. Barnes

FORMAT: Lecture

PREREQUISITE: PSYO 2470.03 or NESC 2470.03

CROSS-LISTING: NESC 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: 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 and integrates the material to provide students with a core knowledge base pertaining to biophysical and biochemical principles that govern the function of cells.

The topics to be discussed include (i) the functional organization of cells (cellular compartments, cytoskeleton), (ii) reception and processing of environmental information (cell membrane receptors, second messengers, signal transduction pathways), (iii) membrane physiology (membrane transport processes, regulation of intracellular ion concentrations, regulation of cell volume), (iv) electrophysiology of the cell membrane, electric excitability and action potential.

Through didactic (lectures) and problem-solving sessions (tutorials) students will acquire the necessary knowledge to pursue the study of organ system physiologies and integrative mechanisms of homeostasis (PHYL3322.03).

DIRECTOR: S. Pelzer

INSTRUCTOR(S): S. Pelzer

FORMAT: Lectures 3 hours/tutorial 1 hour

PREREQUISITE: PHYL 2030.06 or permission of course director

EXCLUSION: PHYL 4320, BIOL 4320

PHYL 3520.03: Core Concepts in Medical Physiology.

Physiology is the foundation of a number of disciplines. A firm understanding of its principles is essential for any student contemplating a career in the health professions. 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 (integrative mechanisms of homeostasis) including fluid and electrolyte balance, blood pressure regulation and acid-base homeostasis. Where appropriate, the physiology of disease processes will underscore the consequences of a malfunction of a physiological process. Organ systems covered include autonomic nervous system, cardiovascular, renal, respiratory and gastrointestinal.

DIRECTOR: N.S. Morgunov

FORMAT: Lectures/tutorial 4 hours per week

PREREQUISITE: PHYL 2030.06, PHYL 3320.03 or permission of course director

EXCLUSION: PHYL 4322, BIOL 4322

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 2030.06 or BIOL 3070.06 or permission of the class director

PHYL 4326.03: The Pathophysiology of Heart Disease.

This course is a comprehensive introduction to diseases of the cardiovascular system. Normal physiology serves as a frame of reference that students must comprehend before they understand the derangements caused by disease. Thus, this course creates a bridge between basic cardiovascular physiology and the care of patients with heart disease in hospital wards and clinics. Throughout the course, emphasis is placed on the basic mechanisms by which cardiac illnesses develop to facilitate an understanding of clinical diagnosis and therapy.

DIRECTOR: D. Pelzer

FORMAT: Lectures/tutorial 4 hours per week

PREREQUISITE: PHYL 3520.03

PHYL 4327.03: Advanced Human Cell Physiology.

The course is designed to provide advanced undergraduates with an up-to-date understanding of the major mechanisms that govern cellular communication and the regulation of cell function in various tissues and organs. The topics to be discussed include (i) cellular calcium homeostasis and calcium signaling (ii) secretion in excitable and non-excitable cells (synaptic transmission, endocrine and exocrine secretion), (iii) stimulus transduction in metabolic sensor cells, and (iv) stimulus - contraction coupling and contractile properties of striated and smooth muscle. Lectures will be accompanied by problem-solving sessions (tutorials) where students have the opportunity to integrate the material presented in lectures and to discuss pathophysiological aspects (mini-cases, problems).

DIRECTOR: S. Pelzer

FORMAT: Lecture 3 hours/tutorial 1 hour

PREREQUISITE: PHYL 3320.06 or BIOL 3070.06, PHYL 3320.03 or permission of the course 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: N.S. Morgunov

PREREQUISITE: PHYL 2030.06 and permission of the class director

Faculty of Science

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Fax: (902) 494-1123
Email: science@dal.ca
Website: www.dal.ca/science

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta), Professor (Mathematics & Statistics)

Associate Dean

Ryall, P.J.C., BSc (Dal), MSc (Alta), PhD (Dal), P Geo, Associate Professor (Earth Science).

Associate Dean (Research)

O'Dor, R.K., BA (Berkeley), PhD (UBC), Professor (Biology)

Assistant Dean (Student Affairs)

Retallack, B., BSc, MSc (Dal), PhD (Manchester), Senior Instructor (Biology)

Secretary of Faculty

Swaminathan, S., MA, MSc, PhD (Madras), Professor Emeritus (Mathematics)
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Director of Finance, Research & Development

Jackson, D., BSc (Dal), MSc (Dal), PhD (Dal)
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Finance Coordinator

Hanna-Shea, D.
Telephone: (902) 494-1443

Administrative Assistant

Wells, J., BBA (MSVU)
Telephone: (902) 494-3540

Administrative Secretary

Cox, Danielle
Telephone: (902) 494-2373

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. 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, Biotechnology, Chemistry, Earth Sciences, Economics, Environmental Science, Marine Biology, Mathematics, Meteorology, Microbiology & Immunology, Neuroscience, Physics and Atmospheric Science, Psychology, and Statistics. It is possible to combine studies in many of these areas with a Minor in Business, Minor in Environmental Studies, Minor in Film Studies

or with a Co-op Education in Science option. (This requires work term opportunities.) Combined Honours programs with Oceanography are offered. Details concerning particular programs of study are found in the departmental entries.

II. Departments of the Faculty of Science

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

* Co-op Option available.

Biochemistry & Molecular Biology

Location: Sir Charles Tupper Medical Building
5850 College Street, Ninth Floor
Halifax, NS B3H 1X5
Telephone: (902) 494-6436
Fax: (902) 494-1355
Website: <http://www.biochem.dal.ca>

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Head of Department

D.M. Byers

Program Advisors

Undergraduate inquiries: Advisor@webmail.biochem.dal.ca
Dobson, M.J., Undergraduate Coordinator
Bigelow, B.
Briggs, P.
Lesser, B.H.
Too, C.K.L.
McLeod, R.S., Co-op Academic Advisor

Graduate inquiries: GradInfo@webmail.biochem.dal.ca
Singer, R.A. - Graduate Advisor, rasinger@dal.ca

Professor Emeritus

Helleiner, C.W. BA, PhD (Toronto)

Professors

Bearne, S.L., BSc (Acadia), PhD (Toronto), MD (McGill)
Breckenridge, W.C., BSc (Queen's), MSc, PhD (Toronto)
Byers, D.M., BSc, MSc (Dal), PhD (Alta)
Dobson, M.J., BSc (Dal), DPhil (Oxon)
Doolittle, W.F., AB (Harv), PhD (Stan) - Post-Retirement
Gray, M.W., BSc, PhD (Alta)
Liu, P.X.-Q., BSc (Wuhan), PhD (Cornell)
McMaster, C.R., BSc, PhD (Man)
Ridgway, N.D., BSc (Dal), PhD (UBC)
Ro, H.-S., BSc, PhD (McMaster)
Singer, R.A., AB (Princeton), PhD (Harv)
Too, C.K.L., BSc, MSc (Malaya), PhD (Hawaii)
Waisman, D.M., BSc (Brandon), PhD (Manitoba)
Wallace, C.J.A., BA, MA, DPhil (Oxon)

Associate Professors

Cook, H.W., BSc, MSc (McGill), PhD (Dal)
McLeod, R., BSc, PhD (UBC)
Roger, A.J., BSc (UBC), PhD (Dal)
Rosen, K.V., BSc, MSc, PhD (Moscow)

Assistant Professors

Archibald, J.M., BSc, PhD (Dal)
Blouin, C., BSc, (Laval), PhD (Dal)
Dellaire, G., BSc (UBC), PhD (McGill)
Karten, B., MSc (Hamburg), PhD (Karl-Franzens, Austria)
Lesser, B.H., BSc (McGill), PhD (Alta)
Marignani, P., BSc (Windsor), MSc (Western), PhD (McMaster)
Rainey, J.K., BSc (Guelph), MSc, PhD (Toronto)
Riddell, D.C., BSc, PhD (Queen's)

Adjunct Professor

Ewart, K.V., BSc (Moncton), PhD (Memorial), Research Scientist, NRC,
Institute for Marine Biosciences

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 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 biotechnology. 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 with another subject; most often with Chemistry, Microbiology, Biology, Neuroscience or Psychology. 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 and biotechnology.

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, when both an advanced laboratory class and a supervised research project are required for honours Biochemistry 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 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 the undergraduate coordinator (Dr. M. Dobson), or another advisor (Dr. C. Too, Dr. B.H. Lesser, P. Briggs).

There is no 15-credit BSc program with a concentration in Biochemistry. Students wishing to include Biochemistry in other programs are welcomed. 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 65 of this calendar.

A. 20-credit BSc with Honours in Biochemistry

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 4th year Biochemistry 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 2301.03 and 2302.03 or if not taking combined program with Chemistry, CHEM 2303.03
- CHEM 2401.03 and 2402.03

3000 level

- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03
- CHEM 3601.03 or MICI 3033.03

4000 level

- BIOC 4604.03 and 4605.03
- BIOC 4610.06
- One and a half credits from BIOC 40XX, 43XX, 44XX, 45XX, 47XX
- One additional half credit in Biochemistry at the 4000 level

Other requirements

Two full credits in a single subject other than Biochemistry taken after first year are required for BA students. 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. 20-credit BSc with Combined Honours in Biochemistry and Another Subject

Biochemistry 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 classes as specified in A except MATH 1000 and 1010 required if combined with Chemistry
- BIOL 2020.03
- BIOL 2030.03
- CHEM 2401.03 and 2402.03
- BIOC 2300.03
- BIOC 2610.03
- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03
- BIOC 4610.06
- One credit from BIOC 40XX, BIOC 43XX, BIOC 44XX, BIOC 45XX, BIOC 47XX

Consult an Undergraduate Advisor for details of recommended courses of study.

C. 20-credit BSc Major in Biochemistry

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, 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 3rd year and some 4th 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 2303.03
- CHEM 2401.03 and 2402.03

3000 level

- BIOC 3200.03
- BIOC 3300.03
- BIOC 3400.03

4000 level

- Three full credits in Biochemistry at the 4000 level

D. 20-credit BSc Double Major in Biochemistry 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
- Students are advised to take some Physical Chemistry, if possible

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

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 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 courses 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
5	Acad		

For further information, please see www.sciencecoop.dal.ca.

Co-op Academic Advisor in Biochemistry: Dr. McLeod (494-7013)
Email: roger.mcleod@dal.ca

III. Class Descriptions

The Department also teaches students in Dental Hygiene, Dentistry, 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 will be outlined in lectures, with some topics of particular interest being studied further in the laboratory. Tutorials aim to develop students' ability to learn biochemistry on their own and in small groups.

INSTRUCTOR(S): B.H. Lesser

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 Faculty of Dentistry in fulfillment of the requirement of a biochemistry class for admission.

INSTRUCTOR(S): B.H. Lesser

FORMAT: Online (BLS)/tutorials 2 hours

PREREQUISITE: None, but Chemistry 1410.03 is recommended

RESTRICTION: This class is restricted to students in the BScN and BHSc programs.

BIOC 2300.03: Introduction to Biochemistry.

This class will survey basic topics and concepts of Biochemistry. The structures, properties and metabolic inter-relations of proteins, carbohydrates and lipids will be considered together with an introduction to nutrition and metabolic control. Although mammalian examples will predominate some consideration of special aspects of biochemistry of microbes and plants will be included.

INSTRUCTOR(S): B.H. Lesser

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.

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 3200.03 and BIOC 3300.03

EXCLUSION: BIOC 2200.03, BIOL 2010.03, BIOL 2013.03

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 Microbiology Programs.

INSTRUCTOR(S): P. Briggs.

FORMAT: Lab 3 hours

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 3200.03: Biological Chemistry.

This class deals with chemical principles governing biochemical systems, and in particular, how they operate in the relationship between structure and function in proteins. Basic principles of protein structure are discussed. The ways in which proteins bind other molecules are described. A discussion of enzyme catalysis emphasizes relationships between macromolecular structure and biochemical function, enabling us to explain the striking effectiveness and high specificity with which these catalytic proteins carry out their functions.

INSTRUCTOR(S): S.L. Bearne, C.J.A. Wallace

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 3300.03: Intermediary Metabolism.

Emphasis is chiefly on metabolic pathways common to all organisms, notably the reductive synthesis and oxidative catabolism of carbohydrates, lipids, and some nitrogen compounds. Other pathways, significant in certain tissues or organisms, are included. Metabolic regulation is emphasized, and factors influencing the rate at which compounds flow through selected pathways are examined. Students learn how pathways are compartmentalized, interrelated, and affected by changes in the environment. Laboratory exercises demonstrate the strategies and techniques used to study metabolic pathways.

INSTRUCTOR(S): R. McLeod (Coordinator), B. Karten, C. Too

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. Enzymic mechanisms for biosynthesis, rearrangement, degradation, and repair of nucleic acid molecules are studied, as are the processes of replication and transcription. In this context, nucleic acid biochemistry is emphasized as a basis for understanding storage and transfer of biological information.

INSTRUCTOR(S): J. Archibald (Coordinator), P. Liu

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 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 3200.03, 3300.03, and 3400.03

CROSS-LISTING: BIOC 5001.03

BIOC 4010.03: Bioinformatics.

This class presents both the theoretical basis for, and the application of, computing in molecular biology and evolution. A wide range of topics will be addressed including the estimation of rates and patterns of mutations, sequence database searching, with an emphasis on

phylogenetic analysis of genes and genomes. The content of the class may vary from year to year.

INSTRUCTOR(S): A. Roger, C. Blouin

FORMAT: Lecture 3 hours with regular computer-based labs in comparative sequence analysis, database searching, alignment and phylogenetic analysis and introduction to programming for bioinformatics

PREREQUISITE: BIOC 3400.03 instructor's consent

CROSS-LISTING: BIOC 5010.03

BIOC 4027.03: Molecular Mechanisms of Cancer.

The class focuses on the molecular mechanisms of cancer and consists of lectures and student presentations. Topics include: receptors and downstream signaling, oncogenes and tumor suppressors, cancer metastasis and angiogenesis, cell cycle control, and apoptosis. Grading consists of student presentations (60%), summaries of presented paper (25%) and class participation (15%).

INSTRUCTOR(S): P. Lee, D. Waisman

FORMAT: Lecture/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, C. McMaster

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3200.03 and 3300.03

CROSS-LISTING: BIOC 5301.03

BIOC 4305.03: Mechanisms of Signal Transduction.

The emphasis of the course is systems biology. Lecture topics include emergent properties of protein kinases, tumour suppressors, cell cycle, apoptosis, oncogenes, cytoskeletal reorganization, and lipids.

INSTRUCTOR(S): P.A. Marignani (Coordinator), B. Karten, K. Rosen

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3200.03, BIOC 3300.03, BIOC 3400.03 or instructor's consent

CROSS-LISTING: BIOC 5305.03

EXCLUSION: BIOC 4301.03

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 the genomics will be discussed at some length.

INSTRUCTOR(S): P. Liu

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3400.03 and MICI 3033.03 or instructor's consent

CROSS-LISTING: MICI 4403.03, BIOC 5403.03

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.A. Singer

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: MICI 4404.03, BIOC 5404.03

BIOC 4501.03: Medical Biotechnology I.

An introduction to biotechnology fundamentals from a medical perspective. Topics will include recombinant DNA technology, DNA microarray, antibody and polymerase-chain reaction-based applications, production of transgenic organisms, potential applications for embryonic stem cell and nuclear transfer cloning, business and legal aspects of medical biotechnology.

INSTRUCTOR(S): M. Dobson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3400.03 or instructor's consent

CROSS-LISTING: PHAR 4351.03, BIOL 5105.03, and BIOC 5501.03

BIOC 4603.03: Advanced Laboratory in Biochemical Techniques.

This class will consist of 2 laboratory modules (each of 4 weeks duration, one full day per week, 48 hours in total) and tutorials with computer-based assignments designed to teach scientific writing techniques (9 hours in total).

COORDINATOR(S): P.Liu and L. Murray

INSTRUCTOR(S): Members of the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology

FORMAT: Eight 6-hour labs and three 3-hour tutorials/computer assignments

PREREQUISITE: BIOC 3200.03, BIOC 3300.03, and BIOC 3400.03 and consent of coordinator

CROSS-LISTING: BIOC 5603.03

EXCLUSION: BIOC 4610.03/5610.03, BIOL 4012.03/4013.03/5013.03 and MICI 4601.03/5610.03

RESTRICTION: Restricted to BIOC and MICI Co-op students

BIOC 4604.03: Research Project I.

This class requires original biochemical research in the laboratory of a faculty member, and will require the equivalent of at least one day per week to be spent in the laboratory. A report is to be submitted at the end of the term. 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.

COORDINATOR(S): S.L. Bearne

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 3200.03, 3300.03 and 3400.03.

BIOC 4605.03: Research Project II.

This class requires original biochemical research in the laboratory of a faculty member, and will require the equivalent of at least one day per week to be spent in the laboratory. A report is to be submitted at the end of the term. 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.

COORDINATOR(S): S.L. Bearne

FORMAT: Lab 1 day per week

PREREQUISITE: BIOC 4604.03

BIOC 4610X/Y.06: Scientific Writing and Advanced Laboratory in Biochemical Techniques.

This class will consist of a series of laboratory modules (3 modules each of 4 weeks' duration, 1 day per week or 72 hours in total with limited flexibility to accommodate the need to attend other classes) and tutorials with computer-based assignments designed to teach scientific writing techniques (9 hours in total). The class is organized collaboratively by the

Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. Several lab modules will be offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. Students in concentrated Honours Biochemistry must complete 1 module from each section. Students in combined Honours with Biochemistry may select their three modules from any section or sections, subject to availability of space. Students must obtain a class outline from the Biochemistry & Molecular Biology Department prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

COORDINATOR(S): P. Liu and L. Murray

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): Faculty members of the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology.

FORMAT: Twelve 6-hour labs and three 3-hour tutorials/computer assignments.

PREREQUISITE: BIOC 3200.03, 3300.03, 3400.03 (Average grade of B or higher) and consent of coordinator

CROSS-LISTING: BIOC 5610X/Y.06, BIOL 4013X/Y.06/BIOL 5013X/Y.06, MICI 4610X/Y.06/MICI 5610X/Y.06

EXCLUSION: BIOC 4603.03/BIOC 5603.03, BIOL 4012.06/BIOL 5012.06, MICI 4601.06/MICI 5601.06, and MICI 4602.06/MICI 5602.06

BIOC 4700.03: Proteins.

The theme of this class is the relationship between the structure and function of the most versatile class of biological macromolecules. The role of the sequence of monomeric units in the kinetic and thermodynamic determination of the protein fold is explored, and methods to determine that three dimensional fold, and to modify it for experimental or practical purposes considered. Specific details of how form determines function in the proteins' role in binding other molecules both small and large, in membranes, and in energy transduction will be provided. This class will also examine the ways for orderly elimination of superannuated proteins, and how the present variety of form has evolved from primeval origins. Some weeks, in addition to lectures, students will independently research and write about specialized topics suggested by the instructor and occasionally present these to the class in discussion group format.

INSTRUCTOR(S): C.J.A. Wallace

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 3200.03; CHEM 2301.03 and 2302.03, or CHEM 2303.03 (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 will be examined. Use of tools such as steady-state and pre-steady-state kinetics, isotope effect measurements, site-directed mutagenesis, spectroscopy, X-ray crystallography, and mechanism-based inhibitors to study the architecture and mechanism of action of enzyme active sites will be presented. The catalytic mechanism and transition state stabilization will be considered in detail for selected enzymes that have been well-characterized structurally. Classic and current papers in the literature will be reviewed so that the experimental and conceptual approaches used may be critically appraised.

INSTRUCTOR(S): S.L. Bearne

FORMAT: Lecture 2.5 hours, seminar/tutorial 0.5 hour

PREREQUISITE: BIOC 3200 (Grade of B or higher), CHEM 2301.03 and 2302.03, or CHEM 2303.03 (Grade of B or higher), and CHEM 3601.03 or instructor's consent

CROSS-LISTING: BIOC 5701.03

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) 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(S): S.E. Howlett

FORMAT: Lecture 3 hours

PREREQUISITE: 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 is intended to cover specific aspects of drug action in greater depth than BIOC 4804.03 and to provide students with practical experience in pharmacology and a perspective on pharmacological research. The laboratory component consists of practical exercises using various techniques, as well as computer simulations. There will be an opportunity to visit research laboratories. Instructor's consent and signature are required.

COORDINATOR(S): H.A. Robertson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOC 4804.03 (with a grade of B or better) and instructor's consent

CROSS-LISTING: PHAC 5409.03, BIOL 4407.03, and NESC 4376.03

BIOC 4807.03: Introduction to Pharmacology III.

This course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g., unknowns) or as written exercises (literature-based problems, computer simulations). The course will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

FORMAT: Lab

PREREQUISITE: BIOC 4804.03 or BIOL 4404.03 or NESC 4374.03 and permission of instructor

CROSS-LISTING: BIOL 4408.03, NESC 4377.03, PHAC 5410.03

CO-REQUISITE: BIOC 4806.03 or BIOL 4407.03 or NESC 4376.03

BIOC 4811.03: Biochemistry of Clinical Disorders I.

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, in addition to acid-base, blood and immune abnormalities.

COORDINATOR(S): TBA

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, 3300.03 and 3400.03 or consent of instructor

CROSS-LISTING: BIOC 5811.03, PATH 5011.03

BIOC 4812.03: Biochemistry of Clinical Disorders II.

An introduction to the pathophysiology of disease. It takes the same approach as BIOC 4811.03, but different groups of diseases are discussed. Topics will include carbohydrate, lipid and amino acid disorders; endocrine and rheumatological diseases, as well as tumor markers and toxicology.

COORDINATOR(S): TBA

FORMAT: Lecture 3 hours, case studies and assignments

PREREQUISITE: BIOC 3200.03, 3300.03 and 3400.03 or consent of instructor

CROSS-LISTING: BIOC 5812.03, PATH 5012.03

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/BIOL 3014.03, 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****SCIE 1111.03: Elements of Writing.**

This half class consists of three lecture hours per week for one term and fully meets the Writing Requirement in the Faculty of Science. The lectures cover a brief history of writing and information theory, a review of the rules of grammar and punctuation, the construction of effective sentences and paragraphs, a detailed treatment of the elements of scientific style, and an extended coverage of the standard sections of proposals and scientific papers. Weekly writing assignments develop the skills learned in the lectures.

FORMAT: \leq Writing requirement for Faculty of Science BSc students only

SCIE 2800.00: Science Co-op Seminar Series.

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, 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 the fall term of the year they join Science Co-op. 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.dal.ca/scicoop for further information.

INSTRUCTOR(S): A. Little and others

FORMAT: Seminars, 3 hours each

Biology

Location: Life Sciences Centre, Second Floor
1355 Oxford Street
Halifax, NS B3H 4J1
Telephone: (902) 494-3515
Fax: (902) 494-3736
Website: <http://www.dal.ca/biology>

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chair

MacRae, T.H., MSc, PhD (Windsor)

Biology Undergraduate Program Advisors

Beauchamp, C. (494-2145)
Bishop, T. (494-1696)
Breckenridge, J. (494-8817)
McCarville, M. (494-7072) (Biology Co-op)
Staples, E. (494-2464)
Van Dommelen, J. (494-1584)
Welsh, E. (494-7110)

Marine Biology 20-credit Major Program Advisor

R. Scheibling (494-2296)

Biology Honours Program Advisors

Collins, P. (494-3847)
Latta, R. (494-2737)
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
Vining, L.C., MSc (Auckland), PhD (Cantab), FRSC

Professors

Bentzen, P., MSc (UBC), PhD (McGill)
Buszard, D., BSc (Bath), PhD (London)
Croll, R.P., PhD (McGill), (major appointment in Physiology and Biophysics)
Fentress, J.C., PhD (Cantab) (major appointment in Psychology)
Freedman, B., MSc, PhD (Toronto)
Hutchings, J.A., PhD (Memorial)
Iverson, S.J., PhD (Maryland)
Johnston, M.O., PhD (Chicago)
Lane, P.A., MSc (SUNY Binghamton), PhD (SUNY Albany)
Leonard, M.L., PhD (Ottawa)
MacRae, T.H., MSc, PhD (Windsor) (Killam Professor of Biology)
Mills, E.L., MS, PhD (Yale) - (major appointment in Oceanography)
O'Dor, R.K., PhD (UBC)
Patriquin, D.G., MSc, PhD (McGill)
Pohajdak, B., MSc, PhD (Man)
Scheibling, R.E., PhD (McGill)

Walde, S., PhD (Calgary)
 Whitehead, H., PhD (Cambridge), University Research Professor
 Willison, J.H.M., PhD (Nottingham) - (jointly appointed with SRES)
 Wright, J.M., PhD (MUN)

Associate Professors

Adl, S. (MSc, PhD (UBC, Paris-VI)
 Herbinger, C.M., PhD (Dalhousie)
 Latta, R., PhD (Colorado)
 Pinder, A., PhD (Mass)
 Ruzzante, D.E., MSc, PhD (Dal)

Assistant Professors

Bielawski, J.P., PhD (Texas A & M)
 Côté, P., PhD (McGill)
 Gunawardena, A. (Oxford)
 Herbinger, C.M., PhD (Dalhousie)
 Lotze, H.K., PhD (Kiel)
 Romanuk, T. N., PhD (McMaster)
 Simpson, A.G.B., PhD (Sydney)
 Staicer, C., PhD (UMass/Amherst)
 Stone, S., PhD (York U.)
 Worm, B., PhD (Kiel)

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

Barber, C., PhD (Queens)
 Bard, S., PhD (MIT)
 Bowen, W.D., PhD (UBC), BIO
 Bricelj, M., PhD (New York State)
 Brown, L., PhD (Univ. of B.C.)
 Campana, S.E., PhD (UBC), BIO
 Cone, D.K., MSc (Guelph), PhD (UNB), SMU
 Dong, Z., PhD (Carleton)
 Douglas, S.E., MSc, PhD (Dal)
 Ewart, V., PhD (Memorial)
 Hanson, M., MSc (Ottawa), PhD (McGill), BSc (Ottawa)
 Harrison, W.G., PhD (New York at Stony Brook)
 Hatcher, B., MSc (Dal), PhD (Sydney)
 Jeliazkov, V., PhD (Massachusetts)
 Johnson, S., BSc, MSc (Dal), PhD (Sydney), Dal
 Kenchington, E., MSc (Dal), PhD (Tasmania), BIO
 Lall, S.F., MSc, PhD (Guelph), NRC
 Olivier, Gilles, BSc, MSc, PhD (Montreal)
 Platt, T.C., MA (Tor), PhD (Dal), BIO
 Ross, N., BSc (McGill), PhD (McGill)
 Rossolimo, T., PhD (Moscow)
 Scrosati, R.A., PhD (St. Francis Xavier)
 Swain, D.P., PhD (UBC)
 Vezina, A., BSc, (Laval), PhD (McGill)
 Warman, P., BSc (Rutgers), MSc (Guelph), PhD (Guelph)
 Witton, P., PhD (Hamburg)

Honorary Research Associates

Chapman, A., PhD (Hamburg)
 Horn, A., PhD (Toronto)
 Weilgart, L., PhD (Dalhousie)

Senior Instructors

Beauchamp, C., BSc., MSc (Memorial), BEd (Dal)
 Bishop, T., BSc, MSc (MUN)
 Collins, P., BSc, MSc (Dal)
 McAllister-Irwin, N., PhD (Dalhousie)
 Staples, E., BSc (Dal), BEd (MSVU)
 Welsh, E., BSc (McMaster), MSc (Guelph), BEd (Dal)

Instructors

Chen, L., PhD (Toronto)
 Gass, G., PhD (Toronto)
 McCarville, M., BSc, MSc (Dalhousie)
 Van Dommelen, J.A., MSc (Dal)

Post Doctoral Fellows

Dunn, K., PhD (Texas A & M)
 Fraser, D., PhD (Laval)
 Gardner, K., PhD (Dalhousie)
 Hampl, V., PhD (Charles University)
 Hawyard, A., PhD (McMaster)
 Hoch, W., BSc, PhD (Michigan)
 Kang, B. -Y., PhD (South Korea)
 Sallam, G.M. (Cairo)
 Park, J.S. (Seoul)
 Tong, Y., MSc, PhD (Dal)
 Winter, J., PhD (Guelph)

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: S. Adl, 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, M. Willison
 Evolutionary Biology: J. Bielawski, P. Bentzen, C.M. Herbinger, J. Hutchings, M. Johnston, R. Latta, D.E. Ruzzante, A. Simpson
 Genetics: J. Bielawski, P. Bentzen, C.M. Herbinger, M. Johnston, R. Latta, D.E. Ruzzante
 Genomics: J. Bielawski, A. Simpson, S. Stone
 Marine Biology: P. Bentzen, C.M. Herbinger, 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
 Physiology: S. Iverson, A. Pinder
 Plant Biology: D. Buszard, B. Freedman, A. Gunawardena, M. Johnston, R. Latta, S. Stone
 Population and Conservation Genetics: P. Bentzen, C.M. Herbinger, R. Latta, D.E. Ruzzante
 Protistology: S. Adl, A. Simpson

I. Degree Programs

The department offers the following degree programs in Biology:

- 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 Concentration, BA or BSc

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, page 65 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.

A. Co-operative Education Program in Biology

The Department of Biology will be offering a Co-operative Education Program for Biology 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 Advisor, Mindy McCarville (Mindy.McCarville@dal.ca) DURING THEIR FIRST YEAR OF STUDY for program details.

B. 20-credit Honours Biology, BA, BSc

Students will not normally be officially registered into an Honours program until their 3rd year, after they have completed at least most of the required 2nd and 3rd year classes and earned the specified 3.0 GPA in them. Students may be admitted into a program without having completed all of the 2nd and 3rd 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 pick up 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 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 3rd year of study and **should have completed arrangements by May of their 3rd 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
- DISP (minimum grade of C-) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

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 2nd and 3rd yr. 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, 3070X/Y.06, and PHYL 2030X/Y.06 (PHYL 2030X/Y.06 will be counted as a 2nd year level Biology credit)
- See recommendations under II. Course 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 9 credits in Biology above the 1000 level, including 2 credits above the 2000 level are required for the Honours degree.

Other Required Classes

- For Concentrated Honours programs, two full credits above the 1000 level in any subject other than Biology (applies to BA students only).

Other Recommended Classes

- PHYC 1300X/Y.06 or 1000X/Y.06 or 1100X/Y.06
- STATS 1060.03 and MATH 1000.03 or 1215.03

C. 20-credit BA or BSc with 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
- DISP (minimum grade of C-) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

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 (3) full credits at or above the 3000 level for a BA
- Minimum of four (4) full credits at or above the 3000 level for a BSc
- See recommendations under II. Course Selection Guidelines

D. 20-credit BA or BSc with 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
- DISP (minimum grade of C-) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

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 (2) Biology full credits at or above the 3000 level
- See recommendations under **II. Course Selection Guidelines**

E. 15-credit BA or BSc with Concentration 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-)

OR

- DISP (minimum grade of C-) (SCIE 1501X/Y or 1502X/Y or 1503X/Y or 1504X/Y or 1510X/Y)

2000 level

- Any FOUR (4) of BIOL 2003.03, BIOL 2004.03, BIOL 2020.03, BIOL 2030.03, BIOL 2040.03, BIOL 2060.03

3000 level

- Minimum of two full credits in Biology at or above the 3000 level

F. Other Programs**Minor in Business**

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section, page 65 for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details.

Minor in Computer Science

A Minor in Computer Science is available as part of an Honours or Major BSc degree, each of which involves 20 credits. Consult the Degree Requirements section, page 65 for details.

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section, page 441 for details.

Minor in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major (20-credit) and a BA Honours degree. Consult the Degree Requirements section, page 65 for details.

Bachelor of Computer Science with Minor in Biology

Students in Computer Science may undertake a Minor in Biology by completing the four full-credit requirements specified for the completion of the 15-credit Concentration program in Biology.

II. Course 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 courses 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 courses associated with each area, and provide recommendations for designing individual programs at the 3rd and 4th year levels.

IMPORTANT: Students should choose 2000 level classes in their 2nd year with care, so that they will have the necessary pre-requisites to enroll in 3rd and 4th year classes in their interest areas.

NOTE: THESE ARE NOT REQUIREMENTS. STUDENTS MAY SELECT COURSES 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 course 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 3rd and 4th 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)
- One half-credit class with a field component (marked ^F below)

Principles: BIOL 3042, BIOL 3044, BIOL 3046, BIOL 3061, BIOL 3062, BIOL 3065, BIOL 3069, BIOL 3101

Biodiversity: BIOL 3067, BIOL 3212, BIOL 3301, BIOL 3322, BIOL 3327, ^FBIOL 3622, ^FBIOL 3626, BIOL 4060

Ecosystems: BIOL 3101, ^FBIOL 3664, ^FBIOL 3761, BIOL 4370, BIOL 4661, BIOL 4666, OCEA 3001, OCEA 3002, OCEA 3003, OCEA 3004

Evolution: BIOL 3102, BIOL 3326, BIOL 4020, EARTH 2205, EARTH 2420

Applications: BIOL 3060, BIOL 3063, BIOL 3225, BIOL 3226, BIOL 3580, BIOL 3600, BIOL 3601, ^FBIOL 3623, ^FBIOL 3624, BIOL 4065, BIOL 4160, PSY 2670, HSTC 2204

Methods & Data Skills: ^FBIOL 3615, ^FBIOL 3680, BIOL 4034, BIOL 4061, BIOL 4062, BIOL 4063

B. Organismal Biology

Organismal biology includes areas such as development, physiology and anatomy, as well the study of particular taxonomic groups. Students interested in organismal biology are encouraged to select courses 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, BIOL 4101

Algae/plants: BIOL 3218, 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 courses from selections in the following departments.

Biology: BIOL 3020, BIOL 3046, BIOL 3102, BIOL 3113, BIOL 3125, BIOL 4012, BIOL 4020, BIOL 4035, BIOL 4041, BIOL 4045, BIOL 4101

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 courses in biochemistry and microbiology

*Courses 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 apply 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 1500X/Y.30 or 1501.27, 1502.21, 1504.27, or 1510.33.

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 concentration 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 (e.g., 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 even though they are not cross-listed with Biology.

BIOC: 2200, 2300, 2610, 3200, 3300, 3400, 4010, 4027, 4301, 4302, 4403, 4404, 4501

MICI: 3033, 3114, 3115, 3118, 4026, 4027, 4037, 4038, 4114, 4115, 4118, 4301, 4302,

NESC: 3440

PHYL: 2030, 3320, 3520

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. 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.

NOTE: Students planning to take further classes in Biology or Marine Biology should read the Program Requirements for these degrees.

COORDINATOR: T. MacRae

INSTRUCTOR(S): T. MacRae, J. Wright, A. Simpson, T. Bishop/G. Gass/L. Chen/J. Van Dommelen

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: BIOL 1000.06, BIOL 1020.03

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. 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.

NOTE: Students planning to take further classes in Biology or Marine

Biology should read the Program Requirements for these degrees.

COORDINATOR: M. Leonard

INSTRUCTOR(S): M. Johnston, M. Leonard, S. Walde, T. Bishop/G.

Gass/L. Chen/J. Van Dommelen

FORMAT: Lecture 3 hours, lab 2 hours

EXCLUSION: BIOL 1000.06, BIOL 1021.03

BIOL 1020.03: Introductory Biology I: Cells, Genetics & Evolution.

Biology 1020.03 and its companion class, Biology 1021.03, are fully online distance education classes that introduce students to the language, concepts and practice of biology. Both classes are available in each of the fall, winter, and summer semesters. BIOL 1020.03 deals with structures and processes that are common to all organisms, from ancient types of bacteria to humans and seed-bearing plants. Topics include cell structure and function, energy production, cell division, mitosis and meiosis; Mendelian genetics, chromosomes and heredity, DNA structure and replication, transcription and translation, DNA technology; evolution, systematics and phylogeny, and origins of prokaryotic and eukaryotic diversity. Weekly lessons include exercises and problem-solving activities that develop students' observational, communication and problem solving skills.

This class is appropriate for students planning to major in Biology and Marine Biology, in which case BIOL 1021.03 (or BIOL 1011.03) should also be taken. It is also appropriate for non-majors wishing to gain an understanding of the science underlying topical issues such as cloning, genetic engineering, cancer, and AIDS. High School Biology and/or Chemistry are recommended as background; however supplemental materials covering essential background are provided.

NOTE: This class will be closed to enrolment one week after classes begin.

INSTRUCTOR(S): J. Van Dommelen/L. Chen/ G. Gass

FORMAT: Online (BLS, 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 1000X/Y.06, BIOL 1010.03; SCIE 1510.03, SCIE 1501.27, SCIE 1502.21, SCIE 1503.21, 1504.27

BIOL 1021.03: Introductory Biology II: Organismal Biology & Ecology.

Biology 1021.03 and its companion class Biology 1020.03, are fully online distance education classes that introduce students to the language, concepts and practice of biology. Both classes are available in each of the fall, winter, and summer semesters. BIOL 1021.03 is concerned with features that characterize whole organisms and their ecological relationships. Topics include evolution of biodiversity, ecology, plants form and function, animals form and function. Weekly lessons include exercises and problem-solving activities that develop students' observation, communication and problem solving skills.

This class is appropriate for students planning to major in Biology and Marine Biology, in which case BIOL 1020.03 (or BIOL 1010.03) should also be taken. It is also appropriate for non-majors with interests in plants, animals and ecology. Commonly BIOL 1020.03 (or BIOL 1010.03) is taken before BIOL 1021.03, however the classes can be taken in any order (BIOL 1020 is NOT a prerequisite for BIOL 1021).

NOTE: This class will be closed to enrolment one week after classes begin.

INSTRUCTOR(S): J. Van Dommelen/L. Chen/G. Gass

FORMAT: Online (BLS, 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 1000X/Y.06, BIOL 1011.03; SCIE 1510.03, SCIE 1501.27, SCIE 1502.21, SCIE 1503.21, SCIE 1504.27

BIOL 1050.03: Biology and Society .

This class will provide a basic background in cell biology, genetics and evolution, which will be used to explore some of the societal issues involved with these subjects. Topics will include: an introduction to cell structure and function, cell division, inheritance patterns, human genetics, DNA technology, and the evidence for evolution. It is intended that students who successfully complete this class will have acquired a basic understanding of some of the methods and concepts used in biology that will help them to become critical thinkers of the biological information they see in their world. This class is directed towards Biology non-Majors, but can be used as a preparatory class for those students with no high school Biology, before they go into the mainstream first year Biology courses.

Students who have taken BIOL 1010.03 or BIOL 1020.03 or DISP may not take this class.

This class will not count as a Biology credit for Biology OR Marine Biology Majors or Honours programs.

INSTRUCTOR(S): E. Welsh

FORMAT: Lecture 3 hours, Lab 2 hours

EXCLUSION: BIOL 1010.03, BIOL 1020.03, DISP

BIOL 2003.03: Diversity of Plants and Animals.

This class introduces students to the diversity of forms and function in the multicellular lineages of life. These include the higher plants and the invertebrate and vertebrate animals. Emphasis is placed on the invertebrate phyla and fish of marine environments, and on terrestrial plants, arthropods, birds and mammals. The course will take a phylogenetic approach, exploring the evolutionary relationships among the different groups, as well as introducing students to examples of the different life forms. The class is recommended to students interested in further studies in cell biology, developmental biology, ecology, environmental sciences, evolution, marine biology, and oceanography.

BIOL 2004.03: Diversity of Micro-organisms.

This class introduces students to the main domains of microbial life, based on modern principles of phylogeny and taxonomy. Lectures provide an overview of prokaryote diversity, structure, growth and metabolism, an explanation of the basic differences between Archaea, Eubacteria and Eukaryota, and an overview of the origin and diversity of the main groups of eukaryotes. The importance of protists and bacteria to marine and terrestrial ecology and to environmental issues will be discussed. The class is recommended to students interested in further studies in cell biology, ecology, environmental sciences, evolution, marine biology, microbiology, oceanography.

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)

EXCLUSION: BIOL 2101.03

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 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better) or equivalent

CO-REQUISITE: Recommended CHEM 1011.03 and 1012.03

BIOL 2030.03: Genetics and Molecular Biology.

Genes contain the biological information that specifies the cell and the organism. Therefore, genetics, the study of genes, is a means to understand the function and propagation of cells and organisms. The power and prominence of modern genetics have grown from a blend of classical and molecular approaches; both of these approaches are emphasized in this class. Major topics discussed include: the structure and function of DNA, the nucleic acid that comprises genes and chromosomes; transmission genetics, concerned with the propagation of genetic information; gene function, the expression of genetic information; and

manipulation of DNA (genes) by genetic engineering. A range of organisms is considered, including bacteria, single-celled and multicellular eukaryotes, and viruses.

INSTRUCTOR(S): E. Staples, J. Wright, C.M. Herbing, S. Stone

FORMAT: Lecture 3 hours, lab/tutorial 3 hours

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better)

RECOMMENDED: CHEM 1011.03 and 1012.03

BIOL 2040.03: Evolution.

Evolution is a basic unifying principle in Biology. This course will provide a thorough overview of the process of evolution. Beginning with genetic variation and changes in genetic composition of populations, we will proceed through the relationship between genetic change and phenotypic change. Adaptation will be analyzed at various levels of organization (DNA to species). The course will finish with study of speciation, phylogeny, and macroevolutionary patterns. Students who complete the course should have a working familiarity with the full breadth of evolutionary concepts, preparing them for more advanced courses which will cover the application of these concepts to particular taxa or situations.

INSTRUCTOR(S): M. Johnston, R. Latta, E. Welsh

FORMAT: Lecture, lab/tutorial

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better)

EXCLUSION: BIOL 3041.03

BIOL 2060.03: Introductory Ecology.

Ecology is the study of the interrelationships of organisms and their environments. The broad subject of ecology focuses upon the interactions of plants and animals, including humans, with each other and with their non-living world. Three levels of ecology are studied: (1) Individuals, (2) Populations, (3) Communities and Ecosystems. Assignments and tutorials enlarge upon concepts presented in lectures. Students are instructed in elementary computer techniques and use the computer for most assignments. This class provides an overview of the science of ecology for the informed citizen, and also a good foundation for further work in ecology, marine biology and environmental studies.

INSTRUCTOR(S): C. Beauchamp, S. Walde, D. Ruzzante, H.K. Lotze

FORMAT: Lecture 3 hours, lab/tutorial 2 hours

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better) or ENVS 1000.06 (grade of C- or better) in consultation with the instructor.

BIOL 2605.03: Introduction to Marine Life of Nova Scotia.

This class will introduce students to the beauty, mystery and variety of marine life found in Nova Scotia. The diversity and zonation of invertebrates and macroalgae will be explored with field trips to a salt marsh, rocky and sandy shore. These visits will be supplemented by laboratory-based investigations on live marine organisms. Students will use project-based studies to understand and appreciate how a full and wise use of the sea's living resources requires an understanding of how human activities affect marine life. Students will also make a pressed collection of macroalgae and visit an aquaculture facility. This class carries an auxiliary fee to cover transportation.

INSTRUCTOR: C. Corkett

FORMAT: Lecture/lab/field

BIOL 3003.03: Dynamics of Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first a basic background to dynamical biological processes, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and physiological and population level adaptation to variations in the marine environment. These processes are then considered in the context of the physics and chemistry of large scale oceanographic ecosystems such as

upwelling regions, the oligotrophic gyres, coastal environments, and the high latitude oceans. The emphasis is on a quantitative approach.

INSTRUCTOR(S): M. Lewis

PREREQUISITE: OCEA 2000.03

CROSS-LISTING: OCEA 3003.03, MARI 3003.03

BIOL 3020.03: Advanced Cell Biology.

The eukaryotic cell is a complex system with an array of interconnected organelles. Some of the topics include the processing of proteins and other molecules as they move through the cell, how the cell interacts with its environment and integrated information, a strong emphasis on signaling pathways and programmed cell death. Lectures will be 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 or BIOC 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.

CROSS-LISTING: MICI 3024.03

BIOL 3036.03: Transgenic Organisms.

Over the past few decades scientists have been inserting foreign genes into various organisms and creating genetically modified organisms (GMOs). These transgenic organisms are now being used (and eaten) for several commercial applications. This course will include: A review of recombinant DNA technologies, the history of transgenics, the different methods of inserting genes into organisms, the selection of transgenics, and the inheritance of the transgene. We will cover both transgenic plants and animals. Several examples of GMOs will be presented. The course will also emphasize the problems, ethics and controversy (e.g. Frankenfood) associated with this technology. Gene therapy in humans will also be discussed.

INSTRUCTOR(S): B. Pohajdak

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better)

BIOL 3042.03: Molecular Ecology.

The analysis of molecular genetic data has revolutionized many areas of ecology and conservation biology. In support of this assertion, consider the following questions: How do you deduce parentage, kinship and mating patterns in wild populations from bits of fin, fur or feathers? Count bears (and other large mammals) with bits of fur? Identify the sex of mammals and the diet of sharks from fecal samples? Deduce population structures and average dispersal rates without tagging organisms? Use scale samples to tell whether the effective population sizes of fishes have changed over the last few decades? Determine the continent and river of origin of Atlantic salmon caught off Greenland? Compare the microbial diversity of deep sea vents and thermal hot springs? Identify the species and even population of origin of food products and consumer goods made from illegally harvested fish and wildlife? Determine where the ancestors of northwest Atlantic fishes spent the last ice age? This course will answer these and many other questions while introducing students to the methods and principles of the rapidly developing field of molecular ecology.

INSTRUCTOR(S): P. Bentzen, D. Ruzzante

PREREQUISITE: BIOL 2030.03/BIOC 2030.03, BIOL 2060.03, (BIOL 3040.03 or BIOL 2040.03)

EXCLUSION: BIOL 4042.03

BIOL 3044.03: Ecological Genetics.

The interface of heritable variation among living things (genetics) with the interaction of organisms with their environment (ecology) is the fundamental crucible of adaptive evolutionary change. As genetic principles become more and more the focus of modern biology, it is relevant to ask how genetics is important to natural populations of organisms. This class will present an advanced examination of genetic variation in ecologically important traits, with a focus on continuously

varying (quantitative) traits and is thus complementary to courses in molecular ecology and evolution. Throughout the course we will seek rigorous evidence for the action of natural selection, testing each observation against the expectations of non-selective (neutral) theories. Topics will include methods for determining whether a trait is inherited; the action of natural selection in the wild; when selection will favour specialists 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.

The aim of this course is to examine the principles and processes of evolutionary change at the molecular level. The course begins with the various sources of genetic mutation, and moves on to the dynamics of genetic variation in populations. The course then shifts to a macro-evolutionary perspective and examines topics in protein phenotypic variation, adaptive molecular evolution, molecular clocks, evolution by genetic co-option, and developmental evolution. This class is complementary to BIOL 4041 (Bioinformatics), in that BIOL 4041 focuses on the use of computational techniques to study molecular evolutionary processes.

INSTRUCTOR(S): Bielawski, J.P.

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL/BIOC 2020.03, BIOL/BIOC 2030.03

BIOL 3050.03: Developmental Biology.

The lectures describe development as a sequence of processes and events, in which 'simple' structures such as the fertilized egg are progressively transformed into complex organisms. These events are governed by a set of developmental 'rules'. Our knowledge of these rules comes from experimental study of developing systems such as sea urchins, frogs, peas, carrots, chick embryos and humans. Laboratories stress the use of live material and give students practice with such techniques as test tube fertilization in echinoderms.

INSTRUCTOR(S): P. Collins, A. Gunawardena, S. Stone

FORMAT: Lecture/discussion 3 hours, lab 3 hours

CO-REQUISITE: BIOL/BIOC 2020.03, BIOL/BIOC 2030.03

BIOL 3060.03: Environmental Ecology.

This class considers the ecological effects of pollution, disturbance, and other stressors. Emphasis is on air pollutants, toxic metals, acidification, eutrophication, pesticides, forestry, extinction, resource degradation and warfare.

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.

Ecosystems are communities of living organisms and their physical-chemical environments that interact together within the biosphere. With few exceptions, all life, including human life, exists in ecosystems. The class is divided into two parts. In the first part, there will be an introduction to ecosystems including their definition, history, and the theory of community structure and stability. Topics include: complex systems, general systems theory, pair-wise and multiple species interactions, the community matrix, descriptors of natural communities, ecological stability theory, food webs and network analysis. Several types of modeling approaches to ecosystems will be explored and compared including conceptual, mathematical and statistical examples. Emphasis will also be given to the community structure controversy and recent evidence for and against the notion that communities are highly structured.

In the second part, the Ecosystem Approach will be discussed and applied aspects of ecosystem management. The Ecosystem Approach relates to how people's use of an ecosystem affects its functioning and productivity. The need for an Ecosystem Approach has been driven by many global trends simultaneously. Clearly, for many seeking sustainability in an

ecologically deteriorating world, the concept of an Ecosystem Approach is an idea whose 'time has come'. Concepts like ecosystem health and ecosystem integrity will be explored. Other topics such as environmental indicators, environmental impact assessment, comparative environmental risk assessment, and resilience theory will also be discussed.

This is a web-based class employing WEB CT with frequent use of the Internet to study topics and complete exercises.

INSTRUCTOR(S): P.A. Lane

FORMAT: Lecture 3 hours + BLS

PREREQUISITE: BIOL 2060.03, or INTD 2001 or INTD 2002

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

PREREQUISITE: BIOL 2060.03

BIOL 3063.03: Resource Ecology.

This class considers the ecology, utilization, and management of renewable resources. It will introduce the history and current state of natural resource use in marine and aquatic fisheries, wildlife and forest management, agriculture and aquaculture. We will examine population dynamics, community interactions, and ecosystem support of resources in relation to their exploitation and management. Practices of controlling production, pests, and predators will be discussed. Finally, we will evaluate single-, multi-species, and ecosystem-based approaches to sustainable management.

INSTRUCTOR(S): H. K. Lotze

FORMAT: Lecture 2 hours, tutorial 2 hours

PREREQUISITE: BIOL 2060.03, (MATH 1010.03, STAT 1060.03 or DISP)

BIOL 3065.03: Conservation Biology.

This class offers an introduction to conservation biology, the science of understanding and conserving biodiversity on Earth. Scientists recognize that humans are affecting biodiversity, and that the consequences are deleterious to species, ecosystems, and ultimately our society. This class has two goals: (1) to learn how patterns and changes in biodiversity are quantified and tracked over time and space, and (2) to learn about methods and tools used to prevent the extinction of species and the disruption of habitats and ecosystems. Examples will come from terrestrial, freshwater, and marine ecosystems. Tutorials involve student presentations on key papers in conservation biology as well as a written essay. Both ecological principles and the management implications of conservation biology will be discussed in detail.

INSTRUCTOR(S): B. Worm

FORMAT: Lectures and Tutorials

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. Topics include the effect of species interactions (predation, competition, mutualism) on population fluctuations, cycles and extinction. The relevance of theory to particular case studies such as lynx-hare cycles and biological control of winter moth will be discussed. Recent literature will be emphasized. Written assignments and exams will contribute to the final grades.

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 3078.03/3079.03: Principles of Animal Physiology. Part I and II.

A discussion of the mechanisms which coordinate the activities of cells within multi-cellular organisms and permit such organisms to maintain a stable internal environment in a changing external environment. The emphasis is on the mechanisms most widely distributed through the animal kingdom. The laboratories are designed to illustrate these "principles of physiology" in a variety of organisms and to demonstrate the experimental approaches used to study physiology.

NOTE: Students must complete 3078.03 before 3079.03

INSTRUCTOR(S): N. McAllister-Irwin, A. Pinder, S. Iverson

FORMAT: Writing Intensive, lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 2003.03 and BIOL 2020.03

EXCLUSION: BIOL 3071.03, BIOL 3074.03, BIOL 3076.03, BIOL 3070.06, MARI 3071.03, 3074.03, 3075.03

BIOL 3101.03: Microbial Ecology.

Lectures on the ecology of microscopic organisms, including bacteria, protists, fungi and micro-invertebrates. The class will focus on interactions between species and with the environment. In ecosystems microbial ecology has a central role in linking nutrient cycles between decomposition and primary productivity. Competition, symbiosis and succession trends are discussed with examples from marine, fresh-water and soil habitats. The course is useful for students in marine biology, ecology, environmental science and microbiology.

INSTRUCTOR(S): S. Adl

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 importance in ecological, evolutionary and medical/veterinary spheres, as well as modern cell biology, molecular biology and biochemistry. This course provides a comprehensive and modern understanding of the biodiversity of microbial eukaryotes, the evolutionary history of eukaryotic life, and the organismal biology of complex unicells (trophic strategies, life history, symbiosis etc.) The curriculum covers both 'algal' and 'protozoan' forms including many of the most important organisms in marine, freshwater, sediment and soil ecosystems, major human, agricultural, and aquacultural parasites, and some important 'model organisms'. The course would be important grounding for students of microbial ecology, cell biology and macroevolution.

INSTRUCTOR(S): A. Simpson

FORMAT: Lecture/lab, 3 hours

PREREQUISITE: BIOL/BIOC 2020.03 and BIOL 2004.03 or MICI 2100

BIOL 3113.03: Bacterial Physiology.

The biochemistry of the physiological pathways is considered in relation to the biology of bacteria. A good knowledge of basic microbiology and biochemistry is required.

INSTRUCTOR(S): M. Silver

FORMAT: Lecture 2 hours

PREREQUISITE: BIOL 2004.03

BIOL 3212.03: Biology of the Algae.

A non-taxonomic examination of the cellular, organismic, population and community organizations of benthic and planktonic algae. This course uses WebCT.

INSTRUCTOR(S): E. Kenchington

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: Grade B or better in BIOL 2003.03 or BIOL 2004.03 or permission of instructor

CROSS-LISTING: MARI 3212.03

BIOL 3218.03: Plant Anatomy.

Lectures will explore the internal organization of the leaves, stems, and roots of both the flowering plants and the cone-bearing plants, emphasizing the common plan that is found at the tissue system level of organization. All major cell and tissue types will be reviewed in the light of modern evidence which correlates structure with function. These

surveys will embrace both the primary and the secondary plant bodies.

The relevance to our everyday lives of the structure and function of the cells, tissues and organs of common plants will be highlighted. Laboratory exercises will be closely related to the lecture material, focusing on the study of a variety of economically important woody and herbaceous crop plants. No background knowledge of botany is required to be successful in this class and may be useful to those considering the teaching profession, graduate school, or who are interested in simply increasing their general knowledge.

INSTRUCTOR(S): P.A. Collins

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better)

BIOL 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.

INSTRUCTOR(S): D. Buszard

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 3225.03, ENVS 3225.03

BIOL 3226.03: Plants and Civilization.

This course covers the botany, domestication, development, distribution, production, processing, history and economic and social impacts of plants which have become major world crops. Topics include the cereals (corn, rice and wheat), flowers (tulips and orchids), fruits (apple, blueberry, citrus, grape, olive, pineapple and strawberry), vegetables (alliums, beets, legumes, lettuce, potato and tomato) and industrial crops (cocoa, coffee, cotton, hemp, rubber and sugar), and the development of novel bioproducts (bio-fuels, etc) from plant sources. Course includes field trips and laboratories.

INSTRUCTOR(S): D. Buszard

FORMAT: Lecture/lab

PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (C- or better) and BIOL 1011.03 or BIOL 1021.03 (C- or better) or DISP

CROSS-LISTING: ENVS 3226.03

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 field trips to local sites, computer aided learning, and group projects to construct food-webs for local invertebrate communities.

INSTRUCTOR(S): T. Romanuk

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 2003.03

CROSS-LISTING: MARI 3301.03

EXCLUSION: BIOL 3321X/Y.06

BIOL 3322.03: Parasitology.

The lectures emphasize the parasite-host relationships, evolution of the parasites and adaptations to the host, modifications of physiology, structure and life cycle for a parasitic existence. Examples are taken from all major animal groups where a parasitic mode of existence has developed beginning with the protozoa. Since the most extensive research pertains to parasites of man, the emphasis is on human parasites. Recommended for Ecologists and Pre-Meds. The laboratory stresses recognition and identification of parasites.

INSTRUCTOR(S): T. Rossolimo

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: BIOL 1010.03 or 1020.03 (C- or better) AND BIOL 1011.03 or 1021.03 (C- or better), OR DISP (SCIE 1500.30X/Y or 1501X/Y.27 or 1502X/Y.21, or 1503X/Y.21 or 1504X/Y.27 or 1510X/Y.33)(C- or better)

BIOL 3326.03: Vertebrate Design: Evolution and Function.

Design of organisms is the result both of evolutionary history and natural selection for function. Organisms have to work, but do not have to be the best possible design. In this class we will analyze current designs found among the vertebrates in terms of vertebrate evolutionary history and functional morphology. This class will be particularly valuable in conjunction with BIOL 3070X/Y.06 and 3071X/Y.06.

INSTRUCTOR(S): A.W. Pinder

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 2003.03

BIOL 3327.03: Entomology.

Entomology, the study of insects, is an important branch of academic biology and also one of the largest divisions of applied biology. Any study of terrestrial ecosystems would be incomplete without considering this diverse and important group of animals. This class is an introduction to the study of insects. Topics will 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. When offered during the summer, this class will carry an extra fee to cover costs of transportation on field trips to a variety of terrestrial habitats.

INSTRUCTOR(S): T. Rossolimo

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: BIOL 2003.03

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 will work on their identification skills and will be introduced to several areas of applied entomology, including insect pest management, medical entomology, forensic entomology, and insects in food science. The class will cover the principal applications of entomology in agriculture (crop and animal production), forestry and medicine. Beneficial as well as harmful insects will be discussed.

INSTRUCTOR(S): T. Rossolimo

FORMAT: There are three hours of lectures and three hours of lab session each week

PREREQUISITE: BIOL 3327.03 or the permission of the instructor

BIOL 3404.03: History of Medicine.

See class description for HIST 2995.03 in the History section of this calendar.

BIOL 3421.03: Comparative Vertebrate Histology.

An advanced histology class surveying the whole range of vertebrate tissues and organs. See class description for ANAT 3421.03 in the Anatomy and Neurobiology section of this calendar.

BIOL 3430.03: Introduction to Human Histology.

The class provides a comprehensive treatment of cells, tissues and selected organ systems. 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.

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): G. McOuat and staff

FORMAT: Lectures and tutorials, 3 hours

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 and field trips, this course offers an introductory overview of aquaculture; the culturing and raising of aquatic plants and animals. Lectures will deal with the following topics: general overview of aquaculture; physical and chemical properties of the aquatic environment; aquatic engineering; site selection; finfish culture; mollusc culture; crustacean culture; seaweed culture; health and pathology; nutrition; genetics and reproduction; legal, economical and social considerations. These topics will be covered with both a Maritimes and global perspective. Additional fees are charged to cover the cost of field trip transportation.

INSTRUCTOR(S): C. Herbinger

FORMAT: Lecture 3 hours, Field trips (2 Sundays)

PREREQUISITE: BIOL 2003.03

CROSS-LISTING: MARI 3600.03

BIOL 3601.03: Nature Conservation.

The class traces the development of human economy and the resultant impact on the wild environment. Particular attention is paid to human population dynamics, biotic extinctions and land-use patterns. Having identified the causes of impoverishment of biodiversity the class examines possible cures, including: sustainable development, conservation science and environmental ethics. Special attention is paid to the establishment and management of protected areas.

INSTRUCTOR(S): M. Willison, T. Rossolimo

FORMAT: Lecture 3 hours/tutorial 1 hour

PREREQUISITE: BIOL 1000.06 or BIOL 1010.03 or 1020.03 and BIOL 1011.03 or 1021.03 or SCIE 1500.30, 1501.27, 1502.21, 1503.21, 1504.27, or 1510.33 or permission of instructor

BIOL 3615.03: Methods in Ecology.

This hands-on class provides practical experience in various skills needed to conduct ecological research and prepare scientific papers. Through participation in several class projects, students obtain experience conducting field studies and laboratory experiments. Project, designed by the instructors, include a wide range of ecological questions, techniques, organisms, and ecosystems. Specific topics may include the spatial distributions of organisms, animal orientation and movement, disturbance and succession in forests, function of animal behaviour, and microbial ecology. Students collect, analyze, and interpret their own data and summarize their findings in formal scientific reports. Evaluation of students is based on written assignments and participation. No exams are given. This class enables students to put into practice what they have learned in lecture-based classes. Lectures are limited to background and techniques necessary to conduct each project and comprehensive lists of articles are provided for each project. Instruction includes use of computer packages for data analysis (e.g. Excel, Systat, Primer) and writing (e.g. formatting papers using Word). This class is recommended for any student interested in ecological research, environmental science, field sampling, and graduate studies in ecology. Third-year honours students will find this class useful for conducting their own field research. This class replaces Biol 3614 (Field Ecology). Additional fees are charged to cover the cost of field trip transportation.

FORMAT: Field and Lab intensive

PREREQUISITE: BIOL 2060.03, STAT 1060.03 (or DISP) and at least one diversity class (e.g. BIOL 2003 or 2004).

RECOMMENDED: STAT 2080.03

CROSS-LISTING: ENVS 3615.03

EXCLUSION: BIOL 3614.03

BIOL 3620.03: Field Survey of Terrestrial Biodiversity.

This summer class provides field experience with biodiversity survey techniques and practical experience in relating trends in biodiversity to natural and anthropogenic variation in terrestrial environments. Lectures will provide an overview of relevant concepts in biodiversity and ecology, as well as focused instruction on the ecology and taxonomy of particular groups of organisms such as lichens, mosses, higher plants, insects, amphibians, birds, and mammals. Students will take field trips to a variety of terrestrial habitats. At each site, students will gain experience with standard techniques used to quantify the biodiversity of different groups of terrestrial organisms. Students will learn to use Excel to tabulate and analyze data, and will write several reports based on the techniques used,

the data collected, and the major biodiversity issues involved. Five days will be devoted to planning, conducting, writing-up, and presenting to the class an independent project of the student's own choice. An extra fee will be charged to cover costs of transportation and camping.

FORMAT: SEASIDE Field intensive

PREREQUISITE: BIOL 2003.03 and 2060.03 or permission of instructor

BIOL 3622.03: Ornithology.

The study of birds in their natural habitats will be the focus of this field-intensive summer class. Each day's activity will be either field trip, lecture, laboratory, or a combination of these, depending on weather. Lectures and laboratory exercises will complement field work and provide an overview of avian biology, from evolution and systematics to anatomy and physiology. A wide variety of field sites in Nova Scotia will be visited, including: Coniferous and deciduous forests of various types; coastal marsh, tide flats, beach, grassy dunes, and rock shore; freshwater lakes; and offshore islands. Students will keep a field notebook and prepare written reports summarizing field observations and addressing particular questions. Students will learn techniques for the scientific study of bird populations, including identification of species by sight and sound. Exams will test student comprehension of the lecture and laboratory material, as well as identification skills. For the last week of the class, students will design and conduct independent projects to test a functional hypothesis about the behaviour or ecology of birds. On the final day, students will present their work to the class in research seminar format. One week will be spent at various field camps; extra fees will be charged to cover costs of transportation and camping.

INSTRUCTOR(S): C. Staicer

FORMAT: SEASIDE Field intensive

PREREQUISITE: BIOL 2003.03 or 2060.03 or permission of instructor

BIOL 3623.03: Applied Coastal Ecology.

This is a field-oriented course which will teach students about the application of ecological principles in the coastal zone. Students will also learn about the impacts of anthropogenic inputs on basic ecosystem function. Field work will concentrate on developing frameworks to assess ecosystem health in several types of coastal ecosystems including macroalgal communities on rocky shores and seagrass beds on sedimentary shores. Students will gain experience in basic experimental design, principles of environmental assessment and monitoring, and coastal habitat remediation. Assessment will be based on individual or group projects, which will be presented as written scientific research papers and oral presentations in seminars to the class. This class carries an additional fee to cover the cost of transportation.

FORMAT: SEASIDE Field and Lab intensive

PREREQUISITE: BIOL 2060.03 and STAT 1060.03 (or DISP)

CROSS-LISTING: ENVS 3623.03, MARI 3623.03

BIOL 3624.03: Urban Freshwater Systems.

Urban ecology is a new branch of environmental science that concentrates on understanding the natural systems of urban areas and the stresses that face them. Watercourses often can be the richest of urban wildlife sites.

This summer field course will introduce students to the ecology of freshwater systems in the context of their urban watersheds. This applies Ecology course is field-intensive, and will concentrate on the lakes and rivers of the assess ecosystem health in several lakes and rivers. In the field, they will monitor water quality and characterize resident communities of plants and animals. some sampling will involve boats and canoes, and a unit on boating safety will be includes. Evaluation will be based on individual and group research reports which will be written up as scientific papers and presented to the class. An extra fee will be charged to cover the costs of transportation and field expenses.

FORMAT: SEASIDE Field and lab intensive

PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or DISP)

CROSS-LISTING: ENVS 3624.03

BIOL 3626.03: Field Studies of Marine Mammals.

This class prepares students to conduct field research on marine mammals, by combining field and laboratory experience with a theoretical framework to understand the biology of these intriguing vertebrates. Field work will investigate pinniped haulout behaviour and cetacean distribution. Laboratory work will include necropsies of available

specimens and an introduction to photographic identification of cetaceans. Lectures will focus on marine mammal adaptations and evolution, population biology, social organization, as well as conservation and management. Field work will be conducted on weekends as well as weekdays. Students will write and present a field report, prepare laboratory reports, and take examinations on lecture material. This intensive field class will take place during the last two weeks of August and the first week of September. An extra fee will be charged to cover the costs of transportation.

FORMAT: SEASIDE Lab and field intensive

PREREQUISITE: BIOL 2060.03 and BIOL 3062.03 (or similar behaviour class), STAT 1060.03

CROSS-LISTING: MARI 3626.03

BIOL 3630.03: Field Methods in Animal Behaviour.

This summer class provides first-hand experience in studying animal behaviour in the field, so that upon completion, students should be able to carry out field studies of their own. Topics include focusing questions, describing behaviour, choosing sampling regimes, and designing and conducting experiments. Lectures will provide background information, but most of the class will consist of day-long field projects that give students practical experience with each of the main topics. Specific exercises will involve various species from insects to mammals, and various behaviours, including visual signaling, foraging, and responses to playback to tape-recorded sounds. Students will also plan, conduct, write-up, and orally present a 5-day project of their own choice. An extra fee will be charged to cover costs of transportation

INSTRUCTOR(S): A. Horn

FORMAT: SEASIDE Field intensive

PREREQUISITE: BIOL 3062.03 or PSYO 2160.03 or 3160X/Y.06 or permission of instructor

BIOL 3632.03: Applied Field Methods in Fish Ecology.

This summer class prepares students for designing and conducting field research on fishes. Fieldwork will concentrate on day trips to streams and shallow water marine/freshwater habitats. Topics covered will include techniques for collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variability, quantifying temporal and spatial variation, and planning for statistical analysis. Informal lectures and laboratories will complement field exercises. The major focus will be on practical techniques and tradeoffs between data quality, quantity, costs and ethical/environmental considerations. Students will keep a field notebook, generate computer files of collected data, take problem-solving quizzes, and write a methodological research proposal. The class includes a two night camping trip and additional fees to cover transportation and camping expenses.

FORMAT: SEASIDE Field intensive. Lecture and lab

PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or DISP) or their equivalents or permission of instructor

CROSS-LISTING: MARI 3632.03, ENVS 3632.03

BIOL 3664.03: Intertidal Ecology and Diversity.

This class explores ecological concepts as they apply to a variety of intertidal habitats, including rocky shores, tidal flats and sandy beaches. Primary emphasis is placed on description and quantification of diversity with the appropriate sampling techniques for flora and fauna. Generally, field sampling and measurements will be followed by further analysis, e.g., identification of seaweeds and invertebrates, in the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the major phyla is a key component of this course. Secondly, major aspects of population and community ecology, such as plant-animal interactions, will be investigated in the different environments. Basic skills in experimental design and related statistical analyses will be learned through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will be through reports of selected lab and field work, oral presentations and in-class discussions, and a final independent project on a topic of choice relating to marine benthic biodiversity. Also, students are introduced to the 'Marine Invertebrate Diversity Initiative', and will each contribute a species profile.

FORMAT: SEASIDE Field and Lab intensive
 PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or DISP)
 CROSS-LISTING: ENVS 3664.03, MARI 3664.03
 EXCLUSION: BIOL 3662.03, 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. The course is designed to be an introductory course in community ecology and would have as a prerequisite at least one background course in ecology. Students will be introduced to the study of food webs from field, experimental and modelling perspectives and take part in field trips, group projects, and running computer simulations.
 FORMAT: SEASIDE: Lectures, Lab, Field trips
 PREREQUISITE: STAT/MATH 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. The human dimension of invasive species ecology from the perspective of humans as invaders, as vectors of invasions, and the human health implications of invasive species will also be explored.
 FORMAT: SEASIDE: Lectures, Lab, Field trips
 PREREQUISITE: BIOL 2003.03
 EXCLUSION: For third year and above or with permission of the instructor

BIOL 3680.03: Scientific Diving Methods for Marine Ecology.

This class will emphasize the practicalities of doing field ecological experiments under water using SCUBA. It will also cover aspects of experimental design, data analysis from ecological experiments, some local natural history necessary to identify and quantify marine organisms, and the regulations governing scientific diving. The class will include at least 12 dives in various habitats, both from shore and from boats. Specific topics will include expedition logistics, site choice, site mapping, equipment installation, experimental manipulations, various censusing methods (transects, quadrats, video, photographs), dive logs and data recording, and sampling, capture, and transport methods for animals, plants, and bottom samples. This class will use diving, but will not teach diving. Students must be certified divers (preferably at least advanced open water, > 10 recent open water dives), have completed a full diving medical, be admitted to the Dalhousie Scientific Diving Program (contact the University Diving Officer), and be comfortable under water in cold water equipment.

INSTRUCTOR(S): R. Scheibling, A. Pinder, J. Lindley
 FORMAT: SEASIDE Field Lab and Lecture
 PREREQUISITE: BIOL 2003.03, STAT 1060.03 (or DISP), internationally recognized diving certification, diving physical; recommended: BIOL 3212.03, BIOL 3301.03
 CROSS-LISTING: MARI 3680.03

BIOL 3761.03: Marine Ecology.

This course gives an introduction to marine ecology by emphasizing ecological processes and evolutionary adaptations that determine the structure and dynamics of marine ecosystems globally. Building upon an understanding of basic ecological principles and a familiarity with major invertebrate and algal/plant groups, the course examines processes operating at the population, community and ecosystem level (e.g. primary and secondary productivity, food web structure and trophodynamics, recruitment, competition, predation, parasitism and disease) in a variety of marine communities/habitats (e.g. intertidal and subtidal habitats of temperate shores, tropical coral reefs and seagrass beds, the open ocean, and the deep sea). Additional topics and vignettes include fertilization and larval ecology, invasion ecology, algal-grazer interactions, trophic cascades, and El Nino events. Field trips to local shores provide first-hand experience with identification of marine biota, measurement of environmental factors, and fundamentals of sampling and experimental design.

INSTRUCTOR(S): R. Scheibling
 FORMAT: Lecture, Lab
 PREREQUISITE: BIOL 2060.03 or BIOL 2003.03
 CROSS-LISTING: MARI 3761.03

BIOL 4013X/Y.06: Scientific Writing and Advanced Laboratory In Biochemical techniques.

This class will consist of a series of laboratory modules (3 modules each of 4 weeks' duration, 1 day per week or 72 hours in total with limited flexibility to accommodate the need to attend other classes) and tutorials with computer-based assignments designed to teach scientific writing techniques (9 hours in total). The class is organized collaboratively by the Departments of Biochemistry & Molecular Biology, Biology, and Microbiology & Immunology. Several lab modules will be offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. Students in concentrated Honours Biochemistry must complete 1 module from each section. Students in combined Honours with Biochemistry may select their three modules from any section or sections, subject to availability of space. Students must obtain a class outline from the Biochemistry & Molecular Biology Department office prior to registration and return the module selection form at least 24 hours prior to the organizational meeting, the date of which will be indicated in the Registration Timetable.

COORDINATORS: P. Liu and L. Murray.

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. A certificate (CELTA) will be awarded when both terms are completed successfully.

INSTRUCTOR(S): Faculty members of the departments of Biochemistry & Molecular Biology, Biology, and Microbiology & Immunology.

FORMAT: Twelve 6-hour labs and three 3-hour tutorials/computer assignments.

PREREQUISITE: BIOC 3200.03, 3300.03, 3400.03 and consent of coordinator

CROSS-LISTING: BIOC 4610X/Y.06, BIOC 5610.06, MICI 4610X/Y.06, MICI 5610X/Y.06

EXCLUSION: BIOC 4603/BIOC 5603, BIOL 4012.03/BIOL 5012, MICI 4601/MICI 5601, and MICI 4602/MICI 5602

BIOL 4034.03: Molecular Genetic Techniques in Ecology.

This course will provide a practical introduction to molecular genetic techniques that have gained wide use in ecological, behavioural and evolutionary studies of wild organisms. Students will be trained in a variety of molecular techniques, including DNA isolation and quantitation, gel electrophoresis, the polymerase chain reaction (PCR), RFLP analysis, DNA sequencing, and microsatellite and amplified fragment polymorphism (AFLP) analysis. During the first part of the semester, the class will consist of planned experiments aimed at building core laboratory skills. During the latter part of the semester, students will work in groups on small research projects involving molecular methods. The research projects will be assigned by the instructor (undergraduates) or chosen by the students but subject to approval by the instructor (graduate students). The students will be expected to keep a laboratory notebook, and prepare a final report on their research project.

INSTRUCTOR(S): P. Bentzen

FORMAT: Lab (2 x 3 hr) + 1 hr lecture

PREREQUISITE: BIOL 3042.03 or 5042.03 or permission of instructor

CROSS-LISTING: BIOL 5034.03

BIOL 4035.03: 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.

INSTRUCTOR(S): D.C. Riddell, W.L. Greer

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: BIOC 3400.03/BIOL 3014.03, or permission from instructor

CROSS-LISTING: BIOC 4835.03, PATH 5035.03

BIOL 4050.03: Advanced Animal Development.

This class is the follow-up to BIOL 3050.03 and deals, at a more advanced level, with the mechanisms and controls that regulate the development of vertebrate and invertebrate embryos. The class also introduces the topic of evolutionary developmental biology and places embryonic development in the context of animal evolution and the evolution of development itself. Topics covered include cell determination and differentiation, morphogenesis, mechanisms of organ formation, inductive tissue interactions, growth, regeneration, wound healing, the evolution of development and how changes in development lead to evolutionary change in structures.

INSTRUCTOR(S): Staff

FORMAT: Lecture/discussion 3 hours, (optional) labs

PREREQUISITE: BIOL 3050.03 (minimum B-) or instructor's permission and BIOL 2020.03, BIOL 2030.03

EXCLUSION: BIOL 3051.03

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): Staff

FORMAT: Lectures 3 hours

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: BIOL 5651.03, MARI 4060.03

BIOL 4061.03: Design of Biological Experiments.

The purpose of this class is to introduce students who have previously taken formal classes in statistics to the practice and pitfalls of experimental design and data analysis in biology. Using examples from the ecological literature, the class examines how experiments should be designed and analyzed in different situations, with emphasis on potential problems and how they may be overcome.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture 3 hours

PREREQUISITE: 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 will introduce students to techniques available for the analysis of biological data, including correlation, regression, general linear models and multivariate methods. Emphasis will be on the practical use and abuse of these techniques rather than derivations or mathematical formulae. Students will analyze real and realistic data sets, and be assessed on write-ups of these analyses.

INSTRUCTOR(S): Whitehead, H.

PREREQUISITE: STAT 2080.03 or ECON 2280.03

CROSS-LISTING: BIOL 5062.03

BIOL 4063.03: Biological Modelling: An Introduction to Analysis, Statistics, Programming and Simulation.

This course will combine lectures and labs to introduce students to the standard modelling tools needed for a wide range of research. The goal is to provide a solid foundation in model formulation, a basic knowledge of computer programming, and a brief introduction to a wide range of techniques. Students will be taught scientific programming, will be introduced to advanced statistics, including GLIM, random/mixed effects models, Bayesian models, state-space models and meta-analysis, and will work with dynamic modelling approaches. At the end of this course, students should be able to formulate research problems as models, create an introductory verbal, analytical or simulation model, and independently find out more.

FORMAT: Lecture, Lab

PREREQUISITE: BIOL 2060.03, MATH 1000.03 (or DISP), STAT 2080.03 and permission of instructor.

CROSS-LISTING: BIOL 5063.03

BIOL 4065.03: Sustainability and Global Change.

Sustainable Development has become a worldwide concept embraced by both the North and the South. This concept emphasizes the intersection of society, economy, and environment. The goal of achieving sustainable development includes: equitable and just societies, protected environments with ecosystem integrity, and robust economies. All of this must be achieved for the present and future generations in a world that is undergoing unprecedented global change. Most countries include Sustainable Development in their national priorities and approaches to development. In Canada, it is a critical component of both domestic and foreign policies. Sustainable development has also become a main organizing principle for global environmental management; for example, most multilateral environmental agreements and international environmental agencies are mandated to enhance sustainability. At the same time, the concept is controversial, and often defined differently in the North and the South. Besides definitional problems, making the concept operational has proven extremely difficult. The global trends portion of the class will deal largely with those trends that relate directly to environmental management and achievement of sustainability at the global level.

NOTE: This is a web-based class and weekly assignments are related the Internet.

INSTRUCTOR(S): P. Lane

FORMAT: Lecture and discussion 3 hours + BLS

PREREQUISITE: BIOL 2060.03 and one of BIOL 3060.03, BIOL 3061.03, BIOL 3062.03, BIOL 3063.03, 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 INTD 2001.03 or INTD 2002.03 or permission of instructor

BIOL 4070.03: Advanced Topics in Animal Physiology.

Whereas the introductory animal physiology classes emphasize common principles, this class emphasizes the diversity of physiological solutions to common problems among animals. A theme is chosen each year and each student presents two seminars reviewing the literature of particular animals' solutions. The student also writes a short term paper based on one of their presentations.

INSTRUCTOR(S): A. Pinder

FORMAT: Lecture 2 hours

PREREQUISITE: BIOL 3070.03 or 3071.03

CROSS-LISTING: BIOL 5070.03

BIOL 4074.03: Introduction to Animal Nutrition.

There will be an introduction to the history of nutritional sciences, nutrition research techniques and focus on vitamin, mineral, lipid, protein, amino acid and carbohydrate requirements.

INSTRUCTOR(S): N. McAllister-Irwin

FORMAT: Lecture

PREREQUISITE: BIOL 2020.03 or BIOC 2020.03, and BIOL 2003.03, or permission of instructor

BIOL 4101.03: Industrial Microbiology and Biochemistry.

This class considers the industrial and environmental applications of micro-biology, particularly the industrial processes, like brewing and food production. Fundamental and practical understanding of the biochemistry of these processes are covered. The class consists of lectures and individual projects.

INSTRUCTOR(S): M. Silver

FORMAT: Lecture/seminar 2 hours

PREREQUISITE: BIOL 2004.03 or MICI 2100.03

BIOL 4160.03: Political Ecology.

Political ecology examines the politics of the environment. How do existing policies and stakeholder interactions affect the use of environment by society? Political ecology does not center on specific policies, political theories, or ideologies, but rather considers an array of broad political and socio-economic forces that shape the human relationships to the environment. These forces are multiple and interact in complex ways.

The class will cover some of the lessons learned around the world concerning the relationships between nature and society. Several case studies will be evaluated using a variety of environmental issues in the use and sharing of natural resources and environmental damage and protection. Decisions about these issues often do not adequately address scientific considerations especially ecological ones. Often there is a mixture of knowledge and myth associated with these issues, and who controls the knowledge often has the power to control the decisions and the ecological resources.

This class has a discussion format. This is a web-based class employing WebCT.

INSTRUCTOR(S): P. Lane

FORMAT: Discussion 3 hours + BLS

PREREQUISITE: BIOL 2060.03 and one of BIOL 3060.03, BIOL 3061.03, BIOL 3062.03, BIOL 3063.03, BIOL 3066.03, BIOL 3067.03, BIOL 3068.03, BIOL 3069.03, BIOL 3101.03, BIOL 3601.03, BIOL 3614.03, BIOL 3615.03, or BIOL 3623.03, BIOL 3624.03, BIOL 3664.03, or BIOL 3761.03 or INTD 2001.03 or INTD 2002.03 or consent of instructor

BIOL 4302.03: Molecular Immunology.

See class description for MICI 4302.03 in the Microbiology and Immunology section of this calendar.

BIOL 4335.03: Marine Impacts.

Marine environments are subject to a variety of environmental impacts caused by resource extracting and utilization as well as waste disposal. These impacts arise from oil and gas production, ocean dumping, coastal habitat alteration and eutrophication, effluent inputs, urbanization, shipping, fisheries, and aquaculture. This course will review the effects of these types of activities on marine environments, with a focus on ecosystem level influences including dispersion, elemental fluxes benthic impacts, food webs, and biodiversity. Approaches to quantifying these processes and predicting impacts will be explored. Specifically, simulation modelling of impacts and ecosystems will be undertaken using Stella graphical modelling software as well as other tools. The course will examine practical solutions to environmental assessment, monitoring, and prediction using modelling, data collection, and analysis. classes will include lectures, modelling examples (computer projection), and discussion of research papers. Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant

PREREQUISITE: BIOL 2003.03, 2060.03, (MATH 1000.03, STAT 1060.03 or DISP) or permission of instructor

CROSS-LISTING: OCEA 4335.03, MARI 4335.03

BIOL 4369.03: Fisheries Oceanography.

See class description for MARI 4369.03 in the Marine Biology section, or 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.

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: S.E. Howlett

FORMAT: Lecture 3 hours

PREREQUISITE: A previous class in physiology and biochemistry is recommended. Extra readings may be required for 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, 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 over-the-counter drugs, herbal medication, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

COORDINATOR: H.A. Robertson

FORMAT: Lecture 3 hours

PREREQUISITE: BIOL 4404.03 (with a grade of B or better).

CROSS-LISTING: PHAC 5409.03, BIOC 4806.03, NESC 4376.03

EXCLUSION: BIOL 4405.03

BIOL 4408.03: Introduction to Pharmacology III.

The course will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts (e.g. drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g. unknowns) or as written exercises (literature-based problems, computer simulations). The course will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

COORDINATOR: J.W. Downie

FORMAT: Lab

PREREQUISITE: BIOL 4404.03 or BIOC 4804.03 or NESC 4374.03 (with a grade of B or better) and permission of instructor

CROSS-LISTING: BIOC 4807.03, NESC 4377.03, PHAC 5410.03

CO-REQUISITE: BIOL 4407.03 or BIOC 4806.03 or NESC 4376.03

BIOL 4661.03: Principles of 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 MARI 4662.03 in the Marine Biology 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 MARI 4663.03 in the Marine Biology section, or OCEA 4330.03 in the Oceanography section of this calendar.

BIOL 4800X/Y.06: Special Topics.

Available as 4806.03, 4807.03, 4809.03, 4810.03. These classes involve independent study and are intended for fourth-year students who wish to study an area of biology not covered in other classes. The topic of study must be different from the student's honours thesis. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be submitted to and approved by the chair of the curriculum committee. Only the Chairperson of the Curriculum Committee can sign the approval form. For more information and forms see <http://biol.dal.ca/classes/classes/sptopics.html>

BIOL 4900X/Y.06: and 4901.03/4902.03 (Parts I and II) Honours Research and Thesis.

This class is required of all students in the Biology and Marine Biology Honours programs. It consists of a research project carried out under the supervision of a faculty member or research scientist at Dalhousie or elsewhere as well as weekly meetings of the class. Students that wish to be supervised by someone external to the department must consult with their Honours advisor before starting their research to determine their supervisor's eligibility (see Biology Web site, <http://www.biology.dal.ca/>)

honours/index.html for more details). Students supervised by a department member or external professor/scientist must also submit a research proposal to the Biology Honours committee to determine the project's eligibility before starting their research. The results of the research will be submitted as a thesis for a letter grade. The rest of the grade will come from an oral presentation of your research to the Honours class, and another presentation or poster at the annual Honours Cameron conference.

NOTE: Regular Honours students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Marine Biology Co-op students taking this class normally attend and register for MARI 4901 in the Winter term of their 4th year and MARI 4902 in the Fall term of their 5th year to accommodate their workterms.

INSTRUCTOR(S): P. Collins, A. Pinder, B. Pohajdak

FORMAT: Weekly class meetings (1.5-3.0 hrs) and an independent research project

CROSS-LISTING: MARI 4900X/Y.06 and MARI 4901.03/4902.03 (Parts I and II)

RESTRICTION: Honours students normally in their final year of study.

Honours Qualifying Examination.

This is an additional requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with BIOL 4900X/Y.06 (4901.03/4902.03). Students are required to attend weekly seminars for two academic terms where they and other students in BIOL 4900X/Y.06 (4901.03/4902.03) give oral presentations of their Honours research projects. Instructional seminars on thesis writing, oral presentations, poster preparation, and other skills are also given. Registrations for this class is not required but it does appear on your final transcript as a Pass/Fail grade and attendance is recorded at all seminars. Marine Biology Co-op students who are on work terms during the Fall term of their 4th year normally attend these seminars during the Winter term of their 4th year and Fall term of their 5th year.

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 8893.00: Co-op Work term III.

PREREQUISITE: SCIE 2800.03

BIOL 8894.00: Co-op Work term IV.

PREREQUISITE: SCIE 2800.03

Chemistry

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Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chairperson of Department

Pincock, J.A.

Graduate Coordinator

Burnell, D. J.

Co-op Advisor

Grindley, T.B.

Faculty Undergraduate Advisors

Doucette, A.A. (494-3714)
Grindley, T.B. (494-2041) (Co-op Academic Advisor)
Guy, R.D. (494-7079) (Coordinator)
Laws, P. (494-6143)
Wentzell, P.D. (494-3708)

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., PhD (Toronto), MDCM (McGill), cross-appointment from Biochemistry & Molecular Biology
Becke, A.D., BSc (Queen's), MSc, PhD (McMaster), FRSC, FRS, FCIC, Canada Council Killam Research Fellow and Killam Chair in Computational Science
Boyd, R.J., BSc (UBC), PhD (McGill), FCIC, Alexander McLeod Professor of Chemistry
Burford, N., BSc (Wales, Cardiff), PhD (Calgary), FCIC, Harry Shirreff Professor of Chemical Research and Canada Research Chair in Synthesis and Characterization of Materials
Burnell, D.J., BSc, MSc (Carleton), PhD (UNB), Faculty of Science Killam Professor of Chemistry
Cameron, T.S., BA, MA, DPhil (Oxon), Director of DALX
Chatt, A., BSc (Calcutta), MSc (Roorkee), MSc (Wat), PhD (Toronto), FCIC, Director of SLOWPOKE and Faculty of Science Killam Professor of Chemistry
Dahn, J.R., BSc (Dal), 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
Grindley, T.B., BSc, MSc, PhD (Queen's), FCIC
Pincock, J.A., BSc, MSc (Man), PhD (Toronto), FCIC, Faculty of Science Killam Professor of Chemistry
Shaver, A., BSc (Carleton), PhD (MIT), Vice President Academic & Provost
Weaver, D.F., MD, PhD (Queen's), FRCP(C) (Dal), FCIC, Canada Research Chair in Clinical Neuroscience and cross-appointment from the Division of Neurology
Wentzell, P.D., BSc (Dal), PhD (Mich State)

White, M.A., BSc (Western), PhD (McMaster), FCIC, University Research Professorship, Director of the Institute for Research in Materials and cross-appointment with Physics and Atmospheric Science.
 Zwanziger, J.W., BA (Chicago), PhD (Cornell), Canada Research Chair in NMR Studies of Materials, Director, ARMRC and cross-appointment with Physics and Atmospheric Science

Associate Professors

Cozens, F.L., BSc (York), PhD (Toronto)
 Grundy, K.R., BSc, MSc, PhD (Auckland)
 Guy, R.D., BSc (SFU), PhD (Carleton)
 Jakeman, D.L., BSc, PhD (Sheffield), cross-appointment with College of Pharmacy
 Martin, R.V., BS (Cornell), MSc (Oxford), PhD (Harvard), cross-appointment from the Department of Physics and Atmospheric Science
 Schepp, N.P., BSc, PhD (Toronto)
 Stradiotto, M., BSc, PhD (McMaster)
 Thompson, A., BSc (Leicester), PhD (Sheffield)
 White, R.L., BSc (Dal), PhD (McMaster), FCIC

Assistant Professors

Andreas, H., BSc, PhD (Calgary)
 Darvesh, S., BSc, MSc, PhD (UNB), MD (Dal), FRCP (C), cross-appointment from Anatomy and Neurobiology
 Doucette, A.A., BSc (Dal), PhD (Alberta)
 Rainey, J.K., BSc (Guelph), MSc, PhD (Toronto), cross-appointment from Biochemistry & Molecular Biology
 Turculet, L., BSc (MIT), PhD (Berkeley)
 Zhang, P., BSc, MSc (Jilin U., China), PhD (Western)

Senior Instructors

Barkhouse, S.A., BSc (MSVU), BEd, MBA (Dal)
 Byers, C.M., BSc (Dal)
 Gabor, J., MSc (Budapest)
 Silvert, D.J., MSc (CWURU)
 Thompson, K.E., BSc (Acadia), MBA (SMU)

Instructors

Alemán Milán, G., BEng (Superior Polytechnic Institute of Havana), MSc, PhD (Dal)
 Laws, P.A., BSc (Acadia), MSc (Dal), BEd (MSVU)

Adjunct Professors

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.
 Keefe, C.D., BSc (MUN), PhD (Alberta), Canada Research Chair in Molecular Spectroscopy, Cape Breton University, Sydney, NS
 Kiceniuk, J., BSc (Alberta), MSc, PhD (UBC), Dept. of Fisheries and Oceans, St. John's, NL.
 Marangoni, D.G., BSc (Acadia), PhD (Dal), St. Francis Xavier University, Antigonish, 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
 Pacey, P.D., BSc (McGill), 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
 Ramaley, L., BA (Colorado), MA, PhD (Princeton) FCIC, Dalhousie University, Halifax, NS
 Roscoe, J.M., BSc, MSc (Acadia), PhD (McGill), Acadia University, Wolfville, NS
 Soo, E., BSc (U of Sunderland), MSc (McGill), PhD (U of Sunderland), Institute for Marine Biosciences, NRC, Halifax, NS
 Syvitski, R., BSc, MSc (Lakehead), PhD (UBC), Institute for Marine Biosciences, Halifax, NS

Spielvogel, B.F., BS (Geneva College, PA), PhD (U of Michigan), Boroscience Canada Inc., Halifax, NS
 Werner-Zwanziger, U., Vordiplom (Mathematics), Diploma (Chemistry), PhD (Westfälische Wilhelms-Universität Münster, Germany), Dalhousie University, Halifax, NS

Sessional Appointments

Carter, M.D., BSc, MSc (Queen's), BEd (Ottawa), PhD (Dal)
 Moya Barrios, R., BSc (U of Havana), MSc, PhD (Dal)
 Pearson, K.J., BSc (UCCB), PhD (Dal)
 Perrott, A., BSc, PhD (Dal), BEd (Acadia)
 Saunders, C.D.L., BSc (Queen's)
 Tiedje, K., BSc (Queen's), PhD (Dal)

Postdoctoral Fellows, Research Associates/ Assistants

Al Mughaid, H., BSc (Jordan), MSc, PhD (Dal)
 Ba Han, PhD (Yangon University, Myanmar)
 Barden, C.J., BSc (James Madison U), PhD (U of Georgia)
 Carter, M., BSc, MSc (Queen's), BEd (Ottawa), PhD (Dal)
 Chen, B., BSc (Central China Normal U), MSc (Huazhong U of Science and Technology), PhD (UWO)
 Cordes, R.E., BSc (Dal), MSc (UBC)
 Furue, H., BSc, MSc (Osaka), PhD (Queen's)
 Galloway, T., BSc (Wilfrid Laurier), PhD (McMaster)
 Gayo, F.G., BSc (Qufu Normal U, China), MSc (Beijing Institute of Technology, China), PhD (Dal)
 Gillis, M., BSc, MSc (UNB), PhD (Sask.)
 Jahan, N., BSc, MSc (Karachi U, Pakistan), MPhil, PhD (HEJ, Karachi U, Pakistan)
 Johnson, M., BSc (Dal), MSc (UWO)
 Lamsabhi, A.M., BSc, MSc, PhD (Cadi Ayyad U, Morocco)
 Lu, E., BSc (Wuhan U of Technology), PhD (Dalian U of Technology)
 McDonald, C., BSc (Dal), PhD (Alberta)
 Paul, N., BSc, MSc (Kurukshetra U, Kurukshetra, Haryana, India), PhD (Bundelkhand U, Jhansi, UP, India)
 Pincock, A.L., BSc, MSc (Man), BFA (NSCAD)
 Sadeghi-Khomami, A., BSc (U of Mashhad), PhD (U of Nottingham)
 Weaver, C., BSc, MSc (Queen's)
 Wu, F., PhD (Research Institute of Petroleum Processing, Beijing, P.R. China)
 Zwicker, B., BSc (Dal)

Visiting Professor

Gauld, J.W., BSc (U of Queensland), Honours (NTU), PhD (ANU)

Visiting Scientists

Fukushima, M., DSc (Tohoku U, Japan), Ishinomaki Senshu U, Ishinomaki, Miyagi, Japan
 Wu, J., BSc (Anqing Normal College, China), MSc, PhD (Nanjing U, China)

I. Introduction

Chemists study the properties of atoms, molecules and ions, and how these interact with each other. Chemists make new compounds and analyze for their purity. Since all matter around us is composed of chemicals, understanding these helps people to protect and influence both their own lives and the environment around them. Chemical principles form the groundwork of all aspects of the physical and biological sciences, from the air, the earth and the sea, to plants, animals, insects, bacteria and viruses, to plastics, glass, concrete, steel, wood, bricks, microchips and more.

A chemistry degree involves considerable breadth of training in the major branches of chemistry. Students who successfully complete a chemistry degree will also have acquired a range of skills, from organizing large bodies of information, to quantitative analytical skills. Successful chemists need to be comfortable with computers and with the fundamental aspects of biology, mathematics, physics and statistics. They must describe their work clearly, both orally and in writing. They need to be able to generate data reliably, to assess their results and to compare these critically to results from other laboratories.

The Honours BSc is the expected professional requirement for a chemist. Chemists with honours degrees are employed in widely differing areas in industry and government. This degree will provide a background for further graduate work in chemistry or in such diverse areas as medicine, law, business administration, biochemistry, oceanography and geology. A postgraduate degree is essential for independent original research in industry or for an academic career.

At the 2000 level the student is exposed to the four traditional areas of specialization in chemistry. Inorganic chemistry deals with all the chemical elements except carbon, and the compounds which these elements form. Organic chemistry is devoted to the study of the almost limitless number of compounds containing carbon. Analytical chemistry is concerned with the determination of the composition of substances, and with the detection of elements in quantities however minute. Physical chemistry provides a means of understanding the physical properties of matter and the processes of its transformations, both at the macroscopic and molecular levels. Beyond the 2000 level, a student's studies in chemistry become increasingly concentrated in one of these four areas.

II. Degree Programs

The Honours in Chemistry, Joint Honours in Chemistry and Biochemistry and 20-credit Major in Chemistry as described in this calendar, are programs 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.

In addition to the departmental requirements listed below, students must satisfy the requirements outlined in the Degree Requirements section, page 65 of this calendar.

A. 20-credit Honours in Chemistry

This program is intended to provide a broad training in chemistry while at the same time making provision for the individual interests of students. Competence in mathematics as well as chemistry is required. All honours students must consult annually with the Honours Student Advisor and obtain approval of their class selection.

For the Honours BSc, all credits in the Honours subject must be passed with a grade of at least C. In the Honours BA all credits (honours subject and the subject chosen for the two credits outside the honours subject) of the Honours BA must be passed with a grade of at least C.

Departmental Requirements

1000 level

- CHEM 1011.03/1012.03 (or equivalent)

2000 level

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03/2402.03

3000 level

- CHEM 3103.03
- CHEM 3201.03
- CHEM 3301.03
- CHEM 3304.03 or 3402.03
- CHEM 3401.03
- CHEM 3601.03
- CHEM 3880.00

4000 level

- CHEM 4880.00
- CHEM 4901X/Y.06
- Honours qualifying examination (8880.00)

The remaining four half credits in Chemistry must be chosen from the classes listed below, with at least one half credit from each of the groups 1 and 2.

1. CHEM 4101.03 or 4102.03
2. CHEM 3202.03, 4201.03, 4203.03, 4204.03, 4205.03, 4206.03
3. CHEM 3303.03, 3304.03, 4301.03, 4304.03, 4305.03, 4306.03
4. CHEM 3402.03, 4401.03, 4402.03, 4403.03
5. CHEM 4501.03, 4502.03, 4504.03, 4601.03

Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH 2001.03 and one of 2002.03 or 2030.03
- PHYC 1100X/Y.06 or equivalent

Two full credits, not taken within the first year, must be taken in a single subject other than the honours subject (BA students only). This subject (if applicable), the unspecified credits in chemistry, and electives should be chosen according to the future plans of the student.

B. Combined Honours Program

The department has designed a number of programs which allow a student to obtain a Combined Honours Degree in Chemistry. To obtain an introduction to all the basic areas of chemistry, CHEM 2101.03, 2201.03, 2301.03, 2302.03, 2401.03, and 2402.03 must be part of any combined honours program involving Chemistry, and must be passed with a grade of at least C.

The additional eight credits in chemistry and the other subject must be chosen in consultation with the two departments involved. Students must consult the Honours Student Advisor of the Department of Chemistry and the Chair of the other area of study before registering in the combined program. Students should also consult the Department's Handbook "Undergraduate Studies in Chemistry" for more information.

C. 20-credit BSc Major in Chemistry

The BSc Major (20 credit) program is accredited by the Canadian Society of Chemistry. Students who wish to obtain a BSc Major (20 credit) in Chemistry must complete the core program and one of the three options described below:

Core program:

- CHEM 1011/1012 or 1021/1022 or 1041/1042 or Science 1501 or 1510.
- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03
- CHEM 2402.03
- CHEM 3103.03
- CHEM 3201.03
- CHEM 3601.03

Option A

CHEM 3202, CHEM 3401, and CHEM 3402 and three chemistry electives (minimum of two classes at the 3000/4000 level);

Option B

Any two of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801 and three chemistry electives (minimum of two classes at the 3000/4000 level);

Option C

One of CHEM 3202, CHEM 3401, and CHEM 3402 and CHEM 4801/4802 or CHEM 4901 and four chemistry electives (minimum of two classes at the 3000/4000 level).

All classes in chemistry must be passed with a grade of at least C-.

In addition to the chemistry requirements students in this program must also take:

- MATH 1000.03 and MATH 1010.03
- PHYC 1100.06 or 1300.06
- One additional credit in mathematics at the 2000 level or higher.

All students who wish to complete a 20 credit major degree must consult an advisor in Chemistry at the beginning of their third year to complete a proposed program form. Any changes to this program must be approved (in writing) by an advisor.

D. 20-credit Double Major Program

The Department has a number of programs which allow a student to obtain a Double Major degree in Chemistry with one of Biochemistry, Biology, Computing Science, Earth Science, Economics, Marine Biology, Mathematics, Microbiology & Immunology, Neuroscience, Physics, Psychology, and Statistics.

Students who wish to have Chemistry as the primary subject (6 or more credits) of this program must include CHEM 2101.03, CHEM 2201.03, CHEM 2301.03, CHEM 2302.03, CHEM 2401.03, and CHEM 2402.03 as part of their program and must pass these classes with a grade of at least C-.

Students who wish to have the primary subject a life science (Biochemistry, Biology, Marine Biology, Microbiology & Immunology, Neuroscience or Psychology for 6+ credits) the required chemistry classes are:

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2303.03
- CHEM 2401.03 + CHEM 2402.03
- CHEM 2505.03
- two credits of CHEM 3/4xxx.03

Students who wish to have the primary subject a physical science (Earth Sciences, Economics, Mathematics, Physics, or Statistics for 6+ credits), the required credits in Chemistry are:

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2441.03
- CHEM 2505.03
- two credits of CHEM 3/4xx

Students who wish to take a traditional class offering, with the potential to transferring to a 20 credit major or honours degree in chemistry, are recommended to take:

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03
- CHEM 2402.03
- two credits of CHEM 3/4xxx

Additional credits in Chemistry and the other subject must be chosen in consultation with the two departments involved. Students are encouraged to consult the Chair of the Undergraduate Studies Committee in the Department of Chemistry and the Chair of the other area of study before registering in the program. Students should also consult the Department's Handbook "Undergraduate Studies in Chemistry" for more information.

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 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.

Students will learn laboratory skills, computers, electronics and statistics. Their training will be broadened by proper choice of electives, which can lead to further computer skills, to experience in biological laboratory techniques, to physics, engineering, or the earth sciences. As Chemistry is

the science on whose foundations most other scientific endeavours rest, this training will equip students for work in a wide range of activities. These include production and plant management, product and process development, basic research in many areas including medicine, agriculture or manufacturing, environmental analysis and regulation, database development and management, marketing and customer service. Chemists work for large and small industries, for consulting companies, patent offices, legal offices and teaching institutions, for government laboratories or as self-employed consultants. In addition to a wide range of chemical skills, students will acquire expertise in statistics and computer use, especially for spreadsheets and databases, to equip them for work in modern environments which stress Total Quality Management and ISO 9000 standards.

A limited number of students will be admitted into this program each year. Students must be Canadian citizens or landed immigrants. Students may be admitted to the 20-credit BSc Major program when they have successfully completed all the classes listed below under Year 1, with an average GPA of at least 2.70, normally with no grade of less than a C. This minimum standing must be maintained throughout the degree program. Students must register 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 www.sciencecoop.dal.ca

Departmental Requirements

Year 1

Regular Session

- CHEM 1011.03/1012.03 (or equivalent)
- MATH 1000.03/1010.03
- PHYC 1100X/Y.06 (or PHYC 1300X/Y.06)
- Social Science Class
- Writing Class (must be a language)

Spring or Summer Session: no academic classes specified

Year 2

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03
- CHEM 2402.03
- SCIE 2800.00
- Electives (four half credits)

These classes must normally be successfully completed before proceeding to Work Term 1.

Summer: no academic classes specified

Year 3, year 4, and year 5 - consult the co-op advisor in chemistry

Students must consult the DalChem Co-op Academic Advisor to discuss scheduling options.

See the "Co-operative Education in Science" section of this calendar, or 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.

F. 15-credit BA, BSc Concentration in Chemistry

Departmental Requirements

1000 level

- CHEM 1011.03/1012.03 (or equivalent)

2000 level

- CHEM 2101.03
- CHEM 2201.03
- CHEM 2301.03
- CHEM 2302.03
- CHEM 2401.03/2402.03

3000 level

- At least one credit at or above the 3000 level

All Chemistry classes must be passed with a grade of at least C-.

Other required classes

- PHYC 1100X/Y.06 or 1300X/Y.06
- MATH 1000.03
- MATH 1010.03

G. Concurrent BSc/DipEng

The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng program. This program allows students to complete requirements for the BSc (15-credit) and BEng degrees in as little as five years. Consult the degree requirements section for details.

Lists of classes required to achieve these two degrees are tightly regulated, with few opportunities to study electives. Programs which will most likely appeal to students are those combining Chemistry (5 credits) with Biological or Chemical Engineering. However, in principle, all engineering disciplines can be accommodated.

H. Other Programs

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

Minor in Computer Science

A Minor in Computer Science is available as part of an Honours or Major BSc degree, each of which involves 20 credits. Consult the Degree Requirements section, page 65 for details

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section for details.

Minor in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major (20-credit) and a BA Honours degree. Consult the Degree Requirements section for details.

I. Bachelor of Computer Science with a Minor in Chemistry

Bachelor of Computer Science students may complete a minor in chemistry. The required classes are:

- CHEM 1011.03 and CHEM 1012.03 or equivalent
- CHEM 2101.03 and CHEM 2201.03
- CHEM 2301.03 and CHEM 2302.03
- CHEM 2401.03 and CHEM 2402.03
- At least one credit at the 3000/4000 level in chemistry.

In addition to these classes, students are required to take MATH 1000.03, MATH 1010.03, and PHYC 1100.06

III. Class Descriptions

NOTE: Not all classes are offered every year. Please consult the current timetable for this year's offerings.

The credit hour extension following the class number, e.g., .06 or .03 indicates the credit hour weight of the class. Consult the timetable for up-to-date details.

Students who have passed a first-year Chemistry class with a grade of D should consider themselves inadequately prepared for further studies in this subject. Such students may not be allowed to register directly for 2000 level Chemistry classes but may request that their names be put on a waiting list. Consult the Department for details. Duly registered students, who do not show up for the first scheduled lab in a class, may lose their place to students on the waiting list.

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 course material. First-year students may also make use of the Concept Room, which is located in the First-Year Resource Centre. Here, first-year Professors will be available at regularly scheduled times to provide aid with course 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 the students.

CHEM 1000X/Y.06: The Chemical World.

This class is intended for students who want to take only a first-year credit in science, and who wish to understand some of the chemical aspects of the world around us. The class does not use a mathematical approach to science, and can be taken by students with no, or limited, previous chemistry experience. The class will cover the development of chemical knowledge from early times to the present. By means of lectures, frequent (and sometimes spectacular!) demonstrations, and laboratory or reading projects, students will be introduced to the world of chemistry and to chemicals and chemical ideas in everyday use. Students contemplating careers, e.g. in law, business, or government could profit from the material studied in this class. Students will be required to do extensive written assignments, which will be marked both on content and writing style. CHEM 1000X/Y.06 is an approved "writing class" in the College of Arts and Science. CHEM 1000X/Y.06 does not serve as a prerequisite for second-year chemistry 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.

INSTRUCTOR(S): T.S. Cameron

FORMAT: \approx Writing Requirement, lecture 2 hours, lab/tutorial 2 hours

EXCLUSION: CHEM 1000X/Y.06 cannot be taken concurrently with or after CHEM 1011.03/1012.03, 1021.03/1022.03, 1041.03/1042.03 and 1500X/Y.06

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. The class starts with the nucleus, electronic configurations and the periodic table, the structure and shapes of organic and inorganic molecules and ions, and the mathematics of chemical reactions. Special topics include nuclear chemistry, spectroscopy, and chirality to illustrate the relevance of chemistry in everyday life. It is recommended that students have Nova Scotia grade 12 chemistry or equivalent before taking this class.

INSTRUCTOR(S): Staff

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 CHEM 1410.03.

CHEM 1012.03: Concepts in Chemistry: Energy and Equilibrium.

The principles of thermodynamics and kinetics are used to explain chemical equilibrium. The principal topics include enthalpy, entropy, free energy, phase and reaction equilibria, electrochemistry and kinetics. Special topics include polymers, chemistry of living systems, and pharmaceutical chemistry to illustrate the relevance of chemistry in everyday life.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: Chemistry 1011.03 or equivalent or permission of the instructor.

EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03

CHEM 1021.03: Engineering Chemistry I.

A study of the fundamental principles of chemistry with an emphasis on quantitative topics, including chemical equilibrium, thermodynamics, reaction kinetics and electrochemistry. This class is only open to students in the Engineering program. CHEM 1022.03 is a sequel to this class.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours/lab 3 hours

PREREQUISITE: Nova Scotia Grade 12 chemistry or equivalent.

EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03

CHEM 1022.03: Engineering Chemistry II.

This class builds on the principles of Chemistry 1021.03 to provide a broader background in chemistry for Engineering students. CHEM 1021.03 combined with CHEM 1022.03 covers the material previously given in CHEM 1020X/Y.06. CHEM 1021.03 and 1022.03 together may serve as a prerequisite for any 2000-level class in chemistry.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1021.03 or permission of the instructor

EXCLUSION: Credit will be given for only one of the following combinations: 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03

CHEM 1410.03: Introductory Chemistry Related to Human Health.

A descriptive introduction to chemistry with emphasis on materials related to human health. The class requires a background of high school chemistry and mathematics. Topics covered include atomic and molecular structure, liquids, solutions, hydrocarbons, alcohols, ethers, acids, bases, fats, simple carbohydrates and proteins and radioactivity. The organic chemistry deals primarily with structures and introduces molecules of medicinal interest.

NOTE: This class does not serve as a prerequisite for any other chemistry class.

INSTRUCTOR(S): P.D. Wentzell

FORMAT: Lecture 3 hours, tutorial 1.5 hours

EXCLUSION: Credit will be given for only one of the following- 1011.03, 1012.03 or 1021.03, 1022.03 or 1041.03, 1042.03 or 1410.03.

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): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

CHEM 2201.03: Introductory Analytical Chemistry.

If you need to know what is in a sample or how much of it is there, then you need analytical chemistry. The techniques most often employed in modern chemical analysis are introduced in this class. Topics include: acid-base and redox chemistry, the theory and practice of titrimetry,

atomic and molecular spectroscopy in the visible and ultraviolet regions of the electromagnetic spectrum; potentiometry and the use of ion selective electrodes, and the various forms of chromatography. Laboratory experiments are based on topics selected from the lectures and introduce the student to a wide variety of analytical methods.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

CHEM 2301.03: Chemical Thermodynamics.

The physical chemist attempts to describe macroscopic systems and chemical reactivity based on an understanding of the atoms and molecules which make up the systems we study. This first class in physical chemistry will start with a discussion of the forces between molecules, and the properties of gases, liquids and solids. Energy relations in macroscopic systems are presented; further topics in thermodynamics include thermochemistry, entropy, and free energy relations, with many applications including phase equilibria, chemical equilibrium, solutions and colligative properties. In the laboratory students will perform experiments based on many of the concepts discussed in class, including an introduction to data handling by computer.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent; MATH 1000.03 and 1010.03

CHEM 2302.03: Chemical Kinetics and Dynamics.

This class examines the dynamics of systems by considering motion and reactivity of molecules. Topics include transport properties such as diffusion and ionic conductivity, the molecular kinetic theory of gases, and rates of chemical reactions. The latter are studied in detail, with applications in atmospheric chemistry, liquid and solid state reactivity, catalysis, enzyme kinetics and polymers. The laboratory experiments emphasize the determination of molecular motion and chemical reactivity using a variety of techniques and instrumental methods.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent; MATH 1000.03

CHEM 2303.03: Physical Chemistry for the Life Sciences.

Those who do not plan a career in chemistry, but who can use the principles and concepts of physical chemistry in related areas, are introduced to the basic ideas of physical chemistry with the necessary mathematical concepts in simple terms. Previous knowledge of calculus is not necessary. The principal topics: thermodynamics, rates of reactions and chemical equilibrium are treated by application to examples of biological and environmental interest. Chemistry majors may not apply credit for CHEM 2303.03 towards the major requirements for a degree in Chemistry.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

EXCLUSION: CHEM 2303.03 does not serve as a prerequisite for any other chemistry class nor will it count as a Chemistry credit towards any degree with a major in Chemistry

CHEM 2401.03: Introductory Organic Chemistry: Structure, Concepts of Mechanisms and Spectroscopy.

This class provides an introduction to the structure of carbon-containing compounds and to the mechanistic principles of their reactivity. Topics include bonding, acid-base properties, stereochemistry and spectroscopy (MS, IR and ¹³C NMR) of organic molecules. In addition, the principles of reactivity and mechanisms will be introduced through the chemistry of alkyl halides. Laboratory work will include introductory techniques of organic chemistry and will complement the topics listed above.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

EXCLUSION: CHEM 2400X/Y.06

CHEM 2402.03: Introductory Organic Chemistry: Reactivity of Functional Groups.

This class continues building on work begun in CHEM 2401.03. Syntheses, spectra and reaction mechanisms of the major functional groups, including alkenes, alkynes, alcohols, ethers, amines, aldehydes, ketones, carboxylic acids, acid halides and anhydrides, esters, amides, nitriles, and aromatic derivatives will be covered at a fundamental level. Reaction mechanisms will be emphasized. Laboratory experiments include preparations and qualitative analyses based on the reactivities of functional groups.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 2401.03

EXCLUSION: CHEM 2400X/Y.06

CHEM 2441.03: Foundations of Organic and Biological Chemistry.

This class is intended primarily to help students in the life sciences develop an appreciation for the chemistry of molecules which are important to living organisms.

Emphasis is placed on structure, functional groups and stereochemistry; reactions are not emphasized, although some that are profoundly important in biological systems will be discussed. The class will develop enough chemistry to help students gain appreciation for the properties of carbohydrates, amino acids, lipids and nucleic acids. Laboratory work emphasizes naturally occurring molecules and includes experiments dealing with the separation, characterization and identification of examples of these organic compounds. Some medical schools require a full year of organic chemistry. CHEM 2441.03 does not satisfy this requirement. This can be met only by taking CHEM 2401.03 and CHEM 2402.03

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent, or permission of the instructor

EXCLUSION: CHEM 2441.03 does not count as a Chemistry credit towards any degree with a major in Chemistry.

CHEM 2442.03: Organic Chemistry for Pharmacy Students.

This class will cover aspects of organic chemistry relevant to the requirements for the degree of Bachelor of Science in Pharmacy. This class does not serve as a prerequisite for any other chemistry class.

FORMAT: Lecture 3 hours

RESTRICTION: Restricted to students in the Bachelor of Science in Pharmacy program.

CHEM 2505.03: Environmental Chemistry I.

The objective of this class is to apply the knowledge acquired in introductory chemistry classes to the description of chemical reactions in the environment. The class will start with the composition of the atmosphere, photochemical reactions in the stratosphere (ozone production and loss) and troposphere (production of smog) and simple models used to describe room air quality. The class will then describe the transfer of gases across the air/water interface and the chemistry of natural waters (hardness, alkalinity), the treatment of both drinking water (chlorination and aeration/coagulation) and waste waters (primary, secondary and tertiary treatment). The class will also introduce the students to some of the classes of chemicals commonly encountered in the environment and describe their impact both on humans and aquatic organisms. The chemicals to be discussed include formaldehyde, chlorinated hydrocarbons, pesticides, PAHs, and heavy metals.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent

EXCLUSION: Students having received credit for Chemistry 4203.03 are not permitted to register in CHEM 2505.03

CHEM 3103.03: Intermediate Inorganic Chemistry.

In this class, modern bonding theories will be utilized to address the chemical and physical properties of compounds of the elements. Concepts

of symmetry introduced in CHEM 2101 will be addressed in further detail and will lead into discussions about molecular structure, spectroscopy, and the reactivity properties of inorganic compounds, such as coordination compounds and organometallic complexes. The class concludes with an introduction to the role of inorganic species in biology, exploring the properties and function of metalloproteins and metalloenzymes, as well as metal ion transport and storage in living systems. The compounds prepared in the laboratory component will introduce more advanced synthetic procedures for the preparation of inorganic compounds and will illustrate principles discussed in lecture.

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. Various 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 of all kinds depends on accurate measurements, and today almost all such measurements are made by instruments, many running under computer control. In addition, computer aided data analysis is often employed to process the information obtained from experimental measurements. The need to gain experience in these subjects is addressed in this class by examining in some detail several important topics in instrumental analysis. These include electrochemistry, spectroscopy, sampling theory, electrophoresis, data analysis, and automation. Experimental principles are explained, the instrumentation is described, and analytical applications are examined. The laboratory experiments are chosen to 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.

This class gives an introduction to quantum mechanics and its application to spectroscopy and the electronic structure of atoms and molecules. The postulates of quantum mechanics are presented and applied to some simple physical systems, followed by a discussion of the rotations and vibrations of molecules, and the electronic structure of atoms, concluding with an introduction to the simple Hückel molecular orbital method. The relevance to chemical bonding will be stressed.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03 and one of MATH 2002.03 or 2030.03 and CHEM 2101.03 or 2301.03 or 2302.03

CHEM 3303.03: Materials Science.

The emphasis of this class will be on the exposition of the underlying principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter will be examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. The principles of important processes such as photography and Xerography will be explained.

INSTRUCTOR(S): M.A. White

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2301.03 or PHYC 2520.03 or PHYC 3200.03 or

ERTH 2001.03/2002.03 or ENGI 2800.03 or permission of the instructor
CROSS-LISTING: PHYC 3303.03

CHEM 3304.03: Introduction to Molecular Spectroscopy and Statistical Thermodynamics.

This class provides an introduction to the principal types of molecular spectroscopy that are employed in chemistry for structure determination and for characterization of patterns of molecular quantized energy levels. Topics include pure rotational spectra, vibrational spectroscopy of linear and nonlinear molecules, electronic transitions, and magnetic resonances. The principles of laser action and the applications of lasers in chemistry are also discussed. The class concludes with an introduction to the principles of statistical thermodynamics.

INSTRUCTOR(S): Staff

FORMAT: lecture 3 hours; five 2-hour labs, tutorial 1 hour

PREREQUISITE: CHEM 3301.03

CHEM 3401.03: Intermediate Organic Chemistry.

This class is a continuation of CHEM 2400X/Y.06 and covers many of the topics included in the last third of modern organic chemistry texts. Topics presented include enolate anions, amines, aromatics, heterocycles, carbohydrates, amino acids, and concerted reactions. The synthesis of compounds of chemical and pharmaceutical interest will be used as a focus for these topics. In addition, there is a continuing emphasis on the principles of mechanistic organic chemistry will be presented. Students work independently in the laboratory on the preparation of organic compounds. The success of student syntheses is monitored by the use of spectroscopic and other techniques.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2401.03/2402.03 (or equivalent)

CHEM 3402.03: Identification of Organic Compounds.

The class develops separation techniques, together with wet chemical and spectroscopic analysis methods, that were introduced in CHEM 2401.03/2402.03. Spectral techniques studied include ultraviolet, infrared, Raman, proton and carbon nmr, and mass spectrometry. Students, using a variety of techniques, work independently in the laboratory to identify unknown substances and to separate and identify components of mixtures. Students should have a good comprehension of the principles studied in CHEM 2401.03/2402.03, as evidenced by a grade of at least C.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 4 hours

PREREQUISITE: CHEM 2401.03/2402.03 (or equivalent)

CHEM 3601.03: Chemistry of Living Systems.

The chemical principles that govern a wide variety of processes found to occur in biological systems will be discussed. Emphasis will be placed on applying the principles of chemistry to explain and predict the behaviour of organic compounds in nature. Other topics may include protein folding, enzyme kinetics, metal-catalyzed oxidation/reduction reactions and an introduction to spectroscopic techniques in biological chemistry.

INSTRUCTOR(S): Staff

FORMAT: lecture, 3 hours per week

PREREQUISITE: CHEM 2402.03 or equivalent

CHEM 3880.00: Intermediate Chemistry Seminar.

A non-credit seminar class to be given by invited speakers. Attendance at all seminars is required of all third-year Honours Chemistry students.

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 and other common systems.

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3103.03

CROSS-LISTING: CHEM 5101.03

CHEM 4102.03: Advanced Transition Metal Chemistry.

Transition metal chemistry has grown over the last several decades into one of the most important areas of research and development in inorganic and synthetic chemistry. Both catalytic and stoichiometric transition metal

mediated reactions of fundamental significance in synthetic chemistry will be surveyed in the class. Molecular orbital theory will be utilized to understand structure and bonding in metal complexes and to develop an understanding of the reactivity properties of these species. Relevant examples from the current chemical literature will be introduced. The class concludes by moving beyond the d-block elements and exploring the fascinating reactivity of lanthanide and actinide metal complexes.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3103.03

CROSS-LISTING: CHEM 5102.03

CHEM 4201.03: Advanced Topics in Separations.

Chemistry started as the science of separations. Separations are still the most prominent feature used in many laboratories around the world. The class begins with a review of classical methods (precipitation, solvent extraction, and ion exchange) used for preconcentration of metal ions prior to their determination by spectroscopic methods. The major thrust of the class will cover chromatographic methods; in particular, gas chromatography in its regular, capillary, and supercritical forms, liquid chromatography, and capillary electrophoresis. A general survey of methods used in environmental and biological analysis will be undertaken using a series of case studies taken from the recent literature.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3201.03, or permission of the instructor

CROSS-LISTING: CHEM 5201.03

CHEM 4203.03: Environmental Chemistry.

The first part of this class consists of a brief review of methods used to model the interactions of organic chemicals in the environment. These interactions include the distribution of chemicals between air and water, the decomposition of chemicals by hydrolysis, photolysis, and aquatic biota. The second part of this class describes the equilibria involved in metal interactions in the environment. These equilibria include a discussion of acid/base chemistry (including alkalinity), the solubility of metal oxides, sulphides, and carbonates, redox chemistry (Eh-pH diagrams), and adsorption interactions with metal oxides, clays, and humic materials. The class ends with a brief review of analytical methodology for chemical speciation of metals in the environment.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2505.03 or 3201.03, or instructor's consent

CROSS-LISTING: CHEM 6203.03

CHEM 4204.03: Nuclear Analytical Chemistry.

This class introduces basic concepts of nuclear chemistry and nuclear analytical methods. The class includes: discovery of radioactivity; nuclides and natural decay chain; types of radioactive decay; nuclear reactions; research reactors; instrumental, preconcentration and radiochemical neutron activation analysis; and two laboratory sessions on NAA.

INSTRUCTOR(S): Staff

PREREQUISITE: CHEM 3201.03

CROSS-LISTING: CHEM 6204.03

CHEM 4205.03: Chemometrics.

The ability to design experiments and interpret measurements is a critically important skill for any scientist. This class examines some of the statistical and mathematical tools necessary for planning and analysis of scientific measurements, with a strong emphasis on chemical applications. Topics include basic statistics and probability, propagation of errors, hypothesis testing, analysis of variance, experimental design, regression, signal processing, multivariate calibration, pattern recognition, response surface modelling and simplex optimization. Most assignments are done in the MatLab programming environment, which is introduced in the class. The class is intended to provide a broad introduction applicable to many fields. Statistics, linear algebra and computer programming are among the areas involved in the class, but only a rudimentary background in these areas is assumed.

INSTRUCTOR(S): P.D. Wentzell

PREREQUISITE: CHEM 2201.03

CROSS-LISTING: CHEM 6205.03

CHEM 4206.03: Analytical Mass Spectrometry.

This class offers a thorough treatment of modern mass spectrometry, including the principles, instruments, and applications of MS for chemical and biochemical analysis. Techniques for ionization, and basic instrumentation are reviewed, including a look at modern hybrid-tandem-MS systems. The MS applications described in this course are directed at the life sciences, including the analysis of pharmaceuticals, proteins, and carbohydrates. Ionization theory, reaction mechanisms, and spectral interpretation are briefly discussed, but are not the main emphasis of this course.

FORMAT: Lecture, 3 hours per week

PREREQUISITE: One of CHEM 3202 or CHEM 3201, or consent of the instructor

CROSS-LISTING: CHEM 6502.03

CHEM 4301.03: Theory of Chemical Bonding.

This class discusses chemical bonding within the framework of molecular quantum mechanics, the science relating molecular properties to the motions and interactions of electrons and nuclei. The emphasis is on the qualitative features and physical basis of molecular orbital theory and its application to chemistry. The symmetry properties of molecular orbitals are discussed within the context of group theory. Computer based assignments are included.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3301.03 or instructor's consent

CROSS-LISTING: CHEM 5301.03

CHEM 4304.03: Kinetics and Catalysis.

This class relates the properties of molecules in motion to the rates of chemical changes. Collision, transition state and diffusion theories are applied to significant industrial, biological and atmospheric processes. Photochemistry, and its converse, luminescence, are interpreted. Mechanisms of catalyst activity are discussed.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2302.03 or equivalent

CROSS-LISTING: CHEM 5304.03

CHEM 4305.03: Introductory Statistical Thermodynamics.

The principles of statistical mechanics are introduced and the relationship between the laws of thermodynamics and the underlying microscopic processes is examined. Wherever possible, applications to chemical systems are emphasized and an overview of modern techniques is also given.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3303.03 and MATH 2001.03, or instructor's consent

CROSS-LISTING: CHEM 5305.03

CHEM 4306.03: Magnetic Resonance.

The basic principles of magnetic resonance will be discussed and reinforced with examples of applications to problems in chemistry and chemical physics. Topics to be discussed include: the magnetic Hamiltonian, chemical shielding, nmr in solids, quantum mechanical approach to spectral analysis of nmr spectra in liquids, esr of organic radicals, relaxation, molecular rate processes, and two dimensional nmr. Students will be assigned problems on a regular basis.

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3301.03 or instructor's consent

CROSS-LISTING: CHEM 5306.03

CHEM 4401.03: Synthesis in Organic Chemistry.

The prerequisite classes provide a foundation of knowledge of many organic reactions that are useful for bringing about specific functional group transformations. This class expands this foundation and shows how these reactions can be combined in well planned, multi-step strategies to synthesize complex molecules. The thought processes involved are

illustrated with examples chosen from recently reported syntheses of natural products. All students will make oral presentations to the class.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3401.03 or equivalent, or instructor's consent

CROSS-LISTING: CHEM 5401.03

CHEM 4402.03: Organic Structure Determination.

This class continues the study of molecular structure and conformation begun in CHEM 3402.03, using methods and results from nuclear magnetic resonance spectroscopy and mass spectrometry. Topics include the correlation of structure and conformation with chemical shifts and coupling constants, analysis of nmr spectra, the theory and application of multiple irradiation experiments, and the vector model of 1D and 2D experiments. Combined spectroscopic methods are used in solving structural problems.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab 3 hours alternate weeks

PREREQUISITE: CHEM 3402.03

CROSS-LISTING: CHEM 5402.03

CHEM 4403.03: Organic Reaction Mechanisms.

The fundamental concepts of bonding, structure, and dynamic behaviour of organic compounds are discussed. Methods for determining the mechanisms of organic reactions are discussed. Topics considered may include molecular orbital theory and molecular mechanics calculations, applications of kinetic data, linear free energy relationships and acid and base catalysis, concerted reactions and the importance of orbital symmetry, steric effects, solvent effects, and isotope effects.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 3401.03 and 3402.03 or equivalents, or instructor's consent

CROSS-LISTING: CHEM 5403.03

CHEM 4502.03: Polymer Science.

This class will cover aspects of synthesis, analysis, characterization, structure and uses of synthetic and naturally occurring macromolecules. Emphasis will be 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): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2201.03 and 2301.03 and 2302.03 and 2402.03 or instructors' consent

CHEM 4504.03: Diffraction Techniques in Solid State Chemistry.

All chemical elements and compounds can exist as crystalline solids. This class will study the arrangements of atoms and molecules in such solids and will examine the methods used to determine these structures.

Particular emphasis will be placed on the techniques of X-ray crystallography.

INSTRUCTOR(S): T.S. Cameron

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: CHEM 2101.03 and MATH 2001.03/2002.03 or equivalent

CHEM 4595.03: Atmospheric Chemistry.

This class will discuss the reactions that govern the distribution of chemical species in the troposphere and stratosphere. It will include such topics as the ozone layer and the reasons for its depletion over Antarctica the formation of acid rain, and photochemical smog. It is desirable for students to have taken "Introduction to Meteorology", or have some other exposure to Atmospheric Science.

FORMAT: Lecture, 3 hours

PREREQUISITE: Permission of the instructor

CROSS-LISTING: PHYC 4595.03, OCEA 4595.03, OCEA 5595.03

CHEM 4601.03: Principles of Biomolecular and Drug Molecule Design.

An introductory level course in biomolecular design, drug design, and medicinal chemistry. The class covers both general principles of drug design and biochemical considerations in drug design. The fundamental goal of the course is to give student the necessary tools "to take a human or veterinarian pathological problem and to sit down and initiate the process of designing new chemical structures as putative therapeutics for the disease in question." Students in chemistry are strongly recommended to take Chemistry 3601 prior to registering in this class.

FORMAT: Lecture, 3 hours per week

PREREQUISITE: CHEM 2402 or permission of the instructor

CROSS-LISTING: CHEM 5601

CHEM 4801.03: Research Project in Chemistry I.

This class is designed for those students who wish to participate in scientific research. It will consist of a literature, experimental, or theoretical research project carried out under the supervision of a faculty member on some aspect of chemistry in which the student has an interest and the appropriate background. The results of the research will be submitted to the Department as a report that will be graded. Students must meet with the Coordinator of Honours and Major projects before undertaking their project. The consent and signature of the Coordinator are required.

INSTRUCTOR(S): T.S. Cameron

PREREQUISITE: CHEM 2101.03, 2201.03, 2301.03, 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 consent of the Coordinator.

EXCLUSION: CHEM 4803X/Y.06

CHEM 4802.03: Research Project in Chemistry II.

This class is intended for those students in the Major program with an appropriate background who wish greater exposure to independent scientific research. It will consist of a research project carried out under the supervision of a faculty member containing some original component on any aspect of chemistry. The results of the research will be submitted to the Department as a report that will be graded. The student must also make an oral presentation of this work to the Department. Students wishing to enter this class must have already demonstrated their research abilities by successfully completing CHEM 4801.03. Students must meet with the Coordinator of Honours and Major projects before undertaking their project. The consent and signature of the Coordinator are required.

INSTRUCTOR(S): T.S. Cameron

PREREQUISITE: CHEM 4801.03, and consent of the Coordinator.

EXCLUSION: CHEM 4803X/Y.06

CHEM 4880.00: Advanced Chemistry Seminar.

A non-credit seminar class to be given by invited speakers. Attendance at all seminars is required of all fourth-year Honours Chemistry students.

CHEM 4901X/Y.06: Honours and Major Research Project.

This class is required for those students in the honours program. It will consist of a research project carried out under the supervision of a faculty member and will contain some original component on any aspect of chemistry. The results of the research will be submitted to the Department as a report that will be graded. The student must also make oral presentations of this work to the Department. Students wishing to enter this class must have an appropriate background in Chemistry and must meet with the Coordinator of Honours projects before undertaking their project. The consent and signature of the Coordinator are 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): T.S. Cameron

PREREQUISITE: At least four full credits in chemistry at the 2000, 3000, or 4000 level from those credits required for the honours program, with an average grade of at least 3.0, or consent of the Coordinator.

Co-operative Education in Science

Telephone: (902) 494-2044

Fax: (902) 494-6643

Email: sciencecoop@dal.ca

Website: www.sciencecoop.dal.ca

Manager

McKinnon, A., BSc (MSVU), BEd (SMU) (494-3378)

Student/Employer Coordinator

Dunsworth, A. (494-1768)

Employer Development Coordinator

Myra, T. (494-6448)

Academic Director

Lewis, M.R., BS, MS (UMd), PhD (Dal)

Co-op Academic Advisors

Cyrus, T., Economics (494-6992)

Grindley, T. B., Chemistry (494-2041)

Gu, H., Statistics (494-7161)

Janssen, J., Mathematics (494-8851)

Labrie, D., Physics (494-2322)

McAllister-Irwin, N., Marine Biology (494-3818)

McLeod, R., Biochemistry (494-7013)

Mushkat, P.W., Environmental Science (494-8056)

Oulton, M., Biology (494-7072)

Stoltz, D.B., Microbiology/Immunology (494-2590)

Wach, G., Earth Sciences (494-8019)

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. 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. 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 combined 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 third 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 permission of the academic department and Science Co-op Office is required for entry. Applications must be received by the deadline date set by the Co-op Academic Advisor in the discipline of choice or by August 15th if they have not stated otherwise. Some departments have earlier deadlines. Students are required to have a Dalhousie University email address with their name in it. 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. More detailed information about the class may be found at www.sciencecoop.dal.ca. SCIE 2800.00 is a required non-credit class which is offered in the fall term only. Students must register for this class in the fall term of the year they join Science Co-op.

C. Work Terms

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 who turn down a job offer through the Co-op office will lose the privilege of office assistance. During their 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, pay a Co-op Fee* for the work term class which students must register for with the Registrar's Office (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 Co-op staff member or the Co-op Academic Advisor to ensure that the academic objectives of the work term are being met.

*Please Note: The Co-op Fee is a program fee, not a "work term" fee.

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.

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. Any request for change of work term sequence must be approved by the departmental Co-op Academic Advisor and the Manager, 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 possible with the permission of the Co-op Academic Advisor and the Manager, Science Co-op. Three consecutive work terms are not 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 (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, consideration is also given to the employer and student evaluations of the work term, and the work site 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 workterms and pay Co-op Fees (program fee) regardless of whether the services of the Co-op office are used. This Co-op Fee is a program fee, not a Workterm Fee, and is due and payable even if the student withdraws, or is required to withdraw, from their workterm once employment has begun. Consult the Science Co-op office for complete details.

Dalhousie Integrated Science Program (DISP)

Location: (See below for locations of the offices of the Director, Class Coordinator and Secretary.)
 Telephone: (902) 494-2373
 Fax: (902) 494-1123
 Email: disp@dal.ca
 Website: <http://disp.science.dal.ca>

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Class Coordinator

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I. Introduction

DISP is an alternative and more interdisciplinary way for a science student to complete first-year of a BSc degree. Foundation concepts and techniques from the different first-year introductory-level classes are integrated in DISP. Science topics, problems, and issues are addressed by presenting relevant scientific knowledge from the different science disciplines, to encourage DISP students to think across discipline boundaries. Classes are organized around central themes in science: measurement, structure, energy, conservation, change, and information. Relationships among disciplines are emphasized, and mathematical and statistical methods are applied to questions across the sciences.

All of the DISP options will satisfy the full first-year Writing Class requirement at Dalhousie University. DISP students concurrently take PHIL 1050.03 (Ethics in Science), a fully integrated and complementary half-credit humanities class for DISP students. PHIL 1050 provides an introduction to ethical questions that arise in the practice of science, using examples that relate to the specific scientific topics studied within DISP. Regular instruction, practice, and feedback in writing are integrated across DISP and PHIL 1050.

On their transcripts, students receive a single letter grade for the DISP program. A breakdown of marks is provided, upon request, for the purpose of transferring to professional programs or other universities, and when applying for jobs or other positions. Students wishing to enter this program normally must have a minimum Grade 12 or OAC average of 80%, with a minimum of 80% in Mathematics and 70% English, and a minimum of 75% in Grade 12 or OAC Chemistry plus either Biology or Physics. High School calculus is recommended but not essential. It is recommended that DISP candidates be highly motivated and have a strong interest in science.

See our website: disp.science.dal.ca for more information. To contact us, email disp@dal.ca. Curriculum details may be discussed with program director, Dr. Cindy Staicer.

II. Choosing a DISP Option

The different options are designed to prepare students for a certain range of degree programs. As each of the DISP options incorporates a different suite of disciplines, some options are better than others for preparing students most effectively and efficiently for particular programs. Disciplines common to all five DISP options include Biology, Chemistry, Mathematics, and Statistics. Certain options also include one or two of the following: Earth Sciences, Physics, or Psychology. SCIE 1502 and 1503 are less math-intensive and include only a half-credit of Calculus.

All DISP options satisfy the full-year distribution requirements for science students at Dalhousie University in terms of full-year, first-year Life Science, Physical Science, Math, and Writing Class requirements. Only the DISP options with a Psychology component also satisfy the Social Science requirement. Before graduating with a science degree, DISP students are required to take another half-credit Humanities or Language class because; PHIL 1050 satisfies half of the full-credit requirement.

First-year Prerequisites satisfied by each DISP option

First-year Equivalent component	DISP all sciences SCIE 1510	DISP Biomedical SCIE 1501	DISP Environmental SCIE 1502	DISP Life Science SCIE 1503	DISP Life Sciences SCIE 1504
Biology (full credit)	✓	✓	✓	✓	✓
Chemistry (full credit)	✓	✓	✓	✓	✓
Earth Sciences (full credit)	✓	(none)	✓	(none)	✓
Calculus (full credit)	✓	✓	half-credit only	half-credit only	✓
Physics (full credit)	✓	✓	(none)	(none)	(none)
Psychology (full-credit)	✓	✓	(none)	✓	✓
Statistics (half credit)	✓	✓	✓	✓	✓
Writing class (full credit)	✓	✓	✓	✓	✓

✓ indicates the component is included in the given DISP Option

About terminology: A full-credit class is two terms (Sept. - April), whereas a half-credit class is one term. Majors usually require a full-credit in the subject before they can enter second-year. At the first year level, Statistics is only offered as a one-term or half-credit class.

Pharmacy: SCIE 1503 plus an additional half-credit Humanities or Language class is recommended. The DISP writing class will serve in lieu of ENGL 1000 for entry into Pharmacy.

Double majors, Joint honours or Environmental Science: Students intending to undertake a double major or combined honours in a science plus a non-science discipline should take SCIE 1502 or SCIE 1503, which leave space to take a full-credit introductory-level class in their other subject. Students intending to major in Environmental Science will need to take a full-credit in first-year Economics in either first or second year. Whenever it is taken, this full-credit in Economics will satisfy the Social Science requirement.

Note: With permission of the DISP Director and Dean's office, students can switch between certain DISP options.

Recommended DISP options (SCIE 1510, 1501, 1502, 1503, or 1504) for incoming students, depending on area or program of interest after first year:

Dalhousie Science Degree or Professional School Program	DISP all sciences SCIE 1510	DISP Biomedical SCIE 1501	DISP Environmental SCIE 1502	DISP Life Science SCIE 1503	DISP Life Sciences SCIE 1504
Atmospheric Science	✓				
Biochemistry & Molecular Biology	✓	✓		(✓)	(✓)
Biochemistry & Microbiology (joint Honours)	✓	✓	✓	✓	✓
Biology	✓	✓	✓	✓	✓
Biological Engineering	✓	✓			✓
Chemistry	✓	✓			(✓)
Computer Science (double major)			✓	✓	
Dentistry**	✓	✓		(✓)	(✓)
Earth Sciences	✓		(✓)		(✓)
Economics	✓	✓			✓
Environmental Science, Area of Emphasis:					
Atmospheric Science	✓		(✓)		(✓)
Biology	✓	✓	✓	✓	✓
Chemistry & the Environment	✓	✓	(✓)		(✓)
Earth Sciences	✓		✓		✓
Ecology	✓		✓	✓	✓
Economics & the Environment	✓		✓		✓
Marine Biology	✓	✓	✓	✓	✓
Statistics & the Environment	✓	✓	✓		✓
Environmental Engineering	✓				
Food Science	✓	✓	(✓)	(✓)	(✓)
Kinesiology*	✓	✓	(✓)	(✓)	(✓)
Law**	✓	✓	✓	✓	✓
Marine Biology	✓	✓	✓	✓	✓
Mathematics	✓	✓			✓
Medicine**	✓	✓	(✓)	(✓)	(✓)
Microbiology & Immunology	✓	✓	✓	✓	✓
Neuroscience	✓	✓		(✓)	(✓)
Oceanography (joint honours)	✓	✓			✓
Occupational Therapy**	✓	✓		✓	✓
Pharmacy*	✓	✓	✓	✓	✓
Physics	✓	✓			
Physiotherapy**	✓	✓	(✓)	(✓)	(✓)
Psychology	✓	✓		✓	✓
Statistics	✓	✓	✓	✓	✓

✓ recommended option

(✓) may need Physics later

* can enter after first year

** must obtain undergraduate degree first

III. Class Descriptions

SCIE 1501X/Y.27: DISP for Biomedical Science.

This program provides particularly good first-year preparation for the full range of degree programs in the biomedical sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. SCIE 1501 includes a full year of Calculus and Physics, and it satisfies the full Social Science requirement and the full Writing Class requirement. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

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 14 hours/lab and other activities 8 hours/tutorials 3 hours (optional)

CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, MATH 1000.03 and MATH 1010.03, PHYC 1100.06 or PHYC 1300.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1502X/Y.21: DISP for Environmental Science.

A recommended route into the Environmental Science degree, this program integrates concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Earth Science, Mathematics, and Statistics. Field trips are an important component of this DISP option. This option provides particularly good first-year preparation for degrees in Biology, Marine Biology, and Earth Sciences, as well as the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis of Environmental Science. Students interested in other Areas of Emphasis (Chemistry and the Environment, Statistics and the Environment, and Atmospheric Science), or degrees in Chemistry, Environmental Engineering, Mathematics, or Oceanography may need to take additional first year classes in Physics and Mathematics in subsequent years. SCIE 1502 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics) and the first-year Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. This option provides flexibility for DISP students to take an elective or a lighter load if they work part-time.

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 approx. 10 hours / lab and other activities approx. 7 hours / tutorials 1 hour

CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03 or EARTH 1080.03 and EARTH 1090.03, MATH 1000.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1503.21: DISP for Life Science.

This program prepares for students for degrees in Biology, Psychology, or Microbiology and Immunology by integrating concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Mathematics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Science component. Students interested in degree programs in Biochemistry, Chemistry, Mathematics, Neuroscience, or Oceanography will need to take additional first-year classes in Mathematics and Physics in subsequent years. SCIE 1503 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics), the first-year Writing Class requirement, and the Social Science requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. SCIE 1503 allows students to take a full credit elective in addition to PHIL 1050 during their first year. This option provides flexibility for DISP students to take an elective in first year or a lighter load if they work part-time.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.

FORMAT: Writing requirement, Lecture 10 hours/lab and other activities 6 hours/ tutorials 1 hour (optional)
 CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, MATH 1000.03, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03
 CO-REQUISITE: PHIL 1050.03

SCIE 1504.27: DISP for Life Sciences.

This program provides comprehensive preparation for the Life Sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Earth Sciences, Mathematics, Psychology, and Statistics. Field trips and other hand-on activities are important components of this class. SCIE 1504 includes a full year of Calculus, and it satisfies the full Social Science requirement and the full Writing Class requirement. SCIE 1504 does not include Physics, so it is not recommended for students intending to continue in the Physical Sciences (e.g., physics, chemistry, engineering). Students will have all of the first-year science and math prerequisites for a major or honours degree in Biology, Marine Biology, Microbiology and Immunology, and Psychology. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.

FORMAT: ✍ Writing requirement: Lecture 13 hours / labs and other activities 7 hours / tutorials 2 hours (optional)

CROSS-LISTING: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1080.03 and 1090.03, MATH 1000.03 and 1010.03, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1510X/Y.33: Dalhousie Integrated Science Program.

This program provides comprehensive first-year preparation for any science major or honours degree, including any area of emphasis of Environmental Science, as well as Oceanography, Biological or Environmental Engineering, and Medicine. SCIE 1510 is the most challenging DISP option, it leaves a student's options wide open for second-year science, and it provides the broadest background of all the DISP options. Concepts and techniques at the first-year introductory level are integrated across seven disciplines: Biology, Chemistry, Mathematics, Physics, Earth Sciences, Psychology, and Statistics. Because the essential material from all of these disciplines is studied, the workload of a SCIE 1510 student is heavier than the workload of students in other DISP options or traditional first-year science at Dalhousie. This option satisfies the full Social Science requirement and the full Writing Class requirement. The 5.5 credit SCIE 1510 combined with the half-credit PHIL 1050 is 6.0 credits, a full-credit overload.

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 16 hours / lab and other activities 10 hours / tutorials 3 hours (optional)

CROSS-LISTING: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1080.03 and 1090.03, MATH 1000.03 and 1010.03, PHYC 1100.06 or 1300.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

Earth Sciences

Location: Life Sciences Centre, Room 3006
 Halifax, NS B3H 4J1
 Telephone: (902) 494-2358
 Fax: (902) 494-6889
 Email: earth.sciences@dal.ca
 Website: <http://earthsciences.dal.ca>

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chair of Department

Gibling, M.R.

Undergraduate Advisor

Ryall, P.J.C. (494-3465)

Co-op Advisor

Wach, G. (494-8019)

Graduate Coordinator

Culshaw, N. (494-3501)

Professors Emeriti

Cooke, H.B.S., MSc, DSc (Witwatersrand)
 Mediolli, F.S., PhD (Parma)
 Milligan, G.C., MSc (Dal), PhD (Harv)
 Zentilli, M., BSc (Chile), PhD (Queen's), PGeo

Professors

Gibling, M.R., BA (Oxon), PhD (Ottawa)
 Jamieson, R.A., BSc (Dal), PhD (MUN)
 Scott, D.B., BSc (Washington), PhD (Dal)
 Wach, G.D., BA (Western Ontario), MSc (South Carolina), DPhil (Oxford)

Associate Professors

Culshaw, N., BA (Keele), PhD (Ottawa)
 Gosse, J.C., BSc (MUN), PhD (Lehigh University)
 Grujic, D., BSc (Belgrade), PhD (ETH Zurich)
 Nedimovic, M., BSc (Belgrade), MSc (Toronto), PhD (Toronto)
 Ryall, P.J.C., BSc (Dal), MSc (Alta), PhD (Dal), PGeo

Assistant Professors

Fedortchouk, Y., PhD (Univ. of Victoria)
 Plug, L., BA (McGill), PhD (Univ. of Alaska - Fairbanks)

Senior Instructors

Graves, M., BSc (Univ of Idaho), MSc (Dal)
 Ryan, A. M., BSc (Univ College Dublin), MSc, BEd (Acadia), MEd (Mt. St. Vincent), PhD (Dalhousie)
 Wallace, P., BSc, MSc (McMaster)
 Walls, C., BSc, MSc (Dalhousie)

Adjunct Professors

Adam, J., Dip in Geology (Univ. of Clausthal), PhD (Tech. Univ. of Berlin), Dalhousie Univ.
 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.
 Calder, J., BSc (SMU), PhD (Dal), NS Dept. of Natural Resources
 Clarke, B., BSc, MSc (Toronto), PhD (Edinburgh)
 Dehler, S., BSc (Calgary), MSc, PhD (UBC), BIO

Deptuck, M., BSc (St. Mary's Univ.), PhD (Dalhousie) Can-NS Offshore Bd.
 Dostal, J., BSc (Charles), PhD (McMaster), St. Mary's University
 Fensome, R., BSc (Sask), MSc (Sask.), PhD (Nottingham), GSC Atlantic
 Godfrey-Smith, D., BA (Calgary), MSc (Simon Fraser), PhD (Simon Fraser), DRDC
 Jones, E.P., BSc (UBC), MSc (UBC), PhD (UBC), BIO
 Jutras, P., BSc (Univ de Montréal), MSc (Univ. de Québec à Montréal), PhD, Univ de Québec à Montréal, St. Mary's University
 Kellman, L., BA (McMaster), MSc (McGill), PhD (Univ. du Quebec à Montreal), St. Frances Xavier
 Kettanah, Y., BSc (Baghdad Univ.), PhD (Southampton Univ. UK), Dalhousie University
 Kontak, D.J., BSc (St FX), MSc (Alberta), PhD (Queen's), NS Dept. of Natural Resources
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 Kronfeld, J., BA (Queens College, NY), MSc (Florida State), PhD (Rice), Tel Aviv 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
 Mudie, P.J., BSc (Cape Town), PhD (Dal), GSC Atlantic
 Mukhopadhyay, P.K., PhD (Jadapur), Global Geoenergy Research
 Murphy, J.B., BSc (Dublin), MSc (Acadia), PhD (McGill), StFX.
 Parsons, M., BSc (Dal), PhD (Stanford), BIO
 Pe-Piper, G., BSc (Athens), PhD (Cambridge), Saint Mary's
 Piper, D.J.W., BA (Hons) (St Catharine's Col, Cantab), MA (Cantab), PhD (Darwin Col, Cantab), GSC Atlantic
 Reynolds, P., BSc (Toronto), PhD (UBC)
 Risk, M., BSc (Toronto), MSc (Western Ontario), PhD (Univ of S. Calif.)
 Robinson, P.T., BSc (Mich), PhD (Calif)
 Rochon, A., BSc, MSc, PhD (U de Quebec à Montreal), BIO
 Salisbury, M.H., BSc (MIT), MSc, PhD (Wash), GSC Atlantic
 Siddiqui, Q., BSc (Lucknow), MSc (Lucknow), PhD (Leicester).
 Stea, R., BSc (Acadia), MSc, PhD (Dal), NS Dept of Natural Resources
 Wielens, H., BSc, MSc, PhD (Utrecht State University), GSC Atlantic

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 sciences involving the Earth, such as geology or geophysics, 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 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, page 65 of this calendar.

A. 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 course, 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

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 4000.00: Advanced Field School
- 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 1100X/Y.06, CHEM 1011.03/1012.03

Other requirements

Two full credits in any subject other than the honours subject (applies to BA students only).

NOTE: PHYC 1100X/Y.06 and a Mathematics class are prerequisites for EARTH 2270.03, which fits best into Year II of the program.

Students in the geophysics stream will take EARTH 3270.03.

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. This oral examination combined with EARTH 4000.00 then counts as the Honours Qualifying Examination.

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. For BA students, a grade of C is also required for the two credits in a single subject outside 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).

C. 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 ERTH 4502.03 in place of ERTH 3010.03/3020.03. For Biology classes, consult Biology Department.

D. Combined Honours: Earth Sciences and Physics

Students should follow the Earth Sciences Honours Program in years I to III, including ERTH 2270.03 and ERTH 3270.03, but should take a Physics class in place of ERTH 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.

E. 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 ERTH 3302.03/3303.03 and 2270.03/3270.03. For Chemistry classes, consult Chemistry Department.

F. 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 2800.06. Students should also take CHEM 1011.03/1012.03 and PHYC 1100.06, preferably in their first year. In the third and fourth years students will take a combination of ERTH and OCEA classes, with a minimum of four credits in OCEA, which may include the Honours thesis.

G. 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. 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 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 (494-8019)
Email: grant.wach@dal.ca

H. 20-credit Major

Departmental Requirements

1000 level

- ERTH 1080 and any other 1st year ERTH course; ERTH 1090 recommended or SCIE 1502.21 or SCIE 1504.27 or SCIE 1510.33

2000 level

- ERTH 2000.015: Earth Sciences Field School
- ERTH 2001.03: Earth Materials Science I
- ERTH 2002.03: Earth Materials Science II
- ERTH 2110.03 (Prerequisite: ERTH 2000.015): Field Methods
- ERTH 2203.03: Sediments and Sedimentary Rock
- ERTH 2205.03: Introduction to Paleontology

3000 level

- ERTH 3000.015: Computing Camp
- One half-credit in Earth Sciences above the 1000 level
- Four (4) additional credits in Earth Sciences beyond the 2000 level

Other required classes

- MATH 1000.03
- MATH 1010.03 or STAT 1060.03

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.

I. 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.

J. 15-credit BSc with Concentration in Earth Sciences

Three-year programs with a concentration in Earth Sciences are suitable for students who intend to take other professional training or to enter fields where they are likely to need their geological training as background. A 15-credit degree is of little value as a qualification for a professional career in the earth sciences. It does not meet requirements for Professional Registration.

Departmental Requirements

1000 level

- ERTH 1080 and any other 1st year ERTH course; ERTH 1090 recommended or SCIE 1502.21 or SCIE 1504.27 or SCIE 1510.33

2000 level

- ERTH 2000.015: Earth Sciences Field School
- ERTH 2001.03: Earth Materials Science I
- ERTH 2002.03: Earth Materials Science II
- ERTH 2110.03 (Prerequisite: ERTH 2000.015): Field Methods
- ERTH 2203.03: Sediments and Sedimentary Rocks
- ERTH 2205.03: Introduction to Paleontology

3000 level

- ERTH 3000.015: Computing Camp
- Two (2) additional Earth Sciences credits beyond the 2000 level.

ERTH 1080.03/1090.03 must be passed with a grade of B- or better to continue in the program.

A grade of D in an Earth Sciences class precludes admission to classes for which the class is a prerequisite. Students must satisfy the Faculty of Science Writing Requirement and Mathematics Requirement.

K. Other Programs

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree in Earth Sciences, each of which involves 20 credits. Consult the Degree Requirements section of this calendar, page 65 for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

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:

- One of CSCI 1100.03 or CSCI 1202.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2132.03
- CSCI 3130.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, 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

Note: The selection of CSCI classes for a minor in computer science excludes CSCI 2100.03 and CSCI 3101.03

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree in Earth Sciences, each of which involves 20 credits. Consult the Environmental Programs section of this calendar, page 441 for details.

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 and Resource Geology, 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.

B. Other Programs

Concurrent BSc/DipEng

The Faculty of Engineering and the Faculty of Science have agreed to offer a combined BSc/DipEng degree program. This program allows students

to complete requirements for the BSc (15-credit) and BEng degrees in as little as five years. Consult the Degree Requirements section, page 65 for details.

Bachelor of Computer Science with Minor in Earth Sciences.

Students taking a BCS with a minor in Earth Sciences should take: EARTH 1080.03 and EARTH 1090.03 as well as EARTH 2000.015, EARTH 2001.03, 2002.03, 2203.03, 2110.03, either EARTH 2270.03 or 2410.03 and at least 3 half credits at the 3000-level or higher.

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 9 geoscience credits after first year. Our Honours degree meets this requirement. A Major degree can, if 9 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 (PHYC 1100X/Y.06). For more information, consult the Earth Sciences Undergraduate Advisor.

C. 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 and MATH 2400.03

To register, complete the registration form found under "IT" at the Faculty of Science URL: <http://adminweb.ucis.dal.ca/science/contents.cfm> and send your completed form to Science@Dal.Ca or fax to (902) 494-1123.

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 course is designed as a science course with no lab for non-science majors, and assumes no special science background. Physical geography develops an understanding of the surface of the physical earth, including the atmosphere, the hydrosphere, and the earth's surface features

themselves. We examine the nature of the atmosphere, including variability in weathering and climate throughout the world. We explore the earth's surface features and processes, including landforms created by volcanoes, earthquakes (and the internal processes contributing to their development), rivers, oceans, glaciers, winds, and gravity. We review briefly the major rock types, how they form, and the process of weathering and soil development. We conclude by looking at the interaction between these subsystems and our interaction with them. 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: 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 every second week; 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 (the geosphere); how it has evolved throughout earth's vast history, and continues to evolve today. The goal of geologists is to understand the processes and materials of the geosphere, and how these interact with the atmosphere, hydrosphere, and biosphere. This class explores the processes responsible for earthquakes and volcanoes, and for building mountains, as well as the surface processes that weather, erode, and transport materials from one place to another. A record of these processes is evident in the rocks and minerals of our earth; this class explores these natural processes and the material produced, 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: 3 hour lecture; 3 hours of labs

EXCLUSION: Credit will be given for only one of EARTH 1080, 1010, 1040 or 1041.

ERTH 1090.03: Geology II.

Earth systems as introduced in Geology I, are explored in greater detail, with an emphasis on those environmental systems at earth's surface that are strongly connected to human actions. Topics explored may include: groundwater, rivers, oceans, and glaciers; energy and mineral resources; evolution and the fossil record, extinctions, and global change; and fragile environments, including deserts, soils, and slopes. The lab sessions offer students the opportunity to explore these issues in more depth, and provide a strong background to pursue further work in the natural and environmental sciences. EARTH1090 is recommended for Earth Sciences majors.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture 3 hours; lab 3 hours

PREREQUISITE: EARTH 1080 or permission of the instructor is a pre- or co-requisite for EARTH 1090 or EARTH 1091.

EXCLUSION: credit will only be given for one of EARTH 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.

INSTRUCTOR(S): A.M. Ryan

FORMAT: 3 hours lecture

PREREQUISITE: EARTH 1080.03 or permission of instructor.

EXCLUSION: Credit will be given for only one of EARTH 1091.03, EARTH 1090.03, EARTH 1020.03 or EARTH 1050.03.

ERTH 2000.015: Earth Sciences Field School.

This class provides 10 to 11 days of concentrated teaching and experiential learning in geological field methods. A wide variety of rock types are examined in the field using traverses, viewing cliff sections and outcrops. Skills taught are rock, mineral and fossil identification, basic geological map making and report writing. The class is held at the end of summer before regular classes in the Fall term and should normally be taken by those enrolling in second-year level Earth Sciences classes: EARTH 2001.03, 2002.03, 2110.03, 2203.03.

INSTRUCTOR(S): P. Wallace

FORMAT: Off-campus at a summer camp, daily field work 10 to 11 continuous days

PREREQUISITE: EARTH 1080 and one other 1st year EARTH course; EARTH 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. EARTH 2001/2002 are intended to 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 will be 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 will 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 EARTH 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. Jamieson

FORMAT: Lecture 3 hours/lab 3 hours/weekend field trip

PREREQUISITE: EARTH 1080 and one other 1st year EARTH 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 EARTH 2001. Lectures will 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 will be discussed in class and labs. In the labs, students will 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 will also be 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: EARTH 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.

This class deals with physical and biological processes which generate modern siliciclastic, carbonate and evaporite sediments. Materials associated with Quaternary glacial events are discussed. The formation of sedimentary rocks is examined and their petrology illustrated using laboratory techniques. Weekend field trips to selected modern and ancient sedimentary deposits in Nova Scotia take place in the first month of classes.

INSTRUCTOR(S): M. Gibling

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 will encompass an introduction to all the major invertebrate groups that are important in the fossil record. It will begin with introduction of the first life forms, basic taxonomy and uses of fossils followed by lectures and laboratories on each major group.

INSTRUCTOR(S): D. Scott

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 will 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 1100X/Y.06

CROSS-LISTING: PHYC 2270.03

ERTH 2380.03: Geochemistry.

A basic understanding of Geochemistry is essential to a professional geoscientist who must deal with earth materials, igneous, metamorphic, and hydrothermal processes that take place under the surface of the earth and other planetary bodies, and on the minerals, rocks, fluids, and mineral deposits resulting from these processes. Equally important is a familiarity with the geochemistry of weathering, acid rock drainage (ARD) and the cycles of environmentally significant elements in ground and surface waters. This class begins with an overview of atoms, ions, and isotopes, and the principles that govern their distribution on the Earth and other planets. This will be followed by a discussion of high- and low-temperature aqueous geochemistry, and the applications of chemistry to igneous and metamorphic systems. A section on mineral deposits will examine the formation of hydrothermal ore deposits, and geochemical exploration methods. The latter half of the term will concentrate on low-temperature aqueous geochemistry, with an emphasis on processes that control the release, mobility, and fate of contaminants in the environment. Computer models and case studies will be used to illustrate the importance of geochemical data for solving real-world environmental problems. Students will also be introduced to a number of closely-related disciplines including surface science, geomicrobiology, and medical geology.

FORMAT: Lecture

PREREQUISITE: ERTH 1080/1090, ERTH 2001 & CHEM 1011/1012 or equivalent, or permission of the instructor

ERTH 2410.03: Environmental and Resource Geology I.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

Geology lies behind many of the environmental problems facing humanity today. In this class we consider topics such as energy and mineral resources, geological hazards such as earthquakes, landslides, and volcanic eruptions, the relevance of geology in the fields of pollution and waste disposal, and the role that water plays in its various guises. This class is not designed for Earth Sciences Honours/Major students. This class is given from a Canadian perspective; where possible, examples are taken from Canadian publications (e.g., Geological Survey of Canada Bulletins). Approved with Canadian Studies.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: ERTH 1080 and one other 1st year ERTH course; ERTH 1090 recommended; or SCIE 1502.21, 1504.27 or 1510.33

EXCLUSION: This class is not available for Earth Sciences Majors

ERTH 2420.03: Dinosaurs.

This class 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 warm-blooded? Did dinosaurs have feathers? Were dinosaurs good parents? In attempting to answer these apparently simple questions, we will investigate the methods for gathering evidence from bones and surrounding rocks to reconstruct not only the physiology of these surprisingly modern organisms but also less tangible characteristics such as behaviour.

INSTRUCTOR(S): M. Graves

FORMAT: Lecture 3 hours

PREREQUISITE: ERTH 1080.03 or any two of ERTH 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.

NOTE: This class is not offered every year. Please consult department in the spring for further information.

Designed for non-earth sciences majors (the non-specialist), this course explores the evolving fields of forensic and medical geology. These new fields within the realm of geosciences share a common thread in that both forensic and medical geology depend upon identifying potential geologic sources of evidence, and applying this information to solve a larger problem, either legal or health-related. The forensic geology portion of the course will use case studies to explore such topics as the recognition and identification of soil, rock, glass, and other earth materials used in criminal activities, as well as a look at case studies of fraud and misrepresentation of information related to economic resources and natural geologic hazards. The medical geology component explores the possible connection between disease, health, and the geologic environment, also using a case study and problem-solving approach. We will examine how the presence of a natural contaminant (such as arsenic, mercury, or naturally-occurring radioactive materials), or on the other hand, the absence of elements (such as calcium or iodine for example), can lead to health conditions that are a direct result of the nature of the rock, soil, nature of the landscape, or water in the region.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture/tutorial

PREREQUISITE: ERTH 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 will be learned through a field-mapping project using computers to manipulate data and prepare geologic maps. The class will be held the week before classes begin in the third year of a program.

INSTRUCTOR(S): P. Wallace, C. Walls

FORMAT: Off Campus, 10 days

PREREQUISITE: ERTH 2000.015, 2001.03, 2002.03, 2110.03, 2203.03, 2205.03

ERTH 3010.03: Igneous Petrology.

The study of the field relations, mineralogy, texture, and geochemistry of volcanic and plutonic rocks. Lectures discuss the classification, graphical representation, means of production, differentiation, and emplacement of igneous rocks, and their grouping into co-magmatic provinces. Practical work consists of three field trips and related laboratory investigations.

INSTRUCTOR(S): Y. Fedortchouk

FORMAT: Lecture 3 hours / lab 3 hours/field trips

PREREQUISITE: ERTH 2001.03 and 2002.03

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: ERTH 3010.03

ERTH 3140.03: Structural Geology.

An introduction to the behaviour of rocks during deformation, stressing the geometrical aspects of rock structures on the scale normally encountered by the geologist, and their interpretation.

INSTRUCTOR(S): D. Grujic

FORMAT: Lecture 3 hours / lab 3 hours, possible field trips

PREREQUISITE: ERTH 2001.03, ERTH 2002.03, ERTH 2110.03, ERTH 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 will explore the Earth as a unified dynamic system. The class will include topics such as seismology, earthquakes, mantle convection, crustal accretion, isostasy, and the Earth's magnetic fields. There will be discussions of radioactivity and the Earth's heat budget, as these are essential to understanding our planet.

INSTRUCTOR(S): P. Ryall

FORMAT: Lecture 3 hours, tutorial 2 hours

PREREQUISITE: ERTH 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: ERTH 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. Subtopics include concepts and methods for investigating bedrock and Quaternary strata (lithostratigraphy), and the use of fossils and age-dating methods (bio- and chronostratigraphy). We will survey the impact of sea-level change, tectonics and climate on sediment accumulation, with emphasis on seismic and sequence stratigraphy. Case studies will 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

PREREQUISITE: ERTH 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 will deal 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: ERTH 2001.03, 2002.03, 2203.03 or permission of instructor

ERTH 3402.03: Practical Hydrogeology.

This class is designed to build on ERTH 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 will be emphasized.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, lab/tutorial

ERTH 3410.03: Environmental Geology II.

Note: This class is not offered every year. Please consult department in the spring for further information.

The topics in this class are similar to those of ERTH 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:** ERTH 3410.03 is the recommended environmental geology course for Earth Science majors.

INSTRUCTOR(S): A.M. Ryan

FORMAT: Lecture/lab/tutorial 3 hours

PREREQUISITE: ERTH 2002.03 and ERTH 2203.03

EXCLUSION: ERTH 3410.03 is the recommended environmental geology course for Earth Science Majors. Credit can only be given for ERTH 2410 or ERTH 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).

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent and ERTH 1080/1090 or ERTH 1010/1020

CROSS-LISTING: OCEA 3420.03

ERTH 3440.03: Geomorphology.

The quantitative study of Earth's surface processes and landforms applies to geology, civil engineering, hydrogeology, and physical geography. Slope stability, weathering and soils development, sediment production, storage, and deposition arid environments, fluvial processes, tectonic landforms, glacial and permafrost processes, hypsometry, and fractal dimension are shown to be influenced by rock properties, climate, and temporal scales. Laboratory and field experiences emphasize geomorphometry, describing, analyzing, and interpreting soils and sediment records, the local Quaternary record of glaciation and stream incision, and incorporate field and remotely sensed data and digital terrain data to solve questions related to the environment and various geomorphic systems.

INSTRUCTOR(S): Plug, L., Gosse, J.

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 4000.00: Advanced Field School.

The class is a field excursion of 7 to 14 days duration which is designed to give the student a regional perspective. Locations visited will vary from year to year. It appears on transcripts and is compulsory for all Honours students. Attendance and completion of this class will be part of the Honours Qualifying Examination.

FORMAT: Off campus, 7 - 14 days

ERTH 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: 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. Ryall

FORMAT: Lecture 3 hours

ERTH 4110.03: Introduction to Geological Oceanography.

This class is intended to give a broad survey of topics in marine geology and geophysics for new students in Oceanography at a graduate level. No previous background in Geology or Geophysics is required. The class content covers recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered in Part 1 are plate tectonics and seismic, heat flow,

gravity, and magnetic methods. In Part 2 patterns and processes of sediment transport and deposition are explored. Some laboratory exercises augment the lectures, including a field cruise to Bedford Basin.

FORMAT: Lecture 3 hours

CROSS-LISTING: OCEA 5110.03, OCEA 4110.03

ERTH 4141.03: Applied Geology, Mineralogy and Geochemistry.

Note: This class is not offered every year. Please consult department in the spring for further information.

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 will be introduced, with emphasis on metallurgy, and acid rock drainage (ARD) prevention. The syllabus will vary somewhat from year to year to reflect the interests and backgrounds of the students, and the availability of visiting lecturers. The labs will consist of hands-on exercises, visits to analytical labs, problem solving, report writing, and seminar presentations by the students.

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

ERTH 4151.03: Mineral Deposits.

Note: This class is not offered every year. Please consult department in the spring for further information.

This class is an introduction to the geology of metallic ore deposits (e.g. gold, copper) and some industrial mineral concentrations (e.g. Diamonds, barite), and the genetic hypotheses used in their exploration. Emphasis is given to the chemical, mineralogical, physical, structural, tectonic, igneous, sedimentary and metamorphic processes that lead to economic concentrations of minerals and their subsequent modification or destruction. The class integrates many Earth Science disciplines, and requires extensive reading from the scientific literature, writing, and oral presentations.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours/ lab 3 hours

PREREQUISITE: EARTH 3010.03, 3140.03

CROSS-LISTING: EARTH 5151.03

ERTH 4153.03: Petroleum Geology.

The course provides an advance-level introduction to petroleum geology (gas and oil) including the areas of coal, oil sands, with some discussion of alternative energy sources. The course will include an introduction to petroleum geology, basin analysis, source rock evaluation, seismic and well log sequence stratigraphy and depositional facies analysis, coal geology, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics including alternative energy sources.

INSTRUCTOR(S): G. Wach

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: EARTH 2270, EARTH 3140, EARTH 3303

ERTH 4156.03: Petroleum Geology - Field Methods and Economic Evaluation.

The course provides an advance-level introduction to petroleum geology (gas and oil) including the areas of coal, oil sands, with some discussion of alternative energy sources. The course will include an introduction to petroleum geology, basin analysis, source rock evaluation, seismic and well log sequence stratigraphy and depositional facies analysis, coal geology, oil sands geology, biostratigraphy, drilling and completions, petrophysics and well log analysis in addition to other topics including alternative energy sources.

INSTRUCTOR(S): G. Wach

FORMAT: Lecture 3 hours, Lab 3 hours

PREREQUISITE: EARTH 2270, EARTH 3140, EARTH 3303

ERTH 4200.03: 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. Some attention will also be given to techniques of oral presentation. 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.

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. Ryall

FORMAT: Lecture 3 hours

ERTH 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 will 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 will be 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

ERTH 4400.03: Advanced Metamorphic Petrology.

Note: This class is not offered every year. Please consult department in the spring for further information.

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.

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

ERTH 4440.03: Geomorphology and Landscape Evolution.

Note: This class is not offered every year. Please consult department in the spring for further information.

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 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.

Note: This class is not offered every year. Please consult department in the spring for further information.

Spatially-extended computer models are tools for the investigation of landscape form and change, and for prediction of the response of landforms to ongoing changes in climate and human land use practices. This course examines and compares different approaches to modelling, including reductionist analytical and numerical approaches and top-down rule-based approaches. Selection of variables, sensitivity testing, and methods for testing models against nature are discussed. Recent models are used as examples, including those for erosion and deposition in braided rivers, topographic and thermal diffusion, cratering on Mars, fracture patterns in rock and permafrost, and slider-block models for faults. Programming experience is useful but not essential; class emphasis lies in understanding the utility and limits of landscape models rather than numerical methods. Advanced students will develop simple models pertinent to their own research interests as a final project.

INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours

PREREQUISITE: EARTH 3440.03, MATH 1010 or 1400, PHYS 1100X/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: OCEA 4470.03

ERTH 4480.3: Advanced Seismic Imaging.

Note: This class is not offered every year. Please consult department in the spring for further information.

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 and K. Loudon

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: EARTH 4470.03 or consent of instructor

CROSS-LISTING: OCEA 4480.03

ERTH 4502.03: Micropaleontology and Global Change.

Note: This class is not offered every year. Please consult department in the spring for further information.

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.

INSTRUCTOR(S): D. Scott
 FORMAT: Lecture 3 hours/ lab 3 hours
 PREREQUISITE: EARTH 3302.03/3303.03
 CROSS-LISTING: EARTH 5502.03

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.

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: 5520.03

ERTH 4530.03: Environmental Remote Sensing.

Note: This class is not offered every year. Please consult department in the spring for further information.
 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 will 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) will be stressed in both the labs and lectures.
 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. Work-term registration requires a signature from the Science Co-op Coordinator.

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

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 Telephone: (902) 494-2026

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta), Professor (Mathematics & Statistics)

Chairperson of Department

Osberg, L.

Faculty Advisors

Cyrus, T., Undergraduate Coordinator, Co-op Academic Advisor (494-6992)
 Lesser, B., Graduate Coordinator (494-2026)

Professors Emeriti

Cornwall, J.L., BA (Iowa), MSc (London), PhD (Harvard), FRSC
 Sinclair, A., BA (Dal), 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 (Dal), MA, PhD (Cornell)
 Osberg, L., BA Hons (Queen's), MPhil, PhD (Yale), McCulloch Professor of Economics and University Research Professor
 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)

Assistant Professors

Adshade, M., BA (Hons) (York), MA, PhD (Queen's)
 Forsdyke, R., BSc (H) Biochemistry, B.Ed., MA (Queen's), PhD (Simon Fraser)
 Kotlyarova, Y., Dip. Software Eng (Lviv Poly. Inst.), MSc (U of Illinois - Urbana), PhD (McGill)
 Kumaranayake, L., BA (Hons) (McGill), MA, PhD (ABD) (Toronto)
 Motiram, S., BT (Comp.Sci) (Reg. Engineering College Warangal), MBA (Indian Inst. of Mgmt.), MA, PhD (U of Southern California)

Adjunct Professors

Amirkhalkhal, S.I., BAHons (Shiraz), MA, PhD (Dal), SMU
 Bradfield, F.M., BComm (McMaster), PhD (Brown)
 Cornwall, J.L., BA (Iowa), MSc (London), PhD (Harvard), Professor Emeritus
 Cornwall, W., BA (MSVU), PhD (Dal), MSVU
 Dar, A., BA, MA (Delhi), MA, PhD (McMaster), SMU
 Dayton-Johnson, J., BA, PhD (Berkeley)
 George, R., BSc (London), MSc (Bristol), PhD (London)
 Hoddinott, J., BA (Hons) (Tor.), MA (York), MA, DPhil (Oxon)
 Huber, P.B., BA, MA, PhD (Yale)
 MacDonald, M., BA (Dal), PhD (Boston College), SMU
 Marfels, C.T., Diplom-Volkswirt, Dr.Rer.Pol. (Berlin)
 McAllister, R.I., MA (Oxon), MA (Cantab)
 Novkovic, S., BA (Novi Sad, Yugoslavia), MA (Guelph), PhD (McGill), SMU

Pinfold, T., BA, MA (Western), PhD (Minn)
 Rankaduwa, W., BA, MSc (Sri Lanka), MA, PhD (Dal), UPEI
 Raymond, M., BA, MA (Windsor), PhD (Guelph), SMU
 Rogers, S., BA (Hons) (King's/Dal), MA (Queen's), PhD (McGill)
 Sharif, N., BA (Punjab), MA (Dacca), MA, PhD (McMaster), SMU
 Sinclair, A.M., BA (Dal), MA, BPhil (Oxon), PhD (Harvard), Professor
 Emeritus

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 behaviour 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 65 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. 20-credit BA 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 4100.03
- ECON 4420.03
- ECON 4421.03
- Three to four other Economics credits at or above the 2000 level for a total 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

C. 20-credit BSc 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 4100.03
- ECON 4420.03
- ECON 4421.03
- Three to four other Economics credits at or above the 2000 level for a total 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

D. Combined Honours

Combined honours programs, BA or BSc, may be arranged with other departments such as Biology, Earth Sciences, History, 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 courses that are required for single honours. If Economics is the secondary field in the combined honours, the student must take at least 4 credits beyond the introductory level, including ECON 3338.03 and 1.5 additional credits beyond the 2000 level.

E. 20-credit BSc 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
- 3.5 other economics credits at or above the 3000 level for a total of 7 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 nine credits in economics while the Honours program allows a maximum of eleven.

F. 20-credit BA Major in Economics

Departmental Requirements

1000 level

- ECON 1101.03
- ECON 1102.03

2000 level

- ECON 2200.03
- ECON 2201.03
- Two other credits in Economics at or above the 2000 level

3000 level

- Three credits in Economics at or above the 3000 level

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 program. 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 only nine credits in economics while the honours program allows a maximum of eleven.

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. 15-credit BA with Concentration in Economics

Departmental Requirements

1000 level

- ECON 1101.03
- ECON 1102.03

2000 level

- ECON 2200.03
- ECON 2201.03
- At least one other credit in Economics at or above the 2000 level

3000 level

- At least two credits at or above the 3000 level

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.

H. 15-credit BSc with Concentration in Economics

Departmental Requirements

1000 level

- ECON 1101.03
- ECON 1102.03

A minimum of four advanced credits in Economics are required which must include:

2000 level

- ECON 2200.03
- ECON 2201.03

3000 level

- ECON 3338.03
- At least 1.5 other Economic credits at or above the 3000 level

Other required classes

- MATH 1000.03
- MATH 1010.03
- MATH/STAT 1060.03
- MATH 2030.03
- STAT 2080.03 (ECON 2280.03)

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 workterms. Workterms are normally 13-16 weeks in length. With four workterms, the program normally requires 4 1/3 years to complete. 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 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 grade average of at least B for the first year of study is required for admission. In addition to completing three to four work-terms, a student in the co-operative program 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 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 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. Interdisciplinary Opportunities

Economics students interested in obtaining an Emphasis in Canadian Studies along with their Major or Minor in Economics should consult the Canadian Studies calendar entry for information on requirements and for a list of Economics classes approved with Canadian Studies.

Both a Minor in Business and a Minor in Environmental Studies are available to BSc Major (20-credit) or Honours students. A Minor in Film Studies is available for students registered in a BSc Major (20-credit) only. A Double Major (20-credit) or Combined Honours degree is available with Concentration in Environmental Science.

A Minor in Economics is available to Bachelor of Computer Science students. The requirement for the minor are the same as those for a 15-credit BSc (see section H. above).

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.

ECON 1101.03: Principles of Microeconomics.

This class is taken as the first in a series of classes in economics or as a background elective. Emphasis is on developing the basic analytical tools and applying them in the context of contemporary, and generally Canadian, economics problems, emphasizing the behaviour and analysis of individual agents in the economy (consumers, producers, markets).
FORMAT: Lecture 3 hours

ECON 1102.03: Principles of Macroeconomics.

This class is taken as the first in a series of classes in economics or as a background elective. Emphasis is on developing the basic analytical tools and applying them in the context of contemporary, and generally Canadian, economics problems, emphasizing aggregate economic behaviour at the national level. 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.

An extension of microeconomic theory and its applications that satisfies the minimum microeconomic theory requirements for majors in economics. Serves as the microeconomic prerequisite for higher-level classes in economics.

NOTE: Credit cannot be received for both ECON 2200.03 and ECON 2210.03

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 (grade of C- or better)

ECON 2201.03: Intermediate Macroeconomics.

Inflation, unemployment, exchange rate and related macro problems, with emphasis on Canadian policy experience in these areas. An extension of macroeconomic theory and its applications that satisfies the minimum macroeconomic theory requirements for majors in economics. Of interest to commerce students or others not majoring in economics, it 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 2216.03: Economics of Global Warming.

Combusting fossil fuels creates greenhouse gases causing global warming. Coastlines recede as polar ice melts, species are extinguished, food and water supplies are jeopardized, tropical disease vectors migrate, and more. Large and rapid reduction in the greenhouse gas emissions are required to stabilize the Earth's temperature. But, what are the benefits and costs of various time paths for abating emissions? How do we assign value to the wellbeing of future generations? How do we balance helping the poor with environmental sustainability? What policies do economists recommend to align people's incentives with environmental sustainability? This course uses economic principles to investigate such questions.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 (grade of C- or better)

ECON 2217.03: Women and the Economy.

This class studies 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 labor 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? Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 and 1102.03

CROSS-LISTING: GWST 2217.03

ECON 2218.03: The Canadian Economy in the New Millennium: Economic Policy Debates for the Next Decade.

A century ago, Prime Minister Wilfred Laurier declared: "The twentieth century belongs to Canada." Since then, Canada's economy has grown from \$840 million to approximately \$1 trillion. But Canada's economy today also faces many important policy issues: unemployment, productivity, income distribution, environmental protection, trade relations, federal-provincial fiscal relations, maintenance of social programs, etc. What are the main economic policy debates which Canada faces in the new millennium? What are Canada's prospects for resolving these debates? What is the appropriate policy role for government?

Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 and ECON 1102.03

ECON 2219.03: Euros and Cents: From Common Market to European Union.

The European Union (EU) is a grand experiment of uniting countries in a single market. The stepwise evolution from customs union to common market and, beyond, to economic and monetary union with a single currency, the Euro, will be reviewed and analyzed. Particular attention will be paid to EU policies re: trade, agriculture, and regional development as well to the European Monetary System. Come and learn more about an economic integration that is unparalleled in history.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03

ECON 2231.03: Health Economics.

Is health care accessible to all? How can we pay for health services? Should the private sector play a greater role in providing and paying for health care? Do markets in health work and what is the role of governments? How do we set priorities if we have limited resources? Economists have increasingly become involved in influencing health policy and programs. This course looks at the economics of health, using Canadian and international experiences, including developing countries. The course examines how health systems work, the nature of market failure, and methods of economic evaluation, including cost-effectiveness and cost-benefit analyses.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 and 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. 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 and ECON 1102.03

ECON 2239.03: European Economic History.

A self-contained class examining the contrasting development patterns of various industrialized European countries during and after their respective industrial revolutions and up to about 1990. The focus is on the development of hypotheses regarding the causes and effects of differences in the experience of growth of mature economies.

FORMAT: Lecture 2.5 hours

PREREQUISITE: ECON 1101.03 and ECON 1102.03

ECON 2260.03: Statistics I.

See class description for MATH 2060.03, in Mathematics section of this calendar.

CROSS-LISTING: MATH 2060.03, STAT 2060.03

ECON 2280.03: Statistics II.

See class description for MATH 2080.03, in Mathematics section of this calendar.

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. Does the current market-friendly "Washington consensus" systematically destroy the environment, indigenous populations, social cohesion, the rights of women? We will assess critiques of the economic analysis of development. Students will be encouraged to debate these issues among themselves and come to their own conclusions.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 1101.03 and ECON 1102.03

ECON 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 2336.

FORMAT: Lecture/seminar 3 hours

PREREQUISITE: ECON 1101.03 and 1102.03

CROSS-LISTING: GEOG 2336.03

EXCLUSION: ECON 3336.03

ECON 3310.03: Economic Growth in Historical Perspective.

What are the determinants of long run growth and why have some countries grown faster than others? Market failure; the transmission of technologies across geographical space; adoption of foreign institutions; changes in social norms, individual identity and culture; fertility and population characteristics; the nature of production and natural resources; all may play a role in the development of economies over time. This course seeks to examine the sources of long-run growth in a historical perspective, from Roman to Modern times.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03, or 2210.03, 2201.03

ECON 3315.03: Labor Economics.

This course provides an overview of basic ideas in labor economics. We will consider theory, evidence and policy, all from a Canadian perspective. Examples of topics to be covered include: How do childcare costs affect desired hours of paid work by parents? Why do some people moon-light at a lower wage while others receive over-time wage premia for extra hours? How does EI affect the Canadian labor market? Do minimum wages reduce employment? What is economic discrimination and does it exist in Canada? How well do immigrants fare in the Canadian labor market?

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or 2210.03, 2201.03

ECON 3317.03: Poverty and Inequality.

Why are some people poor while others are rich? Why do some nations have more poverty, and more inequality than others? What can be, or should be, done? The extent of poverty and the distribution of income and wealth in contemporary societies are discussed. Most data are drawn from Canada but international evidence is introduced for comparative purposes. The theories underlying alternative measures and explanations of economic inequality are emphasized. 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 2210.03

ECON 3319.03: Industrial Organization.

The course provides an overview of industrial organization, the study of the organization of production. Market structure, firm conduct, and performance affect each other in complex ways. For example, market structure, including the size distribution of firms and degree of horizontal and vertical integration, affects firm conduct, such as the ability to set

prices. Governments evaluate market performance and regulate firms in order to reduce socially harmful anticompetitive behaviour.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or 2210.03

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. 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. It covers the standard historical trade theories as well as the more recent theory of scale economies, and discusses the evidence regarding these theories. The course goes on to 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. Policies relevant to Canada, such as those of NAFTA and the World Trade Organization, are discussed in detail.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or 2210.03

ECON 3331.03: International Finance.

This course covers the theory and empirics of international macroeconomics. It examines the effect on exchange rates of trade flows, capital flows, speculation, and risk; the effectiveness of fiscal and monetary policy in an open economy; modern international policy coordination; and the determination of the current account, the balance of payments, 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.

Approved with Canadian Studies.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 1000.03, ECON 2200.03 or 2210.03

ECON 3333.03: Theories of Economic Development.

This class surveys current applications of microeconomic and macroeconomic theory to the problem of economic development in Asia, Africa, and Latin America. As such, this class is complementary to classes in applied development economics. 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. The class is meant to prepare students to be intelligent consumers of economic theory, and thus emphasizes the assumptions underlying particular economic theories and their implication for development policy.

FORMAT: Lecture 3 hours

PREREQUISITE: ECON 2200.03 or 2210.03, 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

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, autocorrelation and

simultaneous equations bias. Emphasis is placed on practical econometric problems by requiring students to conduct their own research projects.
 FORMAT: Lecture 3 hours
 PREREQUISITE: MATH 1000.03 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. 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 2210.03

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 2210.03, 2201.03

ECON 3500.03: Public Economics.

Public economics analyzes the role of government when there is market failure. The course concentrates on the theory of 'public goods' and 'social choice', a rich framework of coexisting possibilities of cooperation and conflict, and studies interesting questions of rational decision making, individual and collective, and devising imaginative solutions to incentive problems for guiding and implementing society's choices, such as: How and when do individuals work together in making decisions? Is group action sustainable? What kind of incentives can make individuals and institutions work in solidarity when there are goods with collective ownership such as water, the atmosphere and fisheries? The course includes mathematical methods of general equilibrium, welfare economics and game theory. Students of applied areas will find in the course the theoretical underpinnings of a wide range of applied fields such as education, health, regulation, common property resources, competition policy, environment. A background of ECON 3700 may be helpful but is not a prerequisite.
 INSTRUCTOR(S): S. Dasgupta
 FORMAT: Lecture 3 hours
 PREREQUISITE: ECON 2200.03 or 2210.03, MATH 1000.03 or instructor permission

ECON 3600.03: Strategic Behaviour in Economics.

This course studies different types of competitive and cooperative behaviour of economic agents. Many economic questions (such as price competition, tax policy, research and development decision, bargaining, or a firm's entry into a new market) can be interpreted as games, in which each player's action affects payoffs of other players. The students will learn how to recognize and describe formally various strategic interactions in economics, and how to evaluate the outcomes of such interactions.
 FORMAT: Lecture
 PREREQUISITE: ECON 2200.03 or 2210.03, MATH 1000.03 or equivalent

ECON 3700.03: Mathematics for Economists.

This course is intended to present mathematical methods used in modern micro- and macroeconomics. The lectures will concentrate on the basic concepts of analysis, comparative statics and optimization theory, combined with relevant economic models. The topics include an introduction to set theory and matrix algebra, the implicit function

theorem and its applications, unconstrained optimization, constrained optimization with equality and inequality constraints, and intertemporal choice.
 FORMAT: Lecture 3 hours
 PREREQUISITE: ECON 2200.03 or 2210.03, 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. This course is suitable for those who wish to broaden their understanding of financial markets, and pursue a career in finance.
 FORMAT: Lecture 3 hours
 PREREQUISITE: ECON 2200.03 or 2210.03, 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.

ECON 4100.03: Honours Seminar.

This is a required class for honours students. The class is devoted to:
 (a) Preparation and presentation of honours papers;
 (b) Discussion of policy issues; and
 (c) Lectures and discussion by faculty members and invited guests.
 In addition to the prerequisites, the student must complete ECON 3338.03 prior to ECON 4100.03 or during the fall term in which he or she is taking ECON 4100.03.
 FORMAT: Seminar 1.5 hours for both terms
 PREREQUISITE: ECON 2200.03 or 2210.03, 2201.03 and MATH 2080.03

ECON 4420.03: Microeconomic Theory.

Emphasizes the working of an economy as a system of interdependent decision makers. Deals in detail with a selection of topics from the theory of choice as applied to consumers and firms, general equilibrium, welfare, linear models in economic analysis, choice under uncertainty, game theory, alternative solution concepts for competitive economies, social choice, stability, optimal growth. 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 for example, is useful.
 FORMAT: Lecture 3 hours
 PREREQUISITE: ECON 2200.03 or 2210.03, 3700.03 and MATH 1000.03 and 1010.03

ECON 4421.03: Macroeconomic Theory.

This class provides students with the analytic tools in macroeconomics needed to either advance to a graduate-level program or move into the workforce in the capacity of a trained economist. Students will be introduced to contemporary issues in dynamic macroeconomics and will survey some of the conventional and current topics, including aggregate growth accounting; classical and neoclassical growth models; active monetary policy, inflation and unemployment; theories of consumption and investment; and international trade and exchange rates. Mathematical methods are applied extensively throughout the course (students will be expected to apply calculus to largely linear models) and their application to economic problems will be stressed at both the theoretical and intuitive levels.
 FORMAT: Lecture 3 hours
 PREREQUISITE: ECON 2201.03, 3700.03 and MATH 1000.03, 1010.03

ECON 4446.03: Contemporary Liberalism, and Democracy.

See class description for PHIL 4470.03, in the Philosophy section of this calendar.
 CROSS-LISTING: PHIL 4470.03, POLI 4479.03

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 Programs

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 Website: www.dal.ca/environment

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Supporting Faculty

Environmental Programs 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

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 Programs in the Faculty of Science offers a BSc Honours/ Major in Environmental Science, a Minor in Environmental Studies, a Double Major in Environmental Science and Community Design, and a Double Major or Combined Honours in Environmental Science and any Major/Honours subject in the Faculty of Arts and Social Sciences (FASS). 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 Programs.

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. Working on environmental problems usually involves teamwork with others from related and unrelated fields. At least two of our core classes in this field stress group work, with both multi- and interdisciplinary components.

II. Degree Programs

A strong high school background in as many sciences (mainly Biology, Chemistry, Physics) as possible 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 65 of this calendar.

A. BSc (20 credit) Environmental Science

The requirements for a BSc Environmental Science are the following:

1. First Year

Students have the option to take DISP or the Environmental Science Foundation Program.

2. Common Core Classes - 7 Credits

Completed at various times over a 4 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. These classes involve 5 credits in ENVS, 1 credit in ECON to satisfy the Social Science requirement and 1 credit in PHIL to satisfy the Humanities requirement.

3. Area of Emphasis (AOE)- 4 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
- * Neuroscience

A listing of the required courses for each Area of Emphasis is available from the Director of Environmental Programs or from the Environmental Programs website (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.

Suggested template and Required Courses for BSc Environmental Science

Year 1

- Dalhousie Integrated Science Program (SCIE 1502, 1504, or 1510)
OR
- Environmental Science Foundation Program:

Fall Term	Winter Term
BIOL 1010 or 1020	BIOL 1011 or 1021
MATH 1000	MATH 1010 or 2030 or STAT 1060
SCIE 1111 (or other approved full-year writing class)	elective
1 full credit in each of 2 science subjects chosen from Chemistry, Oceanography, Physics, Earth Sciences, Environmental Science, and Economics ¹	

(1) Students are encouraged to take introductory courses in subjects that they are considering for their Area of Emphasis.

Year 2

Fall Term	Winter Term
ECON 1101 ⁽²⁾	ECON 1102 ⁽²⁾
PHIL 2480	PHIL 2485
BIOL 2060	STAT 2060 or 2080
AOE/elective	ENVS 2001
AOE/elective	AOE/elective
ENVS 3001	Ten-day Environmental Science Field School late April or late August

(2) Students who have taken ECON 1101 and 1102 in Year One are required to substitute ECON in Year Two with 1 full credit in a single science subject listed for Year One.

Year 3

Fall Term	Winter Term
ENVS 3501	ENVS 3502
ENVS 3200	AOE/elective
BIOL 3060	AOE/elective
AOE/elective	AOE/elective
AOE/elective	AOE/elective

Year 4

Fall Term	Winter Term
ENVS 4901 (Honours only)	ENVS 4902 (Honours only)
ENVS 4001	AOE/elective
AOE/elective	AOE/elective
AOE/elective	AOE/elective
AOE/elective	AOE/elective

Honours Program: Students must have a minimum of 9 and maximum of 12 credits of ENVS courses 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 Courses to meet this requirement (courses 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 Courses is available from the Director of Environmental Programs or online (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 cumulative GPA for these classes must be at least 3.00 ("B").

Major Students: Students must have a minimum of 7 and maximum of 10 credits of ENVS courses 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 Courses to meet this requirement (courses 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 courses is available from the Director of Environmental Programs or online (www.dal.ca/environment).

B. BSc (20 credit) Double Major in Environmental Science and Community Design

The requirements for the BSc Double Major in Environmental Science and Community Design are the following:

1. 1000-level

Students are required to take the following credits:

- BIOL 1010.03/1011.03 or 1020.03/1021.03
- MATH 1000.03
- MATH 1010.03 or MATH 2030.03 or STAT 1060.03
- SCIE 1111.03 or another approved writing requirement class.
- PLAN 1001.03
- PLAN 1002.03
- ECON 1101.03 (usually taken in second year)
- ECON 1102.03 (usually taken in second year)
- 1 full credit in a first year single subject chosen from (chemistry, physics, earth sciences, oceanography, environmental science)

2. Core Requirements

Completed at various times over a 4 year degree program, the Core Requirements introduce students to the scope and magnitude of environmental science and community design (see template).

3. 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.

Suggested template and required courses for BSc Double Major in Environmental Science and Community Design:

Year 1

Fall Term	Winter Term
BIOL 1010 or 1020	BIOL 1011 or 1021
PLAN 1001	PLAN 1002
MATH 1000	MATH 1010 or 2030 or STAT 1060
SCIE 1111 (or other approved writing class)	elective
1 full credit chosen from Chemistry, Physics, Environmental Science, Earth Sciences, or Oceanography	

Year 2

Fall Term	Winter Term
ECON 1101	ECON 1102
BIOL 2060	STAT 2060 OR STAT 2080
PLAN 2002	PLAN 2005
PLAN 2001	PHIL 2480
elective	ENVS 2001
ENVS 3001: Ten-day Environmental Science Field School in late April or late August	

Year 3

Fall Term	Winter Term
ENVS 3501	ENVS 3502
ENVS 3200	PLAN 3005
BIOL 3060	PHIL 2485
PLAN 3001	elective
elective	elective

Year 4

Fall Term	Winter Term
PLAN 3002	PLAN 3006
PLAN elective	ENVS elective
ENVS 4001	ENVS elective
elective	elective
elective	elective

C. 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). The requirements are as follows:

1. First Year

Students have the option to take DISP or the Environmental Science Foundation Program (see template).

2. Core Requirements

- General: STAT 2060.03 or STAT 2080.03
- Subject A: A minimum of 6 and maximum of 9 credits above 1000-level in Environmental Science are required including
 - BIOL 2060.03
 - BIOL 3060.03
 - PHIL 2480.03
 - PHIL 2485.03
 - ENVS 2001.03
 - ENVS 3001.03
 - ENVS 3200.03
 - ENVS 3501.03
 - ENVS 3501.03
 - ENVS 3502.03
 - ENVS 4001.03
- Subject B: Chosen from any Major/Honours subject in the Faculty of Arts and Social Sciences. A minimum of 4 and maximum of 7 credits above 1000-level are required. See Subject B department for specific requirements.

3. 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.

Suggested template and required courses for BSc Double Major in Environmental Science and FASS subject.

Year 1

Fall Term	Winter Term
DISP Or	
Environmental Science Foundation Program	
BIOL 1010 or 1020	BIOL 1011 or 1021
MATH 1000	MATH credit MATH 1010 or 2030 or STAT 1060
First year class in Subject B if required for upper-level classes (1 full credit)	
1 full credit in each of 2 science subjects chosen from Chemistry, Physics, Environmental Science, Earth Sciences, Oceanography, and Economics	

Year 2

Fall Term	Winter Term
ECON 1101 ¹	ECON 1102 ¹
PHIL 2480	PHIL 2485
BIOL 2060	STAT 2060 or STAT 2080
Subject B	Subject B
SCIE 1111 (if writing requirement was not satisfied with first year Subject B class)	ENVS 2001
ENVS 3001: 1 week Environmental Science Field School in late April or late August	
(1) Students who have taken ECON 1101 and 1102 in Year One are required to substitute ECON in Year Two with 1 full credit in a single science subject listed for Year One	

Year 3

Fall Term	Winter Term
ENVS 3501	ENVS 3502
ENVS 3200	Subject B
BIOL 3060	Subject B
Subject B	elective
Subject B	elective

Year 4 Double Majors

Fall Term	Winter Term
ENVS 4001	ENVS elective*
Subject B	Subject B
ENVS elective*	elective
elective	elective
elective	elective

Year 4 Combined Honours

Fall Term	Winter Term
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ENVS 4901	ENVS 4902
Subject B	Subject B
ENVS elective*	ENVS elective*
ENVS 4001	elective
elective	elective

*Any ENVS or ENVS equivalent class from the Faculty of Science

D. BA, BSc, BCD (20-credit), BCS with 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 Director of Environmental Programs. 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 110).

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 Studies OR Dalhousie Integrated Science Program, SCIE 1502.21, 1504.27 or 1510.33
- 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 (2 full credits from the list)

- BIOL 2601.03: The Flora of Nova Scotia
- BIOL 2605.03: Introduction to Marine Biology
- 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 1
- CHEM 4203.03: Environmental Chemistry
- CHEM 4595.03: Atmospheric Chemistry
- 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 4380.03: Principles of Geochemistry
- 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 2216.03: Economics of Global Warming
- ECON 2336.03: Regional Development
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- 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 Law for Environmental Scientists
- ENVS 3225.03: Plants in the Human Landscapes
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Environmental Site Investigation
- ENVS 3301.03: Pollution Prevention
- 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 3302.03: Technology and History in North America
- HIST 3370.03: North American Landscapes
- HIST 4271.03: The Fisheries of Atlantic Canada
- INTD 2001.03: Introduction to Development I
- INTD 2002.03: Introduction to Development II
- INTD 3304.03: Sustainable Development in Cuba
- MARI 2605.03: Introduction to Marine Biology
- 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 2451.03: Astronomy I: The Sky and Planets
- PHYC 2800.03: Climate Change
- PHYC 2310.03: Energy and the Environment
- 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 3585.03: 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
- STAT 3345.03: Environmental Risk Assessment

Possible template for Science students with Minor in Environmental Studies.

	Fall	Winter
Year 1	ENVS 1000 or DISP (SCIE 1502.21, SCIE, 1504.27, or SCIE 1510.33)	
Year 2	PHIL 2480	Minor Elective
Year 3	ENVS 3501 ENVS 3200	ENVS 3502 Minor Elective
Year 4	Remaining Electives	

3. Bachelor of Community Design with Minor in Environmental Studies

See listing in Faculty of Architecture and Planning section of this calendar (page 57).

4. BCSoc 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 1502.21, 1504.27 or 1510.33)
- 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 (2 full credits from the list):

- BIOL 2605.03: Introduction to Marine Biology
- 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
- CHEM 4595.03: Atmospheric Chemistry
- ECON 2216.03: Economics of Global Warming
- ECON 2336.03: Regional Development
- ECON 3332.03: Resource Economics
- ECON 3335.03: Environmental Economics
- EARTH 2410.03: Environmental and Resource Geology I
- 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 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 Law for Environmental Scientists
- ENVS 3226.03: Economic Botany, Plants and Civilization
- ENVS 3300.03: Environmental Site Investigation
- ENVS 3301.03: Pollution Prevention
- ENVS 3400.03: Environmental and Ecosystem Health
- ENVS 3500.03: Geoscience Information Management
- HIST 3302.03: Technology and History in North America
- HIST 4271.03: Fisheries of Atlantic Canada
- INTD 2001.03: Introduction to Development I

- INTD 2002.03: Introduction to Development II
- MARI 2605.03: Introduction to Marine Biology
- 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 2800.03: Climate Change
- PHYC 2310.03: Energy and the Environment
- PLAN 3010.03: Urban Ecology
- POLI 3585.03: 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
- STAT 3345.03: Environmental Risk Assessment

E. Co-operative Education Program in Environmental Science

Co-operative Education in Environmental Science is a program that combines academic study with career-related work experience. Students alternate 3 workterms with academic terms and graduate with a B.Sc., Co-op. Workterms are normally 13-18 weeks in length. The program requires a minimum of three workterms and normally requires four full years to complete. A fourth workterm is optional, and the program requires correspondingly longer to complete if four workterms are selected.

A student in the co-operative 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.

The co-operative program begins in the second year of study, and 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-operative program 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 obtain admission to the Co-operative Education Program in Environmental Science. Interested students should inquire about the program before beginning their second year of study.

Additional information may be found in the calendar under the heading "Co-operative Education in Science". Interested students are urged to consult that section. For more information also see www.science.coop.dal.ca

Scheduling of Academic and Workterms

Year	Sept. – Dec.	Jan. – Apr.	May – Aug.
1	Academic	Academic	Free
2	Academic	Academic	Workterm 1
3	Academic	Academic or Workterm 2	Academic or Workterm 2
4	Academic or Workterm 3	Academic or Workterm 3	Academic or Workterm 3
5	Workterm 4 (optional)		

Note: At least one workterm must NOT be during the summer term.

III. Class Descriptions

ENVS 1000X/Y.06: Introduction to Environmental Studies.

The environment is a dynamic web of interactions between all components of the lithosphere, the hydrosphere, the biosphere and the atmosphere. Humans are one component of the biosphere, and we are unique in that we have the capacity to make individual and community decisions that can have a tremendous impact on many other components

of the environment. How can we predict the effects of our actions? How can we mitigate our impacts? We must understand the components of the environment and the interactions between them in order to answer these questions. This full year class introduces students to environmental science, explores selected environmental problems, as well as ethics, economics and politics that impinge on our individual and community decisions with regard to the environment.

Note: This class counts as a science credit or a credit towards the Minor in Environmental 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.

INSTRUCTOR(S): K. Tae

EXCLUSION: ENVI 1100X/Y.06

ENVS 2001.03: Analytical Environmental Science and Social Responsibility.

This course introduces students to the concepts and methods for analyzing environmental science issues. The course is a survey of the disciplinary and interdisciplinary approaches Environmental Science students will need to become both educated and skilled. The objectives of the course are to introduce analytical approaches for defining and resolving environmental problems and issues; introduce students to the requirements of scholarly research and communication; and introduce the Environmental Science Program, culture, and associated faculty members. Students will apply their analytical knowledge in class lessons, tutorials, assignments, and exams.

INSTRUCTOR(S): S. Bard

FORMAT: Lecture

PREREQUISITE: MATH 1000.03, MATH 1010.03, or MATH 2030.03 or STAT 1060.03, and one full credit of a single first year science subject.

ENVS 3000.03: Environmental Science Internship.

This class is intended to allow students to gain hands-on experience while addressing a question of personal and academic interest relevant to the field of environmental science. Students will also be asked to reflect on practice and to present lessons learned at the end of the term. Students will work as interns for 8 hours a week over a twelve-week period on a specific project at a sponsoring environmental science agency. The internship is guided and evaluated by a supervisor at the sponsoring agency and an advisor at Dalhousie University.

NOTE: It is the student's responsibility to consult with Environmental Programs 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.

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.

This class is an extensive field course delivered the first week after spring exams and the last week of summer holidays. Students engage in formal class work for 8-10 hours/day plus class preparation work at night. The purpose of this course is to introduce students to various field observation, identification, measurement and analytical skills as they apply to selected environmental science problems. Field studies will be selected in order to acquaint the student with several methods, techniques and skills for acquiring and applying field data to problem solving situations. The course will consist of day-trips and overnight trips to sites around Nova Scotia for observation and gathering data. Each activity will be supported by background readings. Students will undertake various analyses and submit assignments and/or make presentations for evaluation.

INSTRUCTOR(S): Staff

FORMAT: Off-campus field work for 7 continuous days

PREREQUISITE: Open ONLY to students in Honours/Major/Double Major/Combined Honours in Environmental Science

ENVS 3200.03: Introduction to Environmental Law.

Of all the problems facing the world those of the environment are among the most difficult and perplexing. They are both naturally occurring and manufactured; they cross all boundaries; they are both latent and manifest. Trying to control environmental hazards through legislation,

regulation and the law is particularly perplexing. While it is often difficult to achieve consensus as to the nature and effect of an existing environmental condition, it is impossible to predict what form an environmental hazard will take and consequently difficult to anticipate what manner of legislation will best contain the damage.

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 3210.03: Environmental Law II: Natural Justice and Unnatural Acts.

Offered every second year. Next offered winter 2009. Environmental Science in Canada is largely defined by statutes and regulations.

Environmental Law II expands on the Introduction to Environmental Law. The class will consider administrative processes, the role of legislation, the function of administrative boards and tribunals and the general principles of judicial review. It's concentration in this area will give all who are considering a career that has an environmental aspect a taste of their "daily bread" in terms of how work is carried out.

INSTRUCTOR(S): P. Mushkat

FORMAT: Lecture 3 hours

PREREQUISITE: ENVS 3200.03

ENVS 3217.03: Economic Botany, Herbals and Medicinals.

The widespread interest in herbal products that provide medicinal or health benefits has made information on this topic vitally important. This course will enable students to develop a critical, investigative attitude toward current health claims. Topics covered will include description and classification of herbal plants, medicinal and non-medicinal aspects, toxicity, traditional and modern uses and current medicinal plant research in Canada. Labs will consist of field trips, formal labs and web-based exercises.

INSTRUCTOR(S): Staff

PREREQUISITE: BIOL 1000.06 or BIOL 1010.03 and BIOL 1011.03, or BIOL 1020.03 and BIOL 1021.03 or SCIE 1500.03, 1501.27, 1502.21, 1503.21, 1504.27 or 1510.33.

CROSS-LISTING: BIOL 3217.03

ENVS 3220.03: International Environmental Law for Scientists.

Offered every second year. Next offered winter 2010. This is "strange law" because under the doctrine of international law there is no inherent enforceability; the problems posed by environmental issues are global requiring solutions that are only achievable through multi-lateral collaboration; the resulting harm is potentially catastrophic and is experienced on a local level.

Over the past 20 years, we have witnessed 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? This course will explore the relationship of modern states in a world where political boundaries are rapidly disappearing in the realms of commerce, communication and the environment.

INSTRUCTOR(S): P. Mushkat

FORMAT: Lecture/seminar

PREREQUISITE: ENVS 3200.03

ENVS 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.

INSTRUCTOR(S): D. Buszard

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

ENVS 3226.03: Economic Botany, Plants and Civilization.

This course covers the botany, domestication, development, distribution, production, processing, history and economic and social impacts of plants which have become major world crops. Topics include the cereals (corn, rice and wheat), flowers (tulips and orchids), fruits (apple, blueberry, citrus, grape, olive, pineapple and strawberry), vegetables (alliums, beets, legumes, lettuce, potato and tomato) and industrial crops (cocoa, coffee, cotton, hemp, rubber and sugar), and the development of novel bioproducts (bio-fuels, etc) from plant sources. Course includes field trips and laboratories.

INSTRUCTOR(S): D. Buszard

FORMAT: Lecture/lab

PREREQUISITE: BIOL 1010.03 or BIOL 1020.03 (B- or better) and BIOL 1011.03 or BIOL 1021.03 (B- or better)

CROSS-LISTING: BIOL 3226.03

ENVS 3300.03: Environmental Site Investigation.

Offered every second year. Next offered winter 2009. Identification and management of contaminated sites can impact our world from environmental and socio-economic perspectives. Over the past several decades, awareness of contaminated sites has increased in our society. Legislation, professional standards and liability have followed suit. Today, it is key for environmental scientists, engineers and planners to have a basic understanding of the issues surrounding environmental site investigation.

In this class, we will use case studies to learn the components of environmental site assessments, risk assessments, site remediation and monitoring. We will also examine the regulatory context and environmental liability associated with contaminated sites. Research projects and guest speakers focusing on current examples will augment the class discussions. There will be a minimum of two field trips to reinforce learning objectives and provide practical experience.

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: Pollution Prevention.

Offered every second year. Next offered winter 2010. This course reviews how the concept of sustainability can be incorporated into projects, and focuses on the practical application of pollution prevention (P2) techniques within real world settings. The tools for data collection, communication, analysis, and presentation will be taught while determining appropriate techniques of environmental protection and improving the triple bottom lines of project/case studies. At least one field trip will provide practical experience with a site visit to assess opportunities for pollution prevention. Guest speakers from the private and public sector will supplement the course.

INSTRUCTOR(S): Staff

FORMAT: Lecture, hands-on exercises and field trip

PREREQUISITE/CO-REQUISITES: ENVS 1000X/Y.06 or ENVS 2001.03

ENVS 3400.03: Human Health and Sustainability.

Understanding why some human populations are healthier than others requires an understanding of the physical, chemical, biological, and psychosocial determinants of health. In this course we will examine the relationships between the health of populations and health determinants in the context of environmental sustainability. Sustainability necessitates balance between natural capital and uses of natural capital for human and non-human ends. Many current global environmental diagnoses indicate that human activities are corroding the environmental conditions required to sustain human beings as well as the many species with whom we share this planet. 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

ENVS 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 3500, GEOG 3500, EARTH 5600

ENVS 3501.03: Environmental Problem Solving I.

This class introduces students to concepts and methods for analyzing environmental problems and the various environmental problem-solving models. Students will learn analytical approaches for problem definition and problem solving that are appropriate for a wide range of environmental issues and apply these to the analysis of case studies. Materials introduced in the class will illustrate the interrelationships among environmental issues that are often perceived to be isolated from one another, but in fact are rooted in ecological, economic and social systems.

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 students apply the skills and tools of interdisciplinary research and problem solving to current real-life problem on Dalhousie University's campus. The campus serves as a living laboratory for identifying, evaluating and assessing indicators of progress toward greater campus sustainability. Working in groups, student apply the environmental problem solving models to chosen case studies using qualitative and quantitative research methods. A variety of tools may be used including systems analysis, environmental audits, field surveys, questionnaires, interviews, and statistical analysis. Students then make recommendations for improvements on the basis of their analysis. Upon completion of the course, students should be well prepared to apply their expertise to environmentally related problems, take on the challenges of proposal-writing, systems analysis, research design and implementation and report preparation required for successful completion of ENVS 4900.

INSTRUCTOR(S): T. Wright

PREREQUISITE: ENVS 3501.03 or permission of instructor

ENVS 3615.03: Methods in Ecology.

This hands-on class provides practical experience in various skills needed to conduct ecological research and prepare scientific papers. Through participation in several class projects, students obtain experience conducting field studies and laboratory experiments. Projects, designed by the instructors, include a wide range of ecological questions, techniques, organisms, and ecosystems. Specific topics may include the spatial distributions of organisms, animal orientation and movement, disturbance and succession in forests, function of animal behaviour, and microbial

ecology. Students collect, analyze, and interpret their own data and summarize their findings in formal scientific reports. Evaluation of students is based on written assignments and participation. No exams are given. This class enables students to put into practice what they have learned in lecture-based classes. Lectures are limited to background and techniques necessary to conduct each project and comprehensive lists of packages are provided for each project. Instruction includes use of computer packages for data analysis (e.g., Excel, Systat, Primer) and writing (e.g., Formatting papers using Word). This class is recommended for any student interested in ecological research, environmental science, field sampling, and graduate studies in ecology. Third-year honours students will find this class useful for conducting their own field research. This class replaces BIOL 3614 (Field Ecology). Additional fees are charged to cover the cost of field trip transportation.

FORMAT: Field and lab intensive

PREREQUISITE: BIOL 2060, STAT 1060 and STAT 2080 and at least one diversity class (e.g., BIOL 2001, 2002 or 2003).

CROSS-LISTING: BIOL 3615

EXCLUSION: BIOL 3614

ENVS 3624.03: Urban Freshwater Systems.

Urban ecology is a new branch of environmental science that concentrates on understanding the natural systems of urban areas and the stresses that face them. Watercourses often can be the richest of urban wildlife sites. This summer field course will introduce students to the ecology of freshwater systems in the context of their urban watersheds. This applies Ecology course is field-intensive, and will concentrate on the lakes and rivers of the assess ecosystem health in several lakes and rivers. In the field, they will monitor water quality and characterize resident communities of plants and animals. Some sampling will involve boats and canoes, and a unit on boating safety will be included. Evaluation will be based on individual and group research reports which will be written up as scientific papers and presented to the class. An extra fee will be charged to cover the costs of transportation and field expenses.

CROSS-LISTING: BIOL 3624.03

FORMAT: Field and lab intensive

PREREQUISITE: BIOL 2060.03 and (STAT 1060.03 or DISP)

ENVS 3632.03: Applied Field Methods in Fish Ecology.

This summer class prepares students for designing and conducting field research on fishes. Fieldwork will concentrate on day trips to streams and shallow water marine/freshwater habitats. Topics covered will include techniques for collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variability, quantifying temporal and spatial variation, and planning for statistical analysis. Informal lectures and laboratories will complement field exercises. The major focus will be on practical techniques and tradeoffs between data quality, quantity, costs and ethical/environmental considerations. Students will keep a field notebook, generate computer files of collected data, take problem-solving quizzes, and write a methodological research proposal. The class includes a two-night camping trip and additional fees to cover transportation and camping expenses.

FORMAT: Field intensive. Lecture and lab.

PREREQUISITE: BIOL 2060.03 and STAT 1060.03 or their equivalents or permission of instructor.

CROSS-LISTING: MARI 3632.03, BIOL 3632.03

ENVS 3664.03: Intertidal Ecology and Diversity.

This class explores ecological concepts as they apply to a variety of intertidal habitats, including rocky shores, tidal flats and sandy beaches. Primary emphasis is placed on description and quantification of diversity with the appropriate sampling techniques for flora and fauna. Generally, field sampling and measurements will be followed by further analysis, e.g., identification of seaweeds and invertebrates, in the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the major phyla is a key component of this course. Secondly, major aspects of population and community ecology, such as plant-animal interactions, will be investigated in the different environments. Basic skills in experimental design and related statistical analyses will be learned

through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will be through reports of selected lab and field work, oral presentations and in-class discussions, and a final independent project on a topic of choice relating to marine benthic biodiversity. Also, students are introduced to the 'Marine Invertebrae Diversity Initiative', and will each contribute a species profile.

CROSS-LISTING: BIOL 3664.03

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. The class involves independent study, and should be supervised by a regular faculty member. The class content and marking scheme must be submitted to and be approved by Director of Environmental Programs in the Faculty of Science 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. **PREREQUISITE:** ENVS 1000X/Y.06 or ENVS 2001.03 and third year student status.

ENVS 3802.03: Directed Readings in Environmental Science.

ENVS 4001.03: Environmental Impact Assessment.

This class provides an opportunity for the students 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: Students must be enrolled in a BSc major with Minor in Environmental Studies, or BSc Honours/Major/Combined Honours/Double Major in Environmental Science Program

FORMAT: Lecture 3 hours, lab 3 hours

PREREQUISITE: ENVS 1000X/Y.06 or ENVS 2001.03

CROSS-LISTING: ENVI 5001.03, CHEE 4772.03

ENVS 4700.03: Environmental Toxicology.

The objective of this course is to introduce students to the principles of environmental toxicology including the sources, fate, and effects of chemicals in the environment. Environmental effects of chemicals will be examined at multiple levels including that of ecosystem, population, organism, cellular, and molecular mechanism of chemical action. Students will learn about the major groups of contaminants that organisms, including humans, are exposed to in their environment. Students will master fundamental toxicological concepts including dose-response relationships, chemical exposure pathways, bioavailability, distribution and storage of toxicants, biotransformation and elimination of toxicants, target organ toxicity, and bio-concentration through the food web. The role of contaminants in teratogenesis, mutagenesis, and carcinogenesis will be examined through risk assessment. Through this course, the students will acquire a deep understanding of the molecular mechanism by which contaminants impact the environment.

INSTRUCTOR(S): S. Bard

FORMAT: Lecture/seminar

PREREQUISITE: CHEM 1011.03 and CHEM 1012.03 or DISP, BIOL 2060.03 and BIOL 3060.03 or permission of instructor

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. This class is required for students in the Honours Environmental Science degree program. The course will include lectures and tutorials that take students through the stages of proposal writing, including research design and choice of methodologies, and an independent environmental science research project carried out under the supervision of an approved faculty member.

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.

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. Workterm registration requires a signature from the Science Co-op Coordinator. See Environmental Programs Co-op 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)

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.

GEOG 1030.03: Introduction to Physical Geography.

This course is designed as a science course with no lab for non-science majors, and assumes no special science background. Physical geography develops an understanding of the surface of the physical earth, including the atmosphere, the hydrosphere, and the earth's surface features themselves. We examine the nature of the atmosphere, including variability in weathering and climate throughout the world. We explore the earth's surface features and processes, including landforms created by volcanoes, earthquakes (and the internal processes contributing to their development), rivers, oceans, glaciers, winds, and gravity. We review briefly the major rock types, how they form, and the process of weathering and soil development. We conclude by looking at the interaction between these subsystems and our interaction with them. 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: 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 every second week; 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 2000.3: 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. One-day weekend field trips unurban and/or wilderness regions of Halifax Regional Municipality are a required part of the class. INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours plus occasional field trips

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 analysing 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: Recommended EARTH 1030.03, 1020.03, or 1010.03

CROSS-LISTING: PLAN 2001.03

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: 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, SOSA 1050X/Y.06, SOSA 1100X/Y.06, SOSA 1200 X/Y.06

CROSS-LISTING: SOSA 2100.06

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 Niño 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

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 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 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 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 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 areal 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 3440.03: Geomorphology.

The quantitative study of Earth's surface processes and landforms applies to geology, civil engineering, hydrogeology, and physical geography. Slope stability, weathering and soils development, sediment production, storage, and deposition in arid environments, fluvial processes, tectonic landforms, glacial and permafrost processes, hypsometry, and fractal dimension are shown to be influenced by rock properties, climate, and temporal scales. Laboratory and field experiences emphasize geomorphometry, describing, analysing, and interpreting soils and sediment records, the local Quaternary record of glaciation and stream incision, and incorporate field and remotely sensed data and digital terrain data to solve questions related to the environment and various geomorphic systems.

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 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.

Spatially-extended computer models are tools for the investigation of landscape form and change, and for prediction of the response of landforms to ongoing changes in climate and human land use practices. This course examines and compares different approaches to modelling, including reductionist analytical and numerical approaches and top-down rule-based approaches. Selection of variables, sensitivity testing, and methods for testing models against nature are discussed. Recent models are used as examples, including those for erosion and deposition in braided rivers, topographic and thermal diffusion, cratering on Mars, fracture patterns in rock and permafrost, and slider-block models for faults. Programming experience is useful but not essential; class emphasis lies in understanding the utility and limits of landscape models rather than numerical methods. Advanced students will develop simple models pertinent to their own research interests as a final project.

INSTRUCTOR(S): L. Plug

FORMAT: Lecture 3 hours/lab

PREREQUISITE: EARTH 2440.03, MATH 1010 or 1400, PHYC 1100X/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 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 will 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) will be 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. R. Campbell
- PHIL 2560.03: Minds & Machines: Introduction to cognitive Science. M. Cash
- PHIL 2660.03 Logic: Understanding Scientific Reasoning. R. Campbell, R. Martin
- BIOL 3601.03: Nature Conservation. M. Willison

Marine Biology

Location: Biology Department,
Life Sciences Centre,
1355 Oxford Street,
Halifax, N.S. B3H 4J1
Telephone: (902) 494-3822
Fax: (902) 494-3736
Website: <http://marine.biology.dal.ca>

Dean

Taylor, K., BSc(St. FX), PhD (U of Alberta)

Program Co-ordinator

Pinder, A. (pinder@dal.ca) (494-3822)

Program Advisors

Herbinger, C. (494-1397) (christophe.herbinger@dal.ca), Regular Honours
McAllister-Irwin, N. (494-3818) (nancy.mcallister-irwin@dal.ca), Co-op
Academic Advisor, Honours and 20-credit majors
Pinder, A. (494-3822) (alan.pinder@dal.ca), Regular Honours
Scheibling, R. (494-2296) (robert.scheibling@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 or 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 intelligent career choices. The Co-op degree normally takes 4 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 65 of this calendar.

A. Co-operative Education BSc Program in Marine Biology (20-credit), Honours and Major

Co-op Academic Advisor in Marine Biology: N. McAllister-Irwin
Email: 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 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 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 Honours and Major 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. The one required full-credit third-year biology class, MARI 3071X/Y.06, is split into 3074.03 (A term) and 3076.03 (B term) so that students can take 3074.03 in the fall term of their third year and 3076.03 in the winter term of their fourth year.

To ensure employment opportunities, Science Co-op students may include some classes (or minor) in biochemistry, business, computer science, environmental science, or microbiology as employers are often seeking expertise in these areas.

ADMISSION to the Marine Biology Science Co-op program should be sought after first year grades are submitted but before entering the second year of study and submitted by August 1.

Science Co-op applications forms for Marine Biology are available from the Marine Biology Co-op Academic Advisor and on the Science Co-op website: www.sciencecoop.dal.ca. A limited number of students will be accepted into the program each year to reflect the current job availability. 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 before the beginning of the fall term.

For further information, please see www.sciencecoop.dal.ca.

B. 20-credit BSc Honours in Marine Biology

Program Advisors: A. Pinder (494-3822). C. Herbinger (494-1397)
Email: Alan.Pinder@dal.ca, christophe.herbinger@dal.ca

Honours students must take a minimum of 9 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 3rd year of study and should have completed arrangements by May of their 3rd year. Co-op students will normally do their Honours research in the summer of their 4th year or in their 5th 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 3071X/Y.06 or 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 1041.03/1042.03 (or 1011.03/1012.03)
- COMM 1501.03 or 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

- DISP (SCIE 1500X/Y, 1501X/Y, 1502X/Y, 1503X/Y, 1504X/Y or 1510X/Y) (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

*Co-op students must complete these classes in their second year

3000 and 4000 level

- MARI 3067.03
- MARI 3071X/Y.06 OR 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
- MARI 8880.00

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 9 credits beyond the 1000 level in the Honours subject.

Classes in Biology taken to satisfy the Marine Biology requirement cannot be counted towards the 2 full credits which are to be taken in a single subject outside the Honours subject (requirement is for BA students only).

Other Biology classes with some marine emphasis: BIOL 3042.03, 3050.03, 3065.03 3069.03, 3101.03, 3102.03, 3326.03, 3615.03, 4061.03, 4063.03, 4074.03, 4661.03

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 must take BIOL 2003 and BIOL 2004 in their second year.

Co-op students will normally do their Honours research in the summer of their 4th year or in their 5th 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 6 and no more than 9 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 1041.03/1042.03 or CHEM 1011.03/1012.03, MATH 1000.03 or MATH 1215.03, STAT/MATH 1060.03 or SCIE 1500.30, 1501.27, 1502.21, 1503.21, 1504.27, or 1510.33 (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 3212.03 or MARI 3221.03, MARI 3301.03 and MARI 3761.03.

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 2 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. 20-credit BSc Major in Marine Biology

Program Advisors:

R. Scheibling (494-2296), C. Corkett (494-7016)

Email: robert.scheibling@dal.ca, chris.corkett@dal.ca

Major students are required to take a minimum of 7 and a maximum of 10 credits above the 1000 level in their subject of concentration (Marine Biology) including 4 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 1041.03/1042.03 (or 1011.03/1012.03)
 - COMM 1501.03 or COMM 1502.03 (recommended for students not fully familiar with microcomputers)
 - MATH 1000.03 or MATH 1215.03
 - STAT 1060.03
- OR
- DISP (SCIE 1500X/Y, 1501X/Y, 1502X/Y, 1503X/Y, 1504X/Y or 1510X/Y) (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 (4) 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. 20-credit BSc 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)
- Co-op students must take BIOL 2003 and BIOL 2004 in their second year

G. 20-credit BSc Double Major in Marine Biology

Department Requirements

If Marine Biology is chosen as the **primary** subject in a Double Major degree, at least 5 and no more than 9 credits in Marine Biology beyond the 1000 level including the following classes:

1000 Level

- BIOL 1010.03 and BIOL 1011.03 (or BIOL 1020.03 and 1021.03) and CHEM 1041.03/1042.03 (or CHEM 1011/1012.03) MATH 1000.03 or MATH 1215.03, MATH/STAT 1060.03 or SCIE 1500.30, 1501.27, 1502.21, 1503.21, 1504.27, or 1510.33 (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.

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: Dynamics of Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first a basic background to dynamical biological processes, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and physiological and population level adaptation to variations in the marine environment. These processes are then considered in the context of the physics and chemistry of large scale oceanographic ecosystems such as upwelling regions, the oligotrophic gyres, coastal environments, and the high latitude oceans. The emphasis is on a quantitative approach.

INSTRUCTOR(S): Lewis, M.

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 2000

CROSS-LISTING: BIOL 3003.03, OCEA 3003.03

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 2001.03 or BIOL 2003.03, BIOL 2060.03

CROSS-LISTING: BIOL 3067.03

MARI 3074.03/3076.03: Physiology of Marine Animals, Part I and II.

The problems of 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 3070, but emphasizes the special characteristics of marine animals and the techniques necessary to study them in laboratories and tutorials.

All students must take both MARI 3074.03 and 3076.03.

INSTRUCTOR(S): N. McAllister-Irwin, A. Pinder, S. Iverson

FORMAT: Writing Intensive, lecture 3 hours, lab 3 hours

PREREQUISITE: BIOL 2001.03 or 2002.03 or 2003.03, 2020.03

EXCLUSION: BIOL 3070X/Y.06, BIOL 3071X/Y.06, MARI 3071X/Y.06

MARI 3212.03: Biology of the Algae.

A non-taxonomic examination of the cellular, organismic, population and community organizations of benthic and planktonic algae. This course uses WebCT.

INSTRUCTOR(S): E. Kenchington

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: Grade B or better in BIOL 2001.03, or BIOL 2003.03, BIOL 2004.03 or permission of instructor

CROSS-LISTING: BIOL 3212.03

MARI 3221.03: Diversity of Algae.

The organisms known colloquially as algae belong to 2 different kingdoms. Over 3 billion years, algae have been responsible for changing the composition of the atmosphere, oceans and geological formations. Algae play a major role in the world's carbon budget (hence global warming), fisheries production and even fossil fuel formation. In spite of the importance of algae, knowledge of their structure, reproduction, and diversity is restricted to a shrinking group of specialists known as phycologists. In this class, algal diversity is presented by one of the shrinking group. emphasis is placed primarily on laboratory and field work with both benthos and plankton. Lectures cover the organization of algal diversity into the Linnean framework of taxa, for simple species

identification is insufficient without a knowledge of the hierarchy within which the name may be fitted.

INSTRUCTOR(S): Staff

PREREQUISITE: BIOL 2001.03 or BIOL 2004.03

CROSS-LISTING: BIOL 3221.03

EXCLUSION: BIOL 3211.03

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 2001.03 or 2003.03

CROSS-LISTING: BIOL 3301.03

EXCLUSION: BIOL 3321X/Y.06

MARI 3600.03: Aquaculture.

Through lectures and field trips, this course offers an introductory overview of aquaculture; the culturing and raising of aquatic plants and animals. Lectures will deal with the following topics: general overview of aquaculture; physical and chemical properties of the aquatic environment; aquatic engineering; site selection; finfish culture; mollusc culture; crustacean culture; seaweed culture; health and pathology; nutrition; genetics and reproduction; legal, economical and social considerations. These topics will be covered with both a Maritimes and global perspective. Additional fees are charged to cover the cost of field trip transportation.

INSTRUCTOR(S): C. Herlinger

FORMAT: Lecture 3 hours, Lab 3 hours, Field trips (2 Sundays)

PREREQUISITE: BIOL 2001.03 or BIOL 2003.03

CROSS-LISTING: BIOL 3600.03

MARI 3623.03: Applied Coastal Ecology.

This is a field-oriented course which will teach students about the application of ecological principles in the coastal zone. Students will also learn about the impacts of anthropogenic inputs on basic ecosystem function. Field work will concentrate on developing frameworks to assess ecosystem health in several types of coastal ecosystems including macroalgal communities on rocky shores and seagrass beds on sedimentary shores. Students will gain experience in basic experimental design, principles of environmental assessment and monitoring, and coastal habitat remediation. Assessment will be based on individual or group projects, which will be presented as written scientific research papers and oral presentations in seminars to the class. This class carries an additional fee to cover the cost of transportation.

FORMAT: Field and Lab

PREREQUISITE: BIOL 2060.03 and STAT 1060.03

CROSS-LISTING: BIOL 3623.03, ENVS 3623.03

MARI 3626.03: Field Studies of Marine Mammals.

This class prepares students to conduct field research on marine mammals, by combining field and laboratory experience with a theoretical framework to understand the biology of these intriguing vertebrates. Field work will investigate pinniped haulout behaviour and cetacean distribution. Laboratory work will include necropsies of available specimens and an introduction to photographic identification of cetaceans. Lectures will focus on marine mammal adaptations and evolution, population biology, social organization, as well as conservation and management. Field work will be conducted on weekends as well as weekdays. Students will write and present a field report, prepare laboratory reports, and take examinations on lecture material. This intensive field class will take place during the last two weeks of August and the first week of September. An extra fee will be charged to cover the costs of transportation.

FORMAT: Lab and field intensive

PREREQUISITE: BIOL 2060.03 and BIOL 3062.03 (or similar behaviour class), STATS 1060.03

CROSS-LISTING: BIOL 3626.03

MARI 3632.03: Applied Field Methods in Fish Ecology.

This summer class prepares students for designing and conducting field research on fishes. Fieldwork will concentrate on day trips to streams and shallow water marine/freshwater habitats. Topics covered will include techniques for collecting fish, designing and conducting surveys, studying behaviour, measuring phenotypic variability, quantifying temporal and spatial variation, and planning for statistical analysis. Informal lectures and laboratories will complement field exercises. The major focus will be on practical techniques and tradeoffs between data quality, quantity, costs and ethical/environmental considerations. Students will keep a field notebook, generate computer files of collected data, take problem-solving quizzes, and write a methodological research proposal. The class includes a two night camping trip and additional fees to cover transportation and camping expenses.

FORMAT: Field intensive. Lecture and lab.

PREREQUISITE: BIOL 2060.03 and STAT 1060.03 or their equivalents or permission of instructor

CROSS-LISTING: BIOL 3632.03, ENVS 3632.03

MARI 3664.03: Intertidal Ecology and Diversity.

This class explores ecological concepts as they apply to a variety of intertidal habitats, including rocky shores, tidal flats and sandy beaches. Primary emphasis is placed on description and quantification of diversity with the appropriate sampling techniques for flora and fauna. Generally, field sampling and measurements will be followed by further analysis, e.g., identification of seaweeds and invertebrates, in the laboratory. Proper use of identification literature and understanding of taxonomic relationships between the major phyla is a key component of this course. Secondly, major aspects of population and community ecology, such as plant-animal interactions, will be investigated in the different environments. Basic skills in experimental design and related statistical analyses will be learned through application in the field. The course format incorporates introductory lectures, field work and laboratory analysis. Assessment will be through reports of selected lab and field work, oral presentations and in-class discussions, and a final independent project on a topic of choice relating to marine benthic biodiversity. Also, students are introduced to the 'Marine Invertebrate Diversity Initiative', and will each contribute a species profile.

FORMAT: Field and Lab intensive

PREREQUISITE: BIOL 2060.03 and (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 will emphasize the practicalities of doing field ecological experiments under water using SCUBA. It will also cover aspects of experimental design, data analysis from ecological experiments, some local natural history necessary to identify and quantify marine organisms, and the regulations governing scientific diving. The class will include at least 12 dives in various habitats, both from shore and from boats. Specific topics will include expedition logistics, site choice, site mapping, equipment installation, experimental manipulations, various censusing methods (transects, quadrats, video, photographs), dive logs and data recording, and sampling, capture, and transport methods for animals, plants, and bottom samples. This class will use diving, but will not teach diving. Students must be certified divers (preferably at least advanced open water, > 10 recent open water dives), have completed a full diving medical, be admitted to the Dalhousie Scientific Diving Program (contact the University Diving Officer), and be comfortable under water in cold water equipment.

INSTRUCTOR(S): R. Scheibling, A. Pinder, J. Lindley

FORMAT: Field Lab and Lecture

PREREQUISITE: BIOL 2001.03 or BIOL 2003.03, STAT 1060.03,

internationally recognized diving certification, diving physical;

recommended: MARI 3212.03, MARI 3301.03

CROSS-LISTING: BIOL 3680.03

MARI 3761.03: Marine Ecology.

This course gives an introduction to marine ecology by emphasizing ecological processes and evolutionary adaptations that determine the structure and dynamics of marine ecosystems globally. Building upon an understanding of basic ecological principles and a familiarity with major invertebrate and algal/plant groups, the course examines processes operating at the population, community and ecosystem level (e.g. primary and secondary productivity, food web structure and trophodynamics, recruitment, competition, predation, parasitism and disease) in a variety of marine communities/habitats (e.g. intertidal and subtidal habitats of temperate shores, tropical coral reefs and seagrass beds, the open ocean, and the deep sea). Additional topics and vignettes include fertilization and larval ecology, invasion ecology, algal-grazer interactions, trophic cascades, and El Nino events. Field trips to local shores provide first-hand experience with identification of marine biota, measurement of environmental factors, and fundamentals of sampling and experimental design.

INSTRUCTOR(S): R. Scheibling

FORMAT: Lecture, Lab

PREREQUISITE: BIOL 2060.03, BIOL 2001.03 or BIOL 2003.03

CROSS-LISTING: BIOL 3761.03

MARI 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): D. Austin, T. Wimmer

FORMAT: Lectures 3 hours

PREREQUISITE: BIOL 2060.03

CROSS-LISTING: BIOL 5651.03, BIOL 4060.03

MARI 4075.03: Nutrition in Aquaculture.

Not offered in 2008/2009. The focus will be on application of nutrition to fish, crustacean and molluscan culture. Topics will include lipids and essential fatty acids, macro and trace elements, vitamins, proteins and bioenergetics, carbohydrates, and digestion in aquatic animals.

INSTRUCTOR(S): N. McAllister-Irwin

FORMAT: Lecture

PREREQUISITE: BIOL 4074.03

CROSS-LISTING: BIOL 4075.03

MARI 4335.03: Marine Impacts.

Marine environments are subject to a variety of environmental impacts caused by resource extracting and utilization as well as waste disposal. These impacts arise from oil and gas production, ocean dumping, coastal habitat alteration and eutrophication, effluent inputs, urbanization, shipping, fisheries, and aquaculture. This course will review the effects of these types of activities on marine environments, with a focus on ecosystem level influences including dispersion, elemental fluxes benthic impacts, food webs, and biodiversity. Approaches to quantifying these processes and predicting impacts will be explored. Specifically, simulation modelling of impacts and ecosystems will be undertaken using Stella graphical modelling software as well as other tools. The course will examine practical solutions to environmental assessment, monitoring, and prediction using modelling, data collection, and analysis. classes will include lectures, modelling examples (computer projection), and discussion of research papers. Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant

PREREQUISITE: BIOL 2001.03 or 2003.03 , 2060.03, MATH 1000.03, STAT 1060.03 or permission of instructor.

CROSS-LISTING: OCEA 4335.03, BIOL 4335.03

MARI 4369.03: Fisheries Oceanography.

Students who are not competent with fundamental population dynamics, ecology, physical oceanography, calculus, statistics, and computerized analysis should not enroll. The class focuses on the ecology of marine fish (including significant advances made in freshwater systems) and on the biotic and abiotic influences on marine fish population dynamics and

production, distribution and abundance. Lectures include reproduction, early life history, feeding, growth, metabolism, mortality, and recruitment variability and forecasting. Emphasis is placed on: 1) hydrological and meteorological processes influencing the above and on 2) the primary literature, current problems and hypotheses, and fruitful research directions, approaches and techniques. Some emphasis is also placed on the application of scientific insights to fishery management techniques. Students are required to write a primary publication-style research paper.

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, OCEA 4160.03, OCEA 5160.03

MARI 4370.03: Deep Sea Biology.

The class examines the biology of organisms inhabiting deep sea environments. We will explore physiological adaptations to the physical, chemical and geological environmental characteristics; describe spatial and temporal distributional patterns of the biological assemblages; examine regulatory factors of these patterns, such as ocean circulation, food availability, reproduction and recruitment; and delve into habitats of special interest such as hydrothermal vents and cold seeps.

INSTRUCTOR(S): A. Metaxas

PREREQUISITE: At least 2 of BIOL 2060.03, BIOL 2001.03 or 2003.03 or OCEA 2000.06

CROSS-LISTING: BIOL 4350.03, BIOL 5370.03, OCEA 4370.03, OCEA 5370.03

MARI 4661.03: Introduction to Biological Oceanography.

Biological oceanography is a quantitative science. Its goal is to describe how physical, chemical and biological processes interact to determine the species composition, biogeochemical activities, and trophic structure of marine communities. At the conclusion of this introduction to biological oceanography, students should possess a basic knowledge of biological oceanographic processes, and how they interact with the Earth's physical and chemical environment. Outstanding problems currently facing biological oceanographers and earth systems scientists will be discussed, as will current attempts and methodologies to address them. Students will demonstrate their accomplishment of these objectives by satisfactory performance on two examinations, completion of assignments including quantitative problem solving, and satisfactory participation in class discussion. Students should be competent in mathematics through calculus.

INSTRUCTOR(S): J. Cullen

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 4140.03

MARI 4662.03: 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. Emphasis is on the current literature.

INSTRUCTOR(S): M. Lewis

FORMAT: Lecture 3 hours, some labs

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4662.03, OCEA 5230.03, OCEA 4230.03

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.

An advanced level graduate class concentrating on the major problems of benthic ecology, such as how food is supplied to benthic animals, what factors control the structure of biological communities, and how the benthos is related to geomicrobiological processes in the sediments. The class is heavily oriented to the current literature. 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. Students are required to have a background in ecology, statistics and invertebrate zoology.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: BIOL 4666.03, OCEA 5330.03, OCEA 4330.03

MARI 4800X/Y.06: Special Topics in Marine Biology.

Available as 4806.03, 4807.03, 4808X/Y.06, 4809.03, 4810.03. These classes involve independent study and are intended for fourth-year Marine Biology students who wish to study an area of marine biology not covered in other classes. The topic of study must be different from the student's honours thesis. Students should first consult with a faculty member to arrange the topic of study. An outline of the class content must be submitted to and approved by the chair of the curriculum committee. Only the Chairperson of the Curriculum Committee can sign the approval form. For more information and forms see <http://biology.dal.ca/classes/classes/sptopics.html>

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.

MARI 4900X/Y.06: and 4901.03/4902.03 (Parts I and II): Honours Research and Thesis.

This class is required of all students in the Marine Biology Honours programs. It consists of a research project carried out under the supervision of a faculty member or research scientist at Dalhousie or elsewhere as well as weekly meetings of the class (1.5 - 3.0 hrs). Students that wish to be supervised by someone external to the department must consult with their Honours advisor before starting their research to determine their supervisor's eligibility (see Biology Web site, <http://www.dal.ca/~biology2/index.html> for more details). Students supervised by a department member or external professor/scientist must also submit a research proposal to the Biology Honours committee to determine the project's eligibility before starting their research. The results of the research will be submitted as a thesis for a letter grade. The rest of the grade will come from an oral presentation of your research to the Honours class, and another presentation or poster of your research or a Co-op work term at the annual Honours Cameron conference.

NOTE: Regular Honours students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively. Marine Biology Co-op students taking this class normally attend and register for 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.

INSTRUCTOR(S): P. Collins, A. Pinder, B. Pohajdak

FORMAT: Weekly class meetings (1.5 - 3.0 hrs) and an independent research project

RESTRICTION: Honours students normally in their final year of study.

Honours Qualifying Examination.

This is an additional requirement of all Biology and Marine Biology Honours students and is normally taken concurrently with MARI 4900X/Y.06 (4901.03/4902.03). Students are required to attend weekly seminars for two academic terms where they and other students in BIOL 4900X/Y.06 (4901.03/4902.03) give oral presentations of their Honours research projects. Instructional seminars on thesis writing, oral presentations, poster preparation, and other skills are also given. Registrations for this class is not required but it does appear on your final transcript as a Pass/Fail grade and attendance is recorded at all seminars. Marine Biology Co-op students who are on workterms during the Fall term of their 4th year normally attend these seminars during the Winter term of their 4th year and Fall term of their 5th year.

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
Halifax, NS B3H 4R2
Telephone: (902) 494-2572
Fax: (902) 494-5130
Email: chair@mathstat.dal.ca
Website: <http://www.mathstat.dal.ca>

Dean

Taylor, K., BSc (St. FX), PhD (Alberta)

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)
Radjavi, H., MA, PhD (Minn)
Swaminathan, S., MA, MSc, PhD (Madras)
Thompson, A.C., PhD (Newcastle upon Tyne)

Professors

Borwein, J., BA. (Western), MSc, PhD (Oxford) FRSC
Brown, J., MSc, PhD (Toronto)
Coley, A.A., PhD (London)
Dilcher, K., MSc, PhD (Queen's)
Gabor, G., MSc, PhD (Eotvos)
Hamilton, D., MA, PhD (Queen's) (Director of Statistics)
Nowakowski, R.J., MSc, PhD (Calgary) (Graduate Advisor Math)
Paré, R., MSc, PhD (McGill)
Smith, B., MA (Calgary), PhD (Berkeley)
Tan, K.K., PhD (UBC)
Taylor, K., BSc (St. F.X.) PhD (Alberta)
Thompson, K., PhD (Liverpool) (CRC Chair) (jointly with Oceanography)
Wood, R.J., MSc (McMaster), PhD (Dal)

Associate Professors

Fraser, A., MSc (Toronto), PhD (Princeton)
Gu, H., MSc (Peking), PhD (Hong Kong) (Undergraduate & Co-op Advisor)
Herbinger, C., MSc (Paris), PhD (Dal) (jointly with Biology)
Janssen, J.C., PhD (Lehigh) (Director of Mathematics and Co-op)
Johnson, K.P., MSc (Toronto), PhD (Brandeis)
Milson, R., PhD (McGill) (Honours Advisor)
Mitnitski, A., PhD (Leningrad Inst. Mech. Eng.) (cross appointment with Dept. of Medicine)
Pronk, D., PhD (Utrecht)
Selinger, P., PhD (U. Pennsylvania)
Susko, E., PhD (Waterloo) (Graduate Advisor Stats)
Zhao, Y., MSc (Western Kentucky), PhD (British Columbia) (cross appointment with Management)

Assistant Professors

Beiko, R., PhD (Ottawa) (jointly with Computer Science)
Bielawski, J. MA, PhD (Texas A & M Univ) (jointly with Biology)
Dowd, M., MBA, MES, PhD (Dal)
Faridi, S., MA (Brandeis), PhD (Michigan)
Flemming (Mills), J., MSc (TUNS), PhD (Dal)
Hilburn, R., BSc, MSc, PhD (Washington)
Iron, D., MSc, PhD (UBC)
Kolokolnikov, T., MSc, PhD (UBC)
Smirnov, R., BSc (Kyiv), PhD (Queen's)

Lecturers

Barger, J., BSc, (Pace NY), BEd, MA (Dal)
Cameron, E., MA (Oxon)
Surovell, A., MA (U. Mass), AB (Boston)

Postdoctoral Fellows

Brannlund, Johan (Stockholm)
Chan, O-Yeat (Illinois)
Hervik, S., PhD (Cambridge)
Jonsen, Ian (Alberta)
Kenney, Toby (Cambridge)
Manna, Dante (Tulane)
Papadopoulos, G.O. (Athens)
Pelavas, N., PhD (Queen's)
Pralat, Pawel (Adam Mickiewicz)
Wang, H., PhD (Ottawa)

Learning Centre Director

Stevens, P., MSc (Delft)

Statistical Consultant

Grover, V.

Adjunct Professors

Astatkie, T. (NSAC)
Beattie, M. (Mt. A)
Bonato, A. (Wilfrid Laurier)
Brunner, H. (Memorial)
Chipman, H. (Acadia)
Clarke, N. (Acadia)
Clements, J. (UBC)
Cole, D. (Sunnybrook & Women's Health Science Centre, Toronto)
Curry, E. (Acadia)
Dawson, R. (SMU)
Fitzpatrick, S. (UPEI)
Fry, R. (St. FX)
Grant McLoughlin, J. (UNB)
Gupta, R. P. (Dal)
Hartnell, B. (SMU)
Haynes, R. (Acadia)
Hines, P. (DRDC)
Hutt, D. (DRDC)
Keast, P. (Dal)
McLenaghan, R. (Waterloo)
Millar, M. (Mt. Saint Vincent)
Muir, P. (SMU)
Rosebrugh, R. (Mt. A)
Sastri, C.C.A. (Dal)
Sutherland, W.R.S. (Dal)
Traves, W. (U.S. Naval Academy)
van den Hoogen, R. (St. FX)
Wolfe, D. (Gustavus Adolphus)

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 513.

Mathematics

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Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chairperson of Department

Dilcher, K., PhD (Queen's)

Director of Division

Janssen, J.C.M., PhD (Lehigh) (Director of Mathematics)

Faculty Advisors

Janssen, J.C.M., PhD (Lehigh) (Undergrad and Co-op)
Milson, R., PhD (McGill) (Honours)

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: A class designed especially for B.A. students and others who wish to know something about the historical and cultural aspects of mathematics.
- MATH 1060.03: An introduction, through examples drawn from a wide variety of disciplines, to the basic ideas of statistics.
- MATH 1115.03: Linear algebra and calculus 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 course 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: An introduction 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, 1110.03, 1115.03, 1120.03.

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 65 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. 20-credit BSc 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 Pure 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 2400.03
- MATH 3110.03/3120.03
- MATH 3170.03
- MATH 3300.03
- MATH 3330.03
- MATH 3360.03
- MATH 3400.03

Student 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 3110.03/3120.03
- 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 during the winter term. 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. 20-credit BSc 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, 2505.03, or 2540.03
- One additional half credit at or above 2xxx level
- One STAT course 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 2400.03
- MATH 3090.03/MATH 3100.03
- MATH 3110.03/MATH 3120.03
- MATH 3170.03
- 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 3090.03/MATH 3100.03
- MATH 3110.03/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

Students wishing to do a double major in Mathematics and Statistics or Mathematics and Computer Science are advised to consider modelling their programs on the corresponding combined Honours program and to consult with the department. Likewise students wishing to do a double major in Mathematics and another subject should consult with the department.

Departmental Requirements - 15-credit BSc with Concentration in Mathematics, Double Major in Mathematics and another Science subject, or Minor in Mathematics with BCS Degree

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, or 2540.03

3000 level

- Two other mathematics credits at or above the 3000 level. This selection may not include MATH 3700, MATH 3800.

D. 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 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 www.sciencecoop.dal.ca

Co-op Academic Advisor in Mathematics: Dr. Janssen (494-8851)
Email: janssen@mathstat.dal.ca

E. Other Programs

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section of this calendar for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

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:

- One of CSCI 1100.03
- CSCI 1101.03
- CSCI 2110.03
- CSCI 2132.03
- CSCI 3130.03
- Two of CSCI 3110.03, CSCI 3120.03, CSCI 3130.03, 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

Note: The selection of CSCI classes for a minor in computer science excludes CSCI 2100.03 and CSCI 3101.03

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section of this calendar, page 441 for details.

Minor in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major (20-credit) and BA Honours degree. Consult the Degree Requirements section of this calendar, page 65 for details.

Concurrent BSc/DipEng

Eligible students may combine an Engineering program with a 15 credit BSc program with concentration in Mathematics, as outlined in Section "Degree Requirements" II-E of the calendar. The departmental requirements for this program are as outlined above for the 15 credit BSc. For students with a strong background in mathematics it may be possible to replace certain required courses. The course selection must be approved by the Mathematics advisor.

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 courses (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 2600, MATH 3110, 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 2400, MATH 1000, MATH 1010, MATH 2001, MATH 2002, MATH 2030, MATH 2040, MATH/CSCI 2112
3. Completion of at least three of:
 - MATH 3110, MATH 3120, MATH 3170, MATH 3210, 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 courses: 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 42; 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 begins with a review of algebra and problem solving skills, then continues with a thorough investigation of linear, quadratic, exponential and logarithmic functions. Probability and geometry topics round out this course, which is taught in a relaxed and patient environment.

FORMAT: Class 3 hours, tutorial 1 hour

PREREQUISITE: At least grade 10 academic math or equivalent

MATH 0010.00: Pre-Calculus.

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 00010.00, a review of the relevant math 11 and 12 material and area under the curve is studied. Algebra and applied geometric problem solving skills needed for calculus are emphasized throughout the course.

Note also that MATH 1000.03 is offered as a single term class (in both fall and winter terms) and as a full year class.

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.

No later than the first week of class students in MATH 1000.03 are required to take a diagnostic test to indicate how they may proceed with the class. 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.

NOTE: Students who have already received credit for MATH 1000.03 cannot subsequently receive credit for MATH 1115.03

FORMAT: Lecture 3 hours, tutorial 1 hour MLC

PREREQUISITE: Nova Scotia Mathematics advanced 11 and 12 or pre-calculus. Pre-calculus is highly recommended.

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.

NOTE: Please note that section 7 of Math 1000 and Math 1010 is set aside for students who want a stronger foundation in calculus. Students contemplating a majors or honors program in mathematics or a related field such as physics or chemistry, etc. are encouraged to consider registering in this section. Sections 5 and 6 are for students enrolled in engineering.

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.

NOTE: Please note that MATH 1115.03 below replaces MATH 1110.03 and MATH 1120.03 as one way to satisfy the Mathematics requirement for the B. Comm. program. MATH 1115.03 will be offered for the first time in September 2004, at which time MATH 1110.03 and MATH 1120 will cease to be offered.

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.

This class may not be used to partially satisfy the BSc Mathematics requirement.

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

** Students who have received credit for both MATH 1000 and MATH 2030 may not register for MATH 1115

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. Students who obtain a B- or higher in MATH 1215 may use the course as a prerequisite for MATH 1010.

FORMAT: Lecture/tutorial

PREREQUISITE: Nova Scotia Mathematics 11 and 12 or pre-calculus is highly recommended.

EXCLUSION: MATH 1000, MATH 1500

MATH 1280.03: Engineering Mathematics I.

This class offers a self-contained introduction to differential and integral calculus for Engineering students. The topics include functions, differentiation of polynomial, trigonometric, exponential and logarithmic functions, product, quotient and chain rules, applications of differentiation, antiderivatives and definite integrals, Riemann sums, integration by substitution, integration by parts, Taylor series approximations, and numerical approximations of integrals. This course has a strong Engineering design component. Examples of applications from several engineering disciplines are introduced and students will

learn to solve them by applying the material taught in the course, aided by sophisticated computational tools such as MATLAB. A sequel to this class is MATH 1290.03.

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.

MATH 1290.03: Engineering Mathematics II.

This class is a sequel to MATH 1280. The basic Calculus techniques learned there will be treated in more depth, and it is taught how they can be used in mathematical modelling. Trigonometric functions and complex numbers will be treated in depth. Elementary differential equations and applications will be introduced, and both analytical and numerical solution techniques will be taught. Other topics are parametric equations and polar coordinates, sequences and series, and a revisiting of Taylor series.

NOTE: Students who have already received credit for MATH 1290.03 cannot subsequently receive credit for MATH 1000.03.

FORMAT: Lecture/tutorial 5hr.

PREREQUISITE: MATH 1280.03

MATH 1500X/Y.06: Calculus.

This class is intended primarily for students who anticipate taking 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.

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 2001.03/2002.03: Intermediate Calculus I and II.

The topics of these two classes include dot product, cross product, equations of lines and planes, functions of 2 or 3 variables, partial derivatives, Lagrange multipliers, double integrals, triple integrals, change of variables in multiple integrals, line integrals, Green's theorem, Stoke's theorem, Divergence theorem, topics in second-order differential equations.

FORMAT: Lecture 3 hours, MLC

PREREQUISITE: MATH 1010.03

MATH 2030.03: Matrix Theory and Linear Algebra I.

This class, together with MATH 2040.03, is a self-contained introduction to Matrix Theory and Linear Algebra. Topics include: vector spaces, linear transformations, determinants, systems of linear equations. Students should note that this is a second-year class and, although it has no formal first-year prerequisites, mathematical maturity and an ability to handle formal proofs at the level of a student who has completed MATH 1000.03 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, MLC

PREREQUISITE: MATH 2030.03 and 1000.03

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

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 offer 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 2135.03: Linear Algebra.

MATH 2135.03 is a second class in linear algebra oriented towards mathematics honours students (although Physics, Chemistry, Economics, and Mathematics majors may find it useful). As such, the class emphasizes the foundations of the theory of vector spaces, rather than applications. Topics include: the axioms of vector and inner product spaces, linear transformations, the dual of a vector space, tensor algebra, determinants, quadratic and bilinear forms, orthogonal, symmetric, and skew-symmetric transformations, the characteristic polynomial, eigenvalues, canonical forms, the Hamilton-Cayley theorem.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 2030.03 and 1000.03
EXCLUSION: MATH 2040.03

MATH 2300.03: Mathematical Modelling.

This class is designed to provide a bridge between introductory calculus and the applications of mathematics to various fields. By using fundamental calculus concepts in a modelling framework, the student investigates meaningful and 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
CROSS-LISTING: STAT 2300.03
CO-REQUISITE: MATH 2030.03 and MATH 1000.03

MATH 2400.03: Introduction to Numerical Computing.

This class introduces students to numerical techniques for solving mathematical problems in the basic sciences (Mathematics, Physics, Chemistry, Oceanography, Biology, etc.). Students will be introduced to a programming language and computing environment and will learn to use such computational tools as MATLAB or MAPLE. Topics covered will include: introduction to the UNIX environment; introduction to C; numerical integration and differentiation; solving non-linear equations;

solving elementary differential equations; spline interpolation; datafitting and graphing software on UNIX stations and on PCs; scientific computing libraries and using the web to obtain solutions to scientific computing problems.
PREREQUISITE: MATH 1000, Recommended: MATH 1010, MATH 2030.

MATH 2505.03: Introductory Analysis.

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.

This course comprises a detailed examination of simple and compound interest as well as the theory of life contingencies and life insurance premiums. The syllabus includes material on which EXAM 2 (Interest Theory, Economics and Finance, Life Contingencies) in the Society of Actuaries accreditation examination series is based. Some of the topics are: nominal and effective rates of interest and discount, force of interest, annuities, perpetuities, price of bonds, callable bonds, life annuities and life insurance premiums. Some special topics in economics and finance such as game theory may also be explored. The spreadsheet application Excel 97 will be introduced and some of its capabilities utilized.
FORMAT: Lecture 3 hours, MLC
PREREQUISITE: MATH 1010.03 or 1115.03
CROSS-LISTING: STAT 2600.03

MATH 3030X/Y.06: Abstract Algebra.

In this first class in abstract algebra the following topics are treated: groups, sub-groups, 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: 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 3 hours
PREREQUISITE: MATH 2040.03 or 2135.03

MATH 3045.03: Curves and Surfaces.

This course is an introduction to the qualitative and analytic properties of curves and surfaces in 3-dimensional space. Topics to be covered include: the tangent vector, curvature, torsion, the Frenet frame and equations, parametric representations and coordinate patches, the first and second fundamental forms, principal curvatures, lines of curvature, intrinsic geometry, surfaces of constant curvature, surfaces of revolution, ruled and developable surfaces.
The class may make use of a symbolic computation package, such as Maple, both for symbolic computation and for visualization. It should be of interest to students who will pursue the study of more advanced differential geometry, and to students who are interested in applications of geometry to computer visualization.
FORMAT: Lecture 3 hours
PREREQUISITE: MATH 2002.03 and MATH 2040.03 or consent of instructor

MATH 3070.03: Theory of Numbers.

The following topics are discussed: 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, definition and elementary properties of ideals; ideal classes 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 3110.03: Differential Equations.

One of the aims of this class is to give students the ability to analyze and solve a number of different types of differential equations. Wherever possible, applications are drawn from the fields of physics, chemistry, biology, and other areas. The class is intended mainly for mathematics students interested in applications and for science students who wish to be able to solve problems arising in their major areas of interest.
 FORMAT: Lecture 3 hours, MLC
 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 3110.03

MATH 3140.03: Introduction to Wavelets.

This course is an introduction to wavelets and their scientific applications. It should be of interest both to students from applied fields seeking a better understanding of the ideas and connections which underlie tools used in their field, and also to students in mathematics curious about a beautiful and fascinating area of great theoretical depth which nevertheless has numerous applications in the modern world. Wavelet analysis provides an extremely powerful and highly flexible tool for the compression, denoising, and recognition of both audio and image signals. In the last two decades it has had immense impact in many fields as diverse as engineering, medicine, seismology, speech analysis, and fingerprint analysis, to name but a few. This course will develop many of the essential mathematical ideas behind Fourier analysis and wavelets. Haar wavelets will be describe in detail, leading up to the concept of a multiresolution analysis, and the construction of a wavelet basis. further topics may include the passage from the continuous domain to the discrete, and the Daubechies wavelets which are largely responsible for the recent explosion of applications that wavelets have seen. Many applications will also be discussed and examined.
 FORMAT: Lecture
 PREREQUISITE: MATH 2002.03 and MATH 2030.03

MATH 3150.03: Intro Nonlinear Dynamics.

This course aims to provide students with a basic understanding of the qualitative analysis of nonlinear dynamical systems. Local bifurcations of both one and two-dimensional flows will be considered. Chaos will be studies with the Smale horseshoe map, the discrete logistic equation and the Lorenz equations. Emphasis will be placed on applications of the theory from such areas as mechanical vibrations, population dynamics, nonlinear oscillators, etc.
 PREREQUISITE: MATH 2002 and MATH 2030
 RESTRICTION: Third year and above

MATH 3170.03: Introduction to Numerical Linear Algebra.

See class description for CSCI 3111.03, in the Computer Science section of this calendar.
 CROSS-LISTING: CSCI 3111.03

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 2002.03 and 2040.03

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 or MATH 2030

MATH 3340.03: Regression and Analysis of Variance.

See class description for STAT 3340.03, in the Statistics section of this calendar.

CROSS-LISTING: STAT 3340.03

MATH 3350.03: Design of Experiments.

See class description for STAT 3350.03, in the Statistics section of this calendar.

CROSS-LISTING: STAT 3350.03

MATH 3360.03: Probability.

See class description for STAT 3360.03, in the Statistics section of this calendar.

CROSS-LISTING: STAT 3360.03

MATH 3380.03: Sample Survey Methods.

See class description for STAT 3380.03, in the Statistics section of this calendar.

CROSS-LISTING: STAT 3380.03

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

PREREQUISITE: MATH 2030, 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.

CROSS-LISTING: STAT 3460.03

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: 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 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.

CROSS-LISTING: ECON 3700.03

MATH 3800.03: Financial Economics.

See class description for ECON 3800.03 in the Economics section of this calendar.

CROSS-LISTING: ECON 3800.03

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 or permission of the instructor

CROSS-LISTING: ECON 3900.03

CO-REQUISITE: MATH 3110.03 or permission of the instructor

MATH 4010.03: Introduction to Measure Theory and Integration.

A discussion of Lebesgue's theory of measure and integration on the real line. The topics include: the extended real number system and its basic properties; 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 3500.06

CROSS-LISTING: MATH 5010.03

MATH 4020.03: Analytic Function Theory.

A second half-class in complex 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 (MATH 3080 recommended)

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 3030.06 or equivalent

CROSS-LISTING: MATH 5025.03

MATH 4045.03: Advanced Algebra I.

Topics may include: structure of groups, rings, fields, and modules; Galois theory. Other topics of special interest may be covered.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030.06

CROSS-LISTING: MATH 5045.03

MATH 4055.03: Advanced Algebra II.

Topics may include: Algebras over a field, classical representation theory of groups and algebras, lattices, Boolean algebra. Additional topics may be covered at the discretion of the instructor.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3030.06

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 3030.06

CROSS-LISTING: MATH 5065.03

MATH 4066.03: Advanced Statistical Theory I.

CROSS-LISTING: MATH 5066.03, STAT 4066.03/5066.03

MATH 4070.03: Topics in Number Theory.

The class is intended to give an introduction to both analytic and algebraic number theory. Following a short review of basic notions from elementary number theory, there will be a detailed discussion of quadratic reciprocity and some of its applications and extensions. 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. Finally, some fundamental properties of algebraic number fields will be discussed, with some emphasis on 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.

CROSS-LISTING: STAT 4090.03

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; further applications, such as digital signatures and identification. The class ends with a brief overview of other cryptosystems, such as elliptic curve cryptography.

PREREQUISITE: MATH 1000.03, 1010.03, 2030.03, and at least one full-year mathematics course beyond the first year

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.

CROSS-LISTING: CSCI 4113.03

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 3030.06 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 3030.03 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 5160.03, MATH 4160.03

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.

Topics covered include existence and uniqueness theorems, continuity of solutions, autonomous differential equations and their relation to dynamical systems and flows, and symmetry methods and reductions.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3500.06 (3090.03 and 3100.03), 2030.03/2040.03 or 2135.03 and 3120.03
CROSS-LISTING: MATH 5190.03

MATH 4195.03: Topics in Topology and Functional Analysis.

CROSS-LISTING: MATH 5195.03

MATH 4200.03: Ordinary Differential Equations - Qualitative Theory.

Qualitative theory is concerned with what can be determined about the phase-portrait and the general behaviour of solutions of differential equations even though those solutions are not explicitly exhibited. Topics are selected from Liapunov stability theory, stable and unstable manifolds of singular points and periodic solutions, classification of plane singular points, structural stability, differential equations on manifolds and Hamiltonian systems. Various equations occurring in applications are qualitatively analyzed. The precise topics and equations covered depend on the specific interests of the instructor and the students.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 4190.03
CROSS-LISTING: MATH 5200.03

MATH 4220.03: Introduction to Partial Differential Equations.

This course comprises a detailed examination of the principal methods for solving (well-posed) boundary value problems involving linear PDEs and includes; (i) Sturm-Liouville Theory, (ii) the method of Separation of Variables (Eigenfunction expansions), (iii) Green's Functions and (iv) the method of Integral Transforms. Existence and uniqueness properties of solutions are also examined. The derivation and classification of some important mathematical models involving conservation laws will be explored, specifically: (i) reaction-diffusion processes associated with heat diffusion and propagation of electric fields in a conducting medium and (ii) wave propagation phenomena including gravity and acoustic waves. Ill-posed problems from potential theory such as the inverse problem of electrocardiography will also be considered.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3110.03
CROSS-LISTING: MATH 5220.03

MATH 4230.03: Partial Differential Equations.

This class continues the theoretical study of partial differential equations and also introduces numerical methods of solution. Topics to be covered will be chosen from: the Rayleigh-Ritz method, Green's functions, finite difference and finite element methods, collocation, the method of lines, two-point boundary value differential equations.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 4220.03
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
PREREQUISITE: MATH 2000, MATH 2002, MATH 2030

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. Correctness will be proved, and complexity bounds given.

The link with Linear Programming, especially LP-Duality, will receive special attention. The theory of Linear Programming will be reviewed for this purpose. Algorithm complexity will be treated in context. The complexity classes P and NP will be loosely introduced and discussed through the comparison of examples such as matching vs. traveling salesman.

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, algebraic methods in graph theory.

FORMAT: Lecture 3 hours
PREREQUISITE: MATH 3330 or CSCI 3110 or permission of the instructor
CROSS-LISTING: MATH 5330.03, CSCI 4115.03

MATH 4340.3: Discrete Random Structures.

The combination of probability theory and combinatorics has given rise to both a rich new theory, as well as a wealth of applications. The so-called probabilistic method, namely, the application of probabilistic techniques to combinatorial problems, has given a new perspective on classical combinatorics. Probability is now also used successfully in the design of discrete algorithms. A combination of probability and combinatorics is often needed when modeling discrete processes and networks that occur in nature. This course will explore the use of probability on discrete structures. It will contain an introduction to probability and stochastic processes, and then focus on one or two research areas where probability and combinatorics interact.

FORMAT: Lecture 3 hours per week
PREREQUISITE: MATH 4330/5330 or MATH 2113 or permission from the instructor
CROSS-LISTING: MATH 5340

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. The modeling process shows how important and fundamental concepts in various branches of mathematics can be used to prove results in combinatorics that are not easily (nor perhaps at all) provable without the connections derived.

On the other hand, combinatorial modeling is a two-way street, and this course shall show how to model various non-combinatorial mathematics combinatorially. Examples include a formal version of the Cayley-Hamilton Theorem, the Little-Offord problem, and simultaneous coset representatives.

FORMAT: Lecture

PREREQUISITE: MATH 2060.03 and MATH 3030X/Y.06

CROSS-LISTING: MATH 5360.03

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 4530.03: Differential Geometry.

This class is an introduction to differential and Riemannian geometry. It serves advanced undergraduates and graduate students with interests in geometry and mathematical physics, and in particular general relativity. There are 4 major topic areas.

1. **Elements of Surface Theory.** First and second fundamental form; curvature; theorema egregium; intrinsic versus extrinsic geometry; parallel transport; geodesics.
2. **Tensors.** Vector spaces and duals; invariance; covariance; contravariance; exterior and tensor algebra.
3. **Differential Manifolds.** Review of point-set topology; charts and atlases. Vectors and the tangent bundle; vector fields and 1- parameter flows. Tensor fields. Intrinsic differential operations: pull-backs, the vector brackets, the exterior derivative. Differential forms and integration.
4. **Riemannian Geometry.** The metric tensor; length of curves and volume. The Levi-Civita connection; parallel transport and geodesics; curvature; covariant differentiation; the Laplacian and the gradient operators.

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 3065.03

CROSS-LISTING: MATH 5530.03

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.

PREREQUISITE: CSCI 2112.03, CSCI 3136.03

CROSS-LISTING: CSCI 4112.03

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, Goedel'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 3030.03 OR MATH 3500.03, OR CSCI 3110 AND CSCI 3136, 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. Computational tools (such as Maple V) will be incorporated for both pure and applied problems. This class will also introduce students to methods for searching the research literature. Students will be expected to record their work in personal journals that are typeset in LaTeX.

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

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—Go, Chess, Checkers and Dots-And-Box are such games. 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. If time permits, the latest developments in loopy and misere games will be covered.

PREREQUISITE: MATH 2030.03/2040.03, 2001.03/2002.03

CROSS-LISTING: MATH 5900.03

MATH 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 department as a written report. The student will also make an oral presentation of this work to the department. Students wishing to enroll in this class must have a suitable background in mathematics, and must meet with, and obtain the approval of, the mathematics honours co-ordinator before undertaking their project.

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

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Dean

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Undergraduate Advisors

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Co-op Academic Advisor

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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 (Dal), 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, Herbal Medicine)
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 (Dal), Molecular Genetics)
Faulkner, G., PhD (Dal) (Ultrastructural Analysis of Infection and Cancer Cells)
Garduno, R., PhD (Victoria) (Intracellular Pathogens)
Haldane, D.J.M., MBChB (Dundee), FRCP(C) (Medical Microbiology)
Issekutz, A.C., MD (Dal), FRCP(C), Prof., Pediatrics (Inflammation)
Lin, T.-J., PhD (Peking) (Mechanisms of Host Defense Against Pathogen Infection)

Assistant Professors

Davidson, R.J., PhD (Manitoba) (Antimicrobial Mechanisms of Action and Resistance)
Hatchette, T.F., MD (Memorial), Pathology (Clinical Virology and Influenza)
Johnston, B., PhD (Calgary) (Inflammation and Immune Response)
McCormick, C., PhD (British Columbia) (Viral Oncology)
Thomas, N., PhD (Queen's) (Molecular Bacterial Pathogenesis)
Wang, J., PhD (McMaster) (Mucosal Immunology and Vaccinology)

Senior Instructor

Murray, L.E., PhD (Dal) (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 2nd 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 65 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. 20-credit BSc with 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) and must, in their 2nd year, obtain a grade of at least B in MICI 2100.03 (BIOL 2004.03). 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 or CHEM 1041.03/1042.03
- 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 3033.03
- MICI 3114.03
- MICI 3115.03
- MICI 3119.03 (or BIOL 3113.03 or MICI 3118.03)

4000 level

- MICI 4900.06

A minimum of two and one-half additional credits (to make a total of 9) 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, 4027.03, 4100.03, 4114.03, 4115.03, 4116.03, 4118.03, 4302.03, 4610.06
- BIOC 4010.03, 4403.03, 4404.03, 4501.03, 4835.03
- BIOL 2004.03, 3101.03, 3102.03, 3113.03, 3322.03, 4101.03, 4104.03
- FOSC 3080.03, BIOE 3241.03

Notes:

1. In the following core classes, MICI 2100.03, 3033.03, 3114.03, 3115.03, 3118.03 (or equivalent) and MICI 4900.03 -- you must achieve a minimum grade of B in five and a minimum grade of B- in the sixth class.
2. If you take both MICI 2100 and BIOL 2004 and receive a grade of B- or lower in MICI 2100, you need to obtain a B+ in BIOL 2004 for the BIOL course to count as the MICI departmental core course requirement.
3. The honours research thesis (MICI 4900.06) can be done in either the Microbiology & Immunology, Biochemistry & Molecular Biology or Biology Departments (or in other departments in the Faculty of Science or Medicine if approved by the departmental Undergraduate Studies Committee). The thesis work, however, must be relevant to the interests of the Department.
4. Students should be aware of Academic Regulation 17. 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.
5. 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.

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 Courses Required at Upper Levels

- CHEM 2401.03 and 2402.03
- BIOC 2300.03 and 2610.03
- MICI 2100.03 or BIOL 2004.03
- BIOL 2020.03, 2030.03
- BIOC 3200.03, 3300.03, 3400.03
- MICI 3033.03, 3114.03, 3115.03, 3118.03 or alternates
- MICI 4610.06 or BIOC 4610.06
- one credit from BIOC 40XX, 43XX, 44XX, 45XX, or 47XX

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 with 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 2 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 2. 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 Courses Required

1000 level

- BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03
- CHEM 1011.03/1012.03 or CHEM 1041.03/1042.03

2000 level

- MICI 2100.03, BIOL 2020.03, BIOL 2030.03, BIOC 2300.03, BIOC 2610.03, CHEM 2401.03 and CHEM 2402.03.

3000 level

- BIOC 3400.03, MICI 3033.03, MICI 3114.03, MICI 3115.03 and MICI 3119.03 (or BIOL 3113.03 or MICI 3118.03) with a grade of C- or better.

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 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 Manager. 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 www.sciencecoop.dal.ca

Co-op Academic Advisor in Microbiology/Immunology: Dr. Stoltz (494-2590)

Email: dstoltz@dal.ca

III. Class Descriptions

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 class is strictly for students in pharmacy. Microbiology is learned over a three--week period by way of PBL tutorials, lectures and laboratory sessions. It addresses some basic principles of microbial structure, physiology and genetics in relation to microbial pathogenesis. General concepts of antibiotics and immunity are also discussed. Laboratory sessions using demonstrations and exercises are designed to complement the lectures and to provide a practical appreciation of the isolation, identification, cultivation and control of microorganisms.

INSTRUCTOR(S): L. Murray

FORMAT: Lecture 3 hours, tutorial 6 hours; 3 weeks

PREREQUISITE: BIOL 1000X/Y.06 or instructor's consent

MICI 1100.03: Health Science Microbiology.

Elementary bacteriology and immunology 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.

INSTRUCTOR(S): D. Haldane

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 through lectures, laboratory sessions and demonstrations. Topics include the structure, genetics and life cycles of microorganisms and viruses, as well as basic immunology. This is normally a required class for Microbiology and Immunology majors/ honours students (although BIOL 2004 is allowed as an alternative option); as such, it is directed primarily to second year students. In fact, roughly three out of four laboratory spaces will normally be reserved for second year students. It is suggested that students take BIOL 2030.03 concurrently with MICI 2100.03, if feasible. Final lab section assignments are made during the first lecture period. Consequently, because of limits to lab space, students not attending that lecture may be denied admission to the class EVEN IF THEY ARE ALREADY REGISTERED. Students wishing to repeat the class must have approval to do so from the class coordinator. MICI 2100.03 is the preferred route into other MICI offerings.

NOTE: Students cannot enter this class after labs have commenced.

INSTRUCTOR(S): D.B. Stoltz

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: Grade of B or better in BIOL 1010.03 and 1011.03 and first year chemistry (full credit) or an above median grade in the Biology and Chemistry components of the Dalhousie Integrated Science Program. Students lacking such prerequisites will be removed from the class list.

MICI 2115.03: Human Organs and Tissues.

Using a histology approach, students are expected to learn the fundamental associations that exist between essential body processes and the microscopic and molecular characteristics of cells, tissues and their main products. In general terms, the subject matter deals firstly with basic tissue types - the structure and function of their cells and products - and then considers the various ways in which tissues and organs are constructed and function at the cellular level normally and, when appropriate, in disease. The course is not intended to cover all typical topics of histology. Instead, the specific subject matter has been selected for its relevance and potential for complementing advanced courses in Microbiology and Immunology (e.g., MICI 3114, 3115 and 3118). This course is not appropriate for students who are taking or have previously taken other human histology courses.

INSTRUCTOR(S): G. Faulkner, G. Rowden, K. West, R. Liwski

FORMAT: Lecture 3 hours

PREREQUISITE: Grade of B or better in MICI 2100.03 or BIOL 2004.03

MICI 3024.03: Microscopy.

The class is concerned with biological ultrastructural analysis concentrating on transmission and scanning electron microscopy. The importance of a proper understanding of the physical and chemical principles governing technical procedures such as fixation, staining, freeze-fracture, colloidal gold probes, autoradiography, x--ray microanalysis and photography is emphasized. During laboratory periods students have the opportunity through individual projects to participate in some of the techniques covered in the lectures.

INSTRUCTOR(S): G.T. Faulkner, D.B. Stoltz, G. Rowden, R. Garduno, P. Li, D. O'Neil

FORMAT: Lecture 3 hours, lab project

PREREQUISITE: Grade of B or better in MICI 2100.03 (or BIOL 2004.03) and BIOL 2020.03

CROSS-LISTING: BIOL 3024.03

MICI 3033.03: Microbial Genetics.

Heredity in bacteria and their viruses, with principal emphasis on mutation, gene transfer, molecular approaches to genetic analysis and regulation of gene expression on microorganisms.

INSTRUCTOR(S): C. Barnes

FORMAT: Lecture 3 hours

PREREQUISITE: Includes all of MICI 2100.03 (or BIOL 2004.03), BIOC 2300.03 and BIOC 2610.03, BIOL 2020.03 and BIOL 2030.03 and BIOC 3400.03 (a B average in these classes with a minimum B- in any one)

MICI 3114.03: Virology.

Viruses are extremely efficient nucleoprotein complexes that have played, and continue to play, significant roles in the analysis of gene organization and expression, cancer biology, molecular pathogenesis, cell biology, biotechnology, gene therapy and molecular evolution. This introductory class is designed to give the student an appreciation for the diversity of viruses and their biological interactions with the host at both a cellular and organismal level. Topics discussed include virus structure, assay, characterization, gene organization and expression, host-cell interactions, cell transformation and pathogenesis. The lecture material relies on concepts introduced in BIOC 2200.03, BIOL 2020.03 and BIOL 2030.03 and complements material presented in other classes such as immunology, cell biology, biochemistry, molecular biology and gene expression.

INSTRUCTOR(S): R. Anderson, R. Duncan, D.B. Stoltz

FORMAT: Lecture 3 hours, tutorial 1 hour

PREREQUISITE: Includes all of MICI 2100.03 (or BIOL 2004.03), BIOC 2300.03 and BIOC 2610.03, BIOC 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 concurrently with this class; the same grade requirement applies.

MICI 3115.03: Immunology.

This class is designed to provide the student with an understanding of the fundamental principles of cellular and molecular immunology. Lectures focus on mechanisms governing the generation and regulation of cell-mediated and humoral immune responses. Topics discussed include cells and tissues of the immune system, the structure and synthesis of antibodies, complement pathways, T cell subsets and their functions, hypersensitivity reactions and the genetics of the immune response.

INSTRUCTOR(S): D.W. Hoskin, A. Stadnyk, T. Lee

FORMAT: Lecture 3 hours

PREREQUISITE: Includes all of MICI 2100.03 (or BIOL 2004.03), 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 except BIOL 2004.03 which requires a minimum B).

MICI 3118.03: Medical Bacteriology.

This class is designed to give a strong background in medical bacteriology. Lectures address the identification and typing of bacterial pathogens, mechanisms of disease transmission, toxins and antibiotics, and provide a detailed survey of most bacterial pathogens. Laboratory sessions, supplemented with computer software, complement the lecture topics and focus on the identification of select groups of bacteria of medical significance.

INSTRUCTOR(S): TBA

FORMAT: Lecture 2 hours, lab 3 hours

PREREQUISITE: Minimum grade of B in MICI 2100.03 or BIOL 2400.03

MICI 3119.03: Physiology of the Prokaryotic Cell.

The course is designed to provide students with some fundamentals of bacteriology and in particular give students an appreciation of the complex physiological processes that are needed for interactions with other organisms and the environment. Topics discussed will include molecular architecture and assembly of cell parts, metabolism and energy production, utilization of energy for cell activities, adaptation responses to host and environmental challenges, and host-pathogen interactions.

INSTRUCTOR(S): S. F. Lee, R. Davidson

PREREQUISITE: MICI 2100 (or BIOL 2004), BIOC 2300 and BIOC 2610, BIOL 2020 and 2030, (a B average in these classes with a minimum B- in any one).

MICI 4027.03: Molecular Mechanisms of Cancer.

This class focuses on the molecular mechanisms of cancer and consists of lectures and student presentations. 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 4100.03: Processes and Mediators of Inflammation.

To provide students with an in depth understanding of the major mechanisms of inflammation at a molecular and cellular level; to introduce students to the current research questions and emerging methods of treatment for inflammation; to develop students' critical appraisal skills as they relate to the current scientific literature in this area.

INSTRUCTOR(S): B. Johnston and J. Marshall

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.

A class for advanced students designed to look in detail at selected aspects of molecular and medical virology. The class is based on student presentation of current literature, in combination with introductory lectures and paper discussions.

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.

An advanced lecture-based class in which students read and discuss review articles and research papers taken from the current literature in immunology. Particular emphasis is placed on mechanisms involved in the host immune response to pathogens and tumour cells. However, other major areas of immunology such as allergic inflammation and transplantation immunology are also covered.

INSTRUCTOR(S): D.W. Hoskin 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.

The mucosal immune system maintains a state of tolerance to environmental antigens while mounting a rapid and robust specific immune response to infectious agents. This balance has led to certain physical and functional characteristics unique to mucosal sites. This course is intended to accent these properties of the mucosal immune system, drawing on experimental and human examples. The course

consists of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Each week focuses on a single theme but covers topics in the gastrointestinal tract and respiratory and genitourinary systems. Students typically present two publications in the course. Evaluations are based on student presentations (30%), 5 page double-spaced written summaries of the discussion following (their own) presentations (20%), participation in the discussions of other student presentations (15%) and a 20 page double-spaced research report or grant on a topic chosen by the student (35%). There are no exams.

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.

An advanced class on the molecular basis of bacterial pathogenesis. The class uses selected bacterial pathogens to develop basic principles regarding genes encoding virulence factors, their regulation and the molecular function of their gene products in surface colonization, invasion, intracellular growth and toxin production. The class includes student presentations of original research papers, and emphasizes the use of modern molecular biological tools in problem solving.

INSTRUCTOR(S): R. Garduno

PREREQUISITE: MICI 3033.03

CROSS-LISTING: MICI 5118.03

MICI 4302.03: Molecular Immunology.

An advanced class which investigates the molecules involved in the generation and expression of immune responses. Topics typically include the molecular regulation of cytokines, the generation of antibody diversity by immunoglobulin gene rearrangement, class switching, the structure and function of cell surface Fc receptors such as the T cell antigen receptor, MHC and adhesion molecules, receptor signaling and the genetics of immune regulation. The course consists of lectures and student-led presentations and discussions of current publications (chosen by the course coordinator). Students typically present two publications in the course. Evaluation is based on student presentations (30%), 5 page double-spaced written summaries of the discussion following (their own) presentations (20%), participation in the discussions of other student presentations (15%) and a 20 page double-spaced research report or grant on a topic chosen by the student (35%). There are no exams.

INSTRUCTOR(S): A. Stadnyk

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.

MICI 4404.03: Gene Expression.

See class description for BIOC 4404.03 in the Biochemistry and Molecular Biology section of this calendar.

MICI 4601.03: Laboratory Techniques in Molecular Biology I.

This class consists of 2 scientific writing modules (15 hours in total of tutorials and computer-based assignments) and one laboratory module (4 weeks duration, one full day per week) organized collaboratively by the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in lab sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. This class is open to senior undergraduate students in the Science Co-op Program only and the number of places in the class is limited. Priority for enrolment is given to undergraduate students for whom this is a required class for their degree program. Students may not necessarily be assigned to the modules of their first choice but every effort will be made to accommodate those needing the techniques provided in a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Office prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

INSTRUCTOR(S): L. Murray; Biochem. & Molec. Biol., and Micro. & Immun., and Faculty members.
 FORMAT: Laboratory (32 hours total) and 20 hours of tutorial/computer
 PREREQUISITE: MICI 3033.03 and BIOC 3400.03 (grade of B or better) and consent of the coordinator
 CROSS-LISTING: BIOC 4603.03

MICI 4602.03: Laboratory Techniques in Molecular Biology II.

This class consists of 2 laboratory modules (each of 4 weeks duration, one full day per week) organized collaboratively by the departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in 2 lab sections covering techniques used in the study of molecular biology, protein structure-function, and specific metabolic processes. This class is open to senior undergraduate students in the Science Co-op Program only and the number of places in the class is limited. Priority for enrolment is given to undergraduate students for whom this is a required class for their degree program. Students may not necessarily be assigned to the modules of their first choice but every effort will be made to accommodate those needing the techniques provided in a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Office prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

INSTRUCTOR(S): L. Murray ; Biochem. & Molec. Biol., and Micro. & Immun. faculty members.
 FORMAT: Laboratory (64 hours total)
 PREREQUISITE: MICI 3033.03 and BIOC 3400.03 (grade of B or better) and consent of the coordinator

MICI 4610.06: Scientific Writing and Advanced Laboratory in Biochemical Techniques.

This class consists of a series of laboratory modules (3 modules each of 4 weeks' duration, 1 day per week or 72 hours in total with limited flexibility to accommodate the need to attend other classes) and tutorials with computer-based assignments designed to teach scientific writing techniques (15 hours in total). The class is organized collaboratively by the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology. A choice of modules is offered in 3 sections covering techniques used in the study of molecular biology, protein structure-function and specific metabolic processes. This class is open to senior undergraduate students and the number of places in the class is limited. Priority for enrolment is given to undergraduates for whom this is a required component of their degree program. Students may not necessarily be assigned to a module of their first choice but every effort is made to accommodate those needing techniques provided by a specific module. Students must obtain a class outline from the Biochemistry & Molecular Biology Department office prior to registration and attend the organizational meeting, the date of which will be indicated in the Registration Timetable.

COORDINATOR: L. Murray
 INSTRUCTOR(S): Faculty members of the Departments of Biochemistry & Molecular Biology, and Microbiology & Immunology
 FORMAT: Twelve 6-8 hour labs and four 3.5-hour tutorials/computer assignments
 PREREQUISITE: BIOC 3400.03 and MICI 3033.03 (Grade B or higher).
 Note: for Science Co-op Students, MICI 4601 and MICI 4602 is equivalent to MICI 4610
 CROSS-LISTING: MICI 5610.06, BIOC 5610.06, BIOC 4610.06, BIOL 4013.06, BIOL 5610.06

MICI 4700X/Y.06: Directed Research Project.

This class is in most respects equivalent to MICI 4900.06. Students are required to spend at least one day per week performing laboratory research. A final report on the research project must be submitted at the end on the academic year. This course is **NOT** intended for students in a regular BSc program.

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): 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 3033.03, 3114.03, 3115.03 and 3119.03 (or equivalent)

MICI 4701.03/4702.03: Advanced Topics in Microbiology and Immunology.

This is an independent studies class intended to correct a deficiency in a student's program.

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 class requires at least one day per week of laboratory research. A final report on the research must be submitted at the end of the academic year.

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): 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.

MICI 8895.00: Co-op Work Term V.

Neuroscience

Location: Psychology Department
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1355 Oxford Street
Halifax, NS B3H 4J1
Telephone: (902) 494-3417
Fax: (902) 494-6585
Websites: www.psychology.dal.ca
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Dean

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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 65 of this calendar.

A. 20-credit BSc with Honours in Neuroscience

This program, which is offered through the Department of Psychology, 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. Students interested in the Neuroscience Honours degree program should consult with Dr. S. Adamo or Dr. K. Duffy in the Department of Psychology at the end of their second year of study. Students are not admitted before the end of their second year.

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 nine credits in classes drawn from Neuroscience, Psychology and Biology. These include a number of required core classes which emphasize the acquisition and application of laboratory skills.

It is recommended that students in the Honours program locate 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. The supervisor should be a member of (or eligible for membership in) the Neuroscience Institute.

Grade Requirements

All students wishing to take Psychology/Neuroscience classes numbered 2000 or above for which Introductory Psychology or Introductory Biology is a prerequisite must have a grade of B- in two half credits (or a full credit) of Introductory Psychology classes (PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03) or Introductory Biology classes (BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03) or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33. An A- average is typically required for admission to Honours.

Students taking SCIE 1502X/Y.21 (DISP for Environmental Science) and wish to enter into a Neuroscience program should consult one of the Neuroscience advisors.

Departmental Requirements

1000 level

- MATH 1000.03
- 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 PHYC 1100X/Y.06 or 1300X/Y.06; or PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or in lieu of the above, SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Students are strongly recommended to take both PHYC 1100X/Y.06 or 1300X/Y.06 and PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03
- BIOL 2020.03 (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)
- Two half credits selected from: NESC 2130.03, 2140.03, 2160.03, 2170.03, 2270.03, BIOC 2200.03, BIOL 2030.03, PHYC 2250.03

3000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3370.03, 3371.03, 3440.03, 3775.03
- PSYO 3502.03
- Two additional half credits selected from NESC 3005.03, 3043.03, 3044.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3137.03, 3165.03, 3190.03, 3227.03, 3237.03, 3260.03, 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, 4230.03, 4374.03, 4376.03, 4377.03, 4740.03
- Two half credits from NESC 3000- or 4000-level classes
- Honours Qualifying Exam.

B. 20-credit BSc with 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 course 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
- 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 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Students are strongly recommended to take PHYC 1100X/Y.06 or 1300X/Y.06 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03
- BIOL 2020.03* (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)
- One half credit selected from: NESC 2130.03, 2140.03, 2160.03, 2170.03, 2270.03, BIOC 2200.03, BIOL 2030.03, PHYC 2250.03

3000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3370.03, 3371.03, 3440.03, 3775.03
- PSYO 3502.03
- At least one additional half credit selected from NESC 3005.03, 3043.03, 3044.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3137.03, 3165.03, 3190.03, 3227.03, 3237.03, 3260.03, 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, 4230.03, 4374.03, 4376.03, 4377.03, 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
- BIOL 2020.03* (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)

3000/4000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 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 Combined Honours 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.

C. 20-credit BSc with 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 only two credits of required 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 is a prerequisite must have a grade of B- in two half credits (or a full credit) of Introductory Psychology classes (PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03) or Introductory Biology classes (BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03) or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33.

Note: For the BSc, a minimum of seven and a maximum of ten (including four at or above the 3000 level) credits in the Major are required.

Departmental Requirements**1000 level**

- MATH 1000.03
- 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 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Students are strongly recommended to take PHYC 1100X/Y.06 or PHYC 1300X/Y.06 prior to finishing their degree

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03
- BIOL 2020.03 (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)
- Two half credits selected from: NESC 2130.03, 2140.03, 2160.03, 2170.03, BIOC 2200.03, BIOL 2030.03, PHYC 2250.03

3000 /4000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3370.03, 3371.03, 3440.03, 3775.03
- Two more half credits selected from NESC 3005.03, 3043.03, 3044.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3137.03, 3165.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, 4177.03, 4374.03, 4376.03, 4377.03
- 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 2200.03, 3200.03, BIOL 2030.03, 3020.03, PHYC 2250.03.

D. 20-credit BSc with 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
- 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 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Students are strongly recommended to take PHYC 1100X/Y.06 or 1300X/Y.06 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03
- BIOL 2020.03* (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)

3000/4000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 3370.03, 3371.03, 3440.03, 3775.03
- Two more half credits selected from NESC 3005.03, 3043.03, 3044.03, 3051.03, 3052.03, 3125.03, 3131.03, 3132.03, 3133.03, 3134.03, 3137.03, 3165.03, 3190.03, 3227.03, 3237.03, 3260.03, 3270.03, 3670.03, 3770.03, 3790.03, 3970.03, 4374.03, 4376.03, 4377.03
- 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 2200.03, 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
- 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 1011.03/1012.03 or PSYO 1021.03/1022.03
- Or, in lieu of the above, SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33

Students are strongly recommended to take PHYC 1100X/Y.06 or 1300X/Y.06 prior to finishing their degree.

2000 level

- NESC 2007.03
- NESC 2470.03
- NESC 2570.03
- PSYO 2501.03
- BIOL 2020.03* (SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33, or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03, or CHEM 1011.03/1012.03, or equivalents, are required as prerequisites for this class.)

3000/4000 level

- Two half credits of laboratory classes selected from NESC 3044.03, 3137.03, 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.

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 and 1012.03 or PSYO 1021.03 and 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.

Through a combination of lectures and labs, this class will introduce methods used to investigate contemporary issues in Neuroscience. Characteristics of these methods, including their strengths and limitations, will be presented conceptually in lectures, and then practically in the form

of supervised laboratory experiments where students will implement in the lab what they encountered first in lectures. The fundamentals of research design and analysis will be taught in the context of each method presented. Students will compose written reports detailing the experiments described in lectures and performed in the laboratory. This class is required for students pursuing a Neuroscience degree.

INSTRUCTOR(S): K.R. Duffy and S. Gadbois

FORMAT: Writing intensive, lecture 3 hours, research lab 2 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33, 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, coherent world of everyday experience 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 the internal representations used in thinking and remembering.

INSTRUCTOR(S): T. Taylor-Helmick

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

CROSS-LISTING: PSYO 2130.03

NESC 2140.03: Learning.

This class traces the experimental study of learning from the turn-of-the-century research of Pavlov and Thorndike to the present. Development of the field of animal learning is described in terms of the ways in which particular conceptions of the learning process have guided experimentation, and have in turn been revised on the basis of the outcomes of that experimentation. Some important concepts discussed are: association, attention, biological constraints on learning, classical conditioning, discrimination, expectancies, law of effect, learning-performance distinction, operant conditioning, S-S and S-R bonds, and stimulus control. The value of various approaches is discussed with respect to 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), rather than on learning a number of facts about animal learning.

INSTRUCTOR(S): V. LoLordo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

CROSS-LISTING: PSYO 2140.03

NESC 2160.03: Animal Behaviour.

Using concepts from evolutionary theory, neuroscience, endocrinology and psychology, animal behaviourists attempt to explain why animals behave the way they do. The class will examine topics such as mate choice, the evolution of behaviour, and animal communication. We will study the behaviour of a wide range of animals.

INSTRUCTOR(S): S. Adamo or S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 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.

An introduction to chemical signals of the neural, endocrine, and immune systems and the ways in which these neuro-chemicals interact to influence the brain and behaviour. Emphasis is on the mechanisms by which neurotransmitters, cytokines, and the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland control neural and behavioural

development, sexual, aggressive and maternal behaviour. Other topics covered are: hormone receptors in the brain; the menstrual cycle and human reproduction; puberty; sex differences in the brain; neurotransmitters; pheromones; stress.

INSTRUCTOR(S): R.E. Brown

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 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: Introduction to Neuroscience I. Brain Systems.

This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology. Introduction is also provided to recent advances in brain imaging and brain chemistry. This class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in those fields should see the Calendar entries for NESC/PSYO 2570.03 and/or NESC/PSYO 3970.03, respectively.

INSTRUCTOR(S): D. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03 (with a grade of B- or better)

CROSS-LISTING: PSYO 2470.03

NESC 2570.03: Introduction to Neuroscience II. Cellular Neurobiology.

Building on the knowledge of holistic aspects of brain function gained in NESC 2470.03, this class explores the neuronal basis of activity in all nervous systems. Starting with an analysis of the structure of neurons, the function of nerve cells will be explored with respect to the ionic and molecular basis of resting potentials and of electrical activity in nerve cells; synaptic transmission; the release and postsynaptic action of synaptic transmitters; aspects of the neurochemistry of synaptic transmitters and of drug action; and glial cells. Cellular phenomena relevant to neurological dysfunction will be discussed.

INSTRUCTOR(S): N. Crowder

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO/NESC 2470.03 or instructor's consent

CROSS-LISTING: PSYO 2570.03

NESC 3000X/Y.06: Independent Research in Neuroscience.

Primarily for Honours students wishing further experience in neuroscience research. Students not in the Honours program normally will be expected to have a grade of B or better in Psychology 2000.03, a high level of performance in other Neuroscience classes, and an overall B+ (GPA 3.30) average. A student in the class chooses a faculty member who serves as an advisor throughout the academic year, and under whose supervision independent research is conducted. Before registering for this class, a student must provide the coordinator of the class with a letter from the faculty member who has agreed to supervise the course of study. Class approval will not be given until this is done.

SIGNATURE REQUIRED

COORDINATOR: B. Earhard

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 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03 or NESC/PSYO 2470.03, 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 further experience in neuroscience research. Students not in the Honours program normally will be expected to have a grade of B or better in PSYO 2000.03, a high level of performance in other Neuroscience classes, and an overall B+ (GPA 3.30) average. A student wishing to take this class must find a faculty member who is prepared to supervise a directed research project. Before registering for this class, a student must provide the coordinator of the class 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.

COORDINATOR: B. Earhard

NOTE: This class cannot be used to fulfill the department's research laboratory requirement.

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, previous or concurrent enrolment in two other NESC/PSYO 3000-level classes, and Coordinator's consent.

CROSS-LISTING: PSYO 3001.03

EXCLUSION: PSYO/NESC 3000X/Y.06

NESC 3005.03: 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 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3005.03

EXCLUSION: PSYO/NESC 2150.03

NESC 3010X/Y.06: Advanced General Psychology.

For the advanced student, a review of general Psychology with the aim of consolidating the student's knowledge. The method is unconventional. With the assistance of the instructor, the student prepares material assigned to PSYO 1012.03 and 1022.03 students at a level which enables him or her to instruct introductory students in tutorial lab classes. The class is designed primarily for Honours students, or other advanced Psychology or Neuroscience students who may be suitably qualified. Prospective students are advised to consult the instructor in the spring of the preceding year.

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): H. Schellinck

FORMAT: Lecture/seminar 2 hours, tutorial lab 1 hour, skills lab

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 provides examination of the various forms of learning and neurological systems associated with these processes. Topics will include imprinting, song learning by birds and classical and operant conditioning. We will also discuss the biological significance and evolutionary origins of these systems.

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: PSYO 3043.03

NESC 3044.03: Laboratory Methods of Learning and Conditioning.

Students will learn hands-on several methods of examining learning and memory in animals, while also understanding some of the neurological systems involved. They normally work in small groups, each responsible for conducting a series of experiments. While cooperating in their research and in some aspects of data analysis, each student write his or her own reports on the experiments completed; students will also complete a final, independent paper.

INSTRUCTOR(S): L. Phillmore

FORMAT: Research lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and one of PSYO/NESC 2140.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3044.03

EXCLUSION: PSYO 3042.03

NESC 3051.03: Sensory Neuroscience I. Vision.

Because our visual perceptions are rich, varied and with few exceptions, arise quickly, flawlessly and without apparent cognitive effort, it might be thought that the underlying processes are simple. That this is not the case is illustrated by the difficulty with which the performance of our biological visual system can be matched by artificial systems. Beginning with a description of the information available in the retinal image, this class will examine the neural basis for the perception of light, colour, movement, depth and form in a variety of species chosen to illustrate common as well as specialized mechanisms of neural processing. In addition, the class will describe the development of perception and discuss the extent to which performance at any age is constrained by the anatomical and physiological development at various levels within the visual pathway.

INSTRUCTOR(S): K. Duffy

FORMAT: Lecture 3 hours, research lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2150.03 or NESC/PSYO 2470.03 or PSYO 2770.03

CROSS-LISTING: PSYO 3051.03

NESC 3052.03: Sensory Neuroscience II. Hearing and Speech.

Hearing and speech are two behavioural capacities of fundamental importance to normal human communication. This lecture class is designed to provide a basic understanding of the peripheral and central neural mechanisms of hearing, and of some psychological and physiological processes involved in speech production and speech perception. The class is intended for those students anticipating more advanced training in neural mechanisms of hearing, speech science, human communication disorders and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address pathology where evidence from pathological subjects is pertinent to understanding normal function. Class content: introductory acoustics; structure and function of the outer and middle ears; structure and function of the cochlea; hair cell physiology and sensory transduction; coding of simple and complex sounds in the auditory nerve; sound localization mechanisms as an example of the correspondence between the physical properties of the stimulus, neural sensitivity and behavioural performance; theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech 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 3125.03: Biology of Excitable Cells.

Neurons (including sensory receptors) and muscle cells are described as "excitable" because they have the common property of using variations in electrical membrane potential to accomplish various functions. These cells are otherwise remarkably diverse in terms of their morphology, mode of action, and development. This class is intended for students who have a good awareness of general cell biology and who are interested in acquiring notions of cell biology that are specific to excitable cells. Topics will include ion channels, protein trafficking, myelin and glia, mechanism of neurotransmitter release, ionotropic and metabotropic neurotransmitter

receptors, secondary messengers, gene expression, axonal pathfinding and synaptic plasticity.

Another goal is to introduce participants to critical scientific thinking. To this end, a large component of the class will involve discussing original research papers in class.

INSTRUCTOR(S): P. Cote

FORMAT: Lecture 1.5 hours, seminar 1.5 hours

PREREQUISITE: BIOL 2020.03 (B+ or better) or permission of instructor

CROSS-LISTING: BIOL 3125.03

NESC 3131.03: Research Methods in Attention.

Most closely associated with selection (our ability to focus on some things to the exclusion of others), attention is an umbrella term that also covers the concepts of alertness, arousal, preparation and control. Neglected by mainstream Psychology for the first half of the 20th century, this gateway to awareness has since returned to centre stage. In this laboratory class, we will explore the methods, findings and theories that have driven recent advances in our understanding of attention. While laboratories will emphasize behavioural methods that have been used to isolate and reveal the components of attention, in class we will also cover neuroscientific evidence (human neuroimaging, single unit recording, breakdowns following brain damage, etc.) and computational models 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, and one of PSYO/NESC 2130.03 or PSYO/NESC 2150.03 or PSYO/NESC 3005.03

CROSS-LISTING: PSYO 3131.03

EXCLUSION: PSYO/NESC 3130.06

NESC 3132.03: Research Methods in Visual Cognition.

Visual cognition is the study of how meaning is extracted from visual information in the environment: how it is represented in memory, transformed as knowledge, and used to direct our behaviour. It involves the processes of perception, memory, attention and motor response. This class will investigate object, face and word recognition as revealed by normal behaviour, 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, and one of PSYO/NESC 2130.03 or PSYO/NESC 2150.03 or PSYO/NESC 3005.03

CROSS-LISTING: PSYO 3132.03

EXCLUSION: PSYO/NESC 3130.06

NESC 3133.03: Research Methods in Memory.

This class will focus on the study of human memory from the perspective of cognitive psychology and, to a lesser extent, cognitive neuroscience. Topics may include, but will not be limited to: Sensory memory, the modal model, working memory models, processing perspectives, forgetting, implicit memory, autobiographical memory, amnesia, and reconstructive processes. The lectures will emphasize cognitive behavioural 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, and PSYO/NESC 2130.03

CROSS-LISTING: PSYO 3133.03

EXCLUSION: PSYO/NESC 3130.06

NESC 3134.03: Research Methods in Psycholinguistics.

This class builds on the fundamentals of Psycholinguistics covered in PSYO/NESC 3190.03, providing students with hands-on experience using various methodologies employed in the study of language processing, and using these to explore topics in Psycholinguistics in greater depth. Labs will provide hands-on experience with numerous psycholinguistic methods including reaction time, priming, self-paced

reading, computational modeling, corpus-based research, and event-related brain potentials. Topics include processing at the phonological, morphological, syntactic, and semantic levels; reading; signed language; and computational modeling of language processing. Students will 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, and PSYO/NESC 3190.03

Please note: Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

CROSS-LISTING: PSYO 3134.03

EXCLUSION: PSYO/NESC 3130.06

NESC 3137.03: Research Methods in Cognitive Neuroscience.

Cognitive neuroscience aims at understanding the neural bases of perception, cognition, and action through the integration of behavioural and neuroimaging techniques. This class will focus on the various techniques used in this endeavour, including the technologies available, the methodologies employed, and the limitations of these techniques. Examples from various areas of inquiry (e.g., language, vision, attention, memory) will be used to illustrate both applications and limitations. Techniques to be covered include event-related potentials (ERPs), functional magnetic resonance imaging (fMRI), diffusion MRI tractography (DTI), magnetoencephalography (MEG), positron emission tomography (PET), near-infrared optical imaging (NIRS), transcranial magnetic stimulation (TMS), and intracranial electrical recording and stimulation. The laboratory component will include experience in the recording and analysis of ERP data and in the analysis of fMRI data, as well as demonstrations of fMRI data acquisition. Students will 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, and PSYO/NESC 2130.03

CROSS-LISTING: PSYO 3137.03

NESC 3165.03: Neuroethology.

Neuroethology explores how assemblies of neurons work together to produce behaviour. This new scientific discipline lies at the intersection of behavioural ecology and neuroscience. In this class, we will examine the neural control of selected behaviours taken from a wide range of animals, both invertebrate and vertebrate. From this comparative perspective we will determine whether there are common themes in the physiological control of behaviour. All of the experiments in the laboratory component of the class will involve insects. Students will need to handle the 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 3070.06 or MARI 3071.06; 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 3190.03: Psycholinguistics.

Learning, understanding, and producing language requires the integration of numerous perceptual and cognitive processes and is a skill unique to humans. This class will explore the cognitive and neural bases of natural human language processing. Topics will include: comparisons of human language with other communication systems; processing at the phonological, morphological, lexical, sentence, and discourse levels; first and second language acquisition; the relationship of language processing to more general cognitive functions such as attention and memory, as well as to music and mathematics; and the processing of signed languages such as American Sign Language as well as non-linguistic gesture.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2130.03

Please note: Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

CROSS-LISTING: PSYO 3190.03

EXCLUSION: PSYO/NESC 2190.03

NESC 3227.03: Principles of Human Neuropsychology.

This survey class examines how higher cognitive, emotional, and social functions are organized in the human brain. Topics covered include: What happens to these abilities when parts of the brain are damaged or diseased? How do clinicians diagnose and rehabilitate clients with brain disorders? Which behavioural interventions help individuals adjust to aphasia, apraxia, dyslexia, neglect, spatial disorientation, visual agnosia, amnesia, and inattention? Students integrate empirical findings from several technologies and research methodologies such as structural and functional brain anatomy and imaging, early and late brain lesions in animals and humans, clinical diagnosis, neuropsychological testing, and clinical outcomes. The class should provide students with insight into the professional life of clinical neuropsychologists.

INSTRUCTOR(S): J. McGlone

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of NESC/PSYO 2270.03 or 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 will be discussed. Specific topics will cover alcohol, tobacco, amphetamines, cocaine, opiates, hallucinogens, tranquilizers and antipsychotic drugs.

INSTRUCTOR(S): J. Stamp

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2150.03, 2170.03, 2270.03, 2470.03, 2570.03, or PSYO 2770.03

CROSS-LISTING: PSYO 3237.03

NESC 3260.03: Biological Rhythms.

The temporal structure of animal and human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioural system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and depression.

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

CROSS-LISTING: PSYO 3260.03

NESC 3270.03: Developmental Neuroscience.

This class introduces students who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of neural development, especially at the cellular level. The first part of the class will link the early events of neural development to general embryonic development. Cell determination, pattern regulation, cell production, cell-lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-neuron interactions and synapse formation using invertebrate and vertebrate examples.

INSTRUCTOR(S): K. Duffy
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and NESC/PSYO 2470.03 and NESC/PSYO 2570.03
 CROSS-LISTING: PSYO 3270.03

NESC 3370.03: Neuroscience Laboratory I.

The two classes NESC/PSYO 3370.03 and 3371.03 (see next entry) are coordinated and provide introduction to several techniques used in contemporary neuroscience. The following information applies to these classes as a pair, between which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor system preparations. Neuroanatomical analysis is introduced by way of techniques usually selected from the following: Golgi impregnation of neurones, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system.

INSTRUCTOR(S): Staff
 FORMAT: Lab 3 hours
 PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or 3270.03, and instructor's consent
 CROSS-LISTING: PSYO 3370.03

NESC 3371.03: Neuroscience Laboratory II.

For a description of this type of neuroscience lab class, see the entry under 3370.03 above; usually, 3371.03 is coordinated closely with 3370.03. Lab II usually, but not always, runs in the second term and develops different research approaches.

SIGNATURE REQUIRED
 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, and instructor's consent
 CROSS-LISTING: PSYO 3371.03

NESC 3440.03: Neuroanatomy.

This class consists of a survey of the histology, development and organization of the human central nervous system (brain and spinal cord), with emphasis on the organization of sensory and motor systems. The class provides the basic neuroanatomy module for neurobiology classes in Physiotherapy and Occupational Therapy, and the lecture and laboratory component for the graduate class ANAT 5100 Human Neuroanatomy.

ORGANISER: R.A. Leslie
 BACKUP ORGANISER: F.M. Smith
 OTHER INSTRUCTORS: 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.

This class will examine the application of genetic techniques to the study of brain and behaviour in animals and humans. The class will consist of four sections: basic genetics, neurogenetics, neurogenetic analysis of animal behaviour, and neurogenetic analysis of human behaviour. During the class, topics in bioinformatics and neuroinformatics and the use of genetic data bases will be considered. Substantial attention will be given to transgenic laboratory mouse models of human neurological and behavioural disorders. Students will acquire information about the genetic basis of cognitive abilities, psychopathology, personality disorders, 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 will also be explored.

INSTRUCTOR(S): T. Perrot-Sinal
 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 1501X/Y.27 or SCIE

1502X/Y.21 or SCIE 1503X/Y.21 or SCIE 1504X/Y.27; 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 concerns itself with the neural mechanisms underlying a variety of behavioural phenomena. Its subject matter includes the neural mechanisms controlling a variety of regulatory and motivational systems, including: feeding, drinking, reward, sexual and parental behaviour, temperature regulation, sleep and waking, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.

INSTRUCTOR(S): S. Gadbois
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 or PSYO 2770.03
 CROSS-LISTING: PSYO 3770.03

NESC 3775.03: Behavioural Neuroscience Laboratory.

The purpose of this laboratory class is to expose students who are motivated to pursue a career in neuroscience, or in a related biomedical discipline, direct experience of research involving studies of the nervous system in relation to behaviour. Students will be expected to acquire skills in animal handling, animal care, recovery surgery, behavioural observations, and histological analysis of the brain. Acquisition of these methods during the class should facilitate students' research efforts in their honours theses.

SIGNATURE REQUIRED
 INSTRUCTOR(S): T. Perrot-Sinal
 FORMAT: Research lab 3+ hours
 PREREQUISITE: PSYO/NESC 3770.03 and instructor's consent
 CROSS-LISTING: PSYO 3775.03

NESC 3790.03: Neurolinguistics.

The class will cover: 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, and 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 continues concepts introduced in NESC/PSYO 2570.03, from the cellular/molecular basis of neuronal function to the role of gene expression in development, maintenance, and pathology of the nervous system. Models of normal and pathological neuronal function are presented and dissected to the level of messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The mechanisms underlying normal neuronal function are presented using both developmental and adult model systems. The role of genetic versus epigenetic factors in development of the functioning nervous system is covered. As well, the importance of gene products like neurotrophic factors in developing and adult brain is stressed. Part of the class is also devoted to understanding how normal cellular and molecular processes can go awry to produce neuropathology, which may underlie neuropsychiatric and neurodegenerative disorders. Throughout the class, there is an emphasis on learning the theory underlying basic cellular and molecular neuroscience tools.

INSTRUCTOR(S): T. Perrot-Sinal
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO/NESC 2570.03
 CROSS-LISTING: PSYO 3970.03

4000-level Seminars

The following seminars (4000-4440) 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. Consult the department for the specific class descriptions.

NESC 4000.03: Senior Seminar.

See class description for PSYO 4000.03 in the Psychology section of this calendar.

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4000.03

NESC 4050.03: Topics in Perception.

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO/NESC 3051.03 or instructor's consent

CROSS-LISTING: PSYO 4050.03

NESC 4070.03: Neuroscience Seminar.

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO 2470.03, 2570.03 or 3270.03, or instructor's consent

CROSS-LISTING: PSYO 4070.03, ANAT 5070.03

NESC 4130.03: Topics in Human Information Processing.

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4130.03

NESC 4160.03: Topics in Behavioural Biology.

FORMAT: Seminar 2 hours

CROSS-LISTING: PSYO 4160.03

NESC 4170.03: Topics in Behavioural Neuroendocrinology.

Topics in Behavioural Neuroendocrinology will consist of discussions of the most current literature relating to the role of steroid hormones in development, maintenance, pathology, and aging of the brain. We will discuss how the brain is affected by steroids at both cellular and systems levels and how this ultimately impacts on a diverse range of behaviours from reproduction to cognition. Students will be assessed with regard to their ability to actively engage in discussions during class time, provide insightful reviews of particular topics in the form of written papers, and present scientific papers to the class.

FORMAT: Seminar 2 hours

PREREQUISITE: Restricted to NESC/PSYO Honours Students

CROSS-LISTING: PSYO 4170.03

NESC 4177.03: Theoretical Neuroscience.

This class introduces basic concepts of theoretical and computational neuroscience on a cellular, network and system level. This includes cellular mechanisms such as spike generation, dendritic computations, and synaptic plasticity, network-level concepts such as population coding, perceptrons and associative attractor networks, and system-level organizations such as invariant representations and complementary memory systems. This class includes an introduction to the MATLAB programming environment and numerical techniques. The class requires basic programming and mathematical skills.

INSTRUCTOR(S): T. Trappenberg

FORMAT: Seminar

PREREQUISITE: Intended for third- or fourth- year Neuroscience students. Permission of the instructor required.

NESC 4230.03: Human Performance Topics.

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: S.E. Howlett

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, 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 over-the-counter drugs, herbal medication, drug abuse, and industrial development of new drugs, plus a section on how drug actions and handling are altered in pregnancy, the elderly, and in children are included.

NESC 4377.03: Introduction of Pharmacology III.

This class will present practical aspects of how experimental data related to fundamental questions in the field of pharmacology are obtained. Basic pharmacologic concepts .e.g., drug absorption and distribution, receptor binding, concentration-response relationships, antagonism, post-receptor events) will be emphasized and presented in a variety of preparations (cells, isolated tissues, whole animals). In addition to the set laboratories, more extensive exercises based on themes presented in groups of laboratories may be assigned as experimental problems (e.g., unknowns) or as written exercises (literature-based problems, computer simulations). The class will relate pharmacologic methodologies to related areas of neuroscience, biology and biochemistry.

INSTRUCTOR(S): J. Downie

FORMAT: Lab 3 hours

PREREQUISITE: BIOC 4804.03 or BIOL 4404.03 or NESC 4374.03, and permission of the instructor

CO-REQUISITE: BIOC 4805.03 or BIOL 4407.03 or NESC 4376.03

CROSS-LISTING: BIOC 4805.037 or BIOL 4408.03 or PHAC 5410.03

COORDINATOR: H.A. Robertson

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.

The purpose is to acquaint the student with a current problem and the related research procedures in experimental neuroscience. Each student works with a staff member who advises the student about research in the area of interest, and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research. The final grade is based upon the originality and skill displayed in executing the project, with emphasis upon the submitted report and an oral presentation.

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): Staff

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.

This seminar class will examine current research in the study of the neurobiology of learning and memory through presentations and discussions of journal articles. Classes will consist of review papers and research papers. Students will present the research papers and direct the class in the discussion. Grades will be given for presentations and participation in discussion and for an essay, which will be a critical enquiry into one of the topics covered in the class.

FORMAT: Seminar 2 hours

PREREQUISITE: NESC/PSYO 2470.03, NESC/PSYO 2140.03

CROSS-LISTING: PSYO 4740.03

Oceanography

Location: Life Sciences Centre
Halifax, NS B3H 4J1
Telephone: (902) 494-3557
Fax: (902) 494-3877
Email: Oceanography@Dal.ca
Website: <http://www.dal.ca/oceanography>

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chairperson of Department

Boudreau, B.P. (494-3557)

Undergraduate Advisor

Metaxas, A. (494-3021)

Graduate Advisor

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 (Dal), (Canada Research Chair)

Bentzen, P., BSc (McGill), MSc (UBC), PhD (McGill) (cross appointment with Biology), DFO Chair in Fisheries Resource Conservation Genetics

Boudreau, B.P., BSc (UNB), MS (Texas A & M), PhD (Yale)

Cullen, J., AB (Calif), PhD (Scripps) (NSERC/Satlantic Research Chair) (Killam Chair in Ocean Studies)

Grant, J., BSc (Duke), PhD (South Carolina)

Greatbatch, R.J., BSc (Liverpool), PhD (Cambridge) (NSERC/MARTEC/AES Research Chair)

Hay, A., BSc, MSc (Western), PhD (UBC)

Hill, P.S., AB (Dartmouth), MSc, PhD (Wash)

Lewis, M.R., BS, MS (UMd), PhD (Dal)

Louden, K.E., BA (Oberlin), MEd (Temple), PhD (MIT)

Moore, R.M., BA (Oxon), PhD (Southampton)

Ruddick, B.R., BSc (UVic), PhD (MIT)

Thompson, K.R., BSc, MSc (UManc), PhD (Liv) (jointly with Mathematics and Statistics) Canada Research Chair

Associate Professors

Folkins, I., BSc (Dal), MSc, PhD (Toronto) (cross appointment with Department of Physics and Atmospheric Science)

Kelley, D., BSc (Mt A), PhD (Dal)

Metaxas, A., BSc (McGill), MSc (UBC), PhD (Dal) (NSERC UFA)

Sheng, J., BSc (East China Tech. Univ.), MSc, PhD (MUN) (NSERC/MARTEC/AES/Research Chair)

Taggart, C.T., BSc (Carleton), MSc (York), PhD (McGill)

Thomas, H., MSc (Düsseldorf), PhD (Rostock)

Assistant Professors

Fennel, K., MSc, PhD (Rostock), Canada Research Chair

Gentleman, W.C., BEng (McGill), PhD (Dartmouth) (cross appointment with Engineering Mathematics)

Kienast, M., BSc (Clausthal), MSc (Kiel), PhD (UBC) (CIAR Scholar)

Ross, T., BSc, PhD (NSERC UFA)

Honorary Adjunct Professors

Azetsu-Scott, K., BSc, MSc (Japan), PhD (Dal)

Cranford P., BSc, PhD (Dal)

DiBacco, C., BSc, MSc (Dal), PhD (Scripps)

Frank, K.T., BSc, PhD (Toledo)
 Hellou, J., BSc (Montreal), MSc, PhD (UBC)
 Huisman, R.S., MSc, PhD (Vrije)
 Johnson, B., BEng (North Carolina), PhD (Dal)
 LeVasseur, M., BSc, MSc (Laval), PhD (UBC)
 Li, W.K.W., BSc (UBC), PhD (Dal)
 Mosher, D.C., BSc (Acadia), MSc (MUN), PhD (Dal)
 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)
 Sathyendranath, S., BSc (St. Teresa's College), PhD (Univ. P&M Curie)
 Smith, P.C., BSc, MS (Brown), PhD (MIT/WHOI)
 Vezina, A., BSc (Laval), PhD (McGill)
 Wright, D., BSc (Laurentian), PhD (UBC)

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 Concentration 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 course 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 65 of this calendar.

A. Combined Honours Program: Marine Biology/Oceanography

Oceanography is intended to be the second or 4-credit honours subject and Marine Biology is intended to be the primary or 7-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 7 nor fewer than 4 in either. Core Biology requirements for the current Marine Biology Program (e.g. 1000-3000 level courses in the Calendar) are unchanged. Other courses 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 courses.

To fulfill the requirements for the combined program, students will take 2 credits in required Oceanography courses. In addition, students will need to choose 2 elective credits in Oceanography at minimum to complete the program. Finally, students working with faculty in Oceanography 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 3001.03 Introduction to Physical Oceanography
- OCEA 3002.03 Introduction to Chemical Oceanography
- OCEA 3003.03 Introduction to Biological Oceanography
- OCEA 4140.03 Biological Oceanography
- BIOL 4900.06 Honours Thesis/Project
- BIOL 8880.00 Honours Qualifying Examination

Electives

- OCEA 4160.03 Fisheries Oceanography
- OCEA 4330.03 Benthic Ecology
- OCEA 4331.03 History of Marine Sciences *
- OCEA 4380.03 Marine Modelling **
- OCEA 4370.03 Deep Sea Biology
- OCEA 4230.03 Biology of Phytoplankton
- OCEA 4335.03 Environmental Impacts in Marine Ecosystems

*as available

**given alternate years

B. Combined Honours Program: Chemistry/Oceanography

Oceanography is designated as the 4-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 8 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 or
CHEM 1041.03 + 1042.03 Introduction to Chemistry
- *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 + 2302.03 Thermodynamics + Kinetics and Dynamics
- *CHEM 2401.03/2402.03 Organic Chemistry
- *CHEM 2505.03 Environmental I

3000 and 4000 level classes (chemistry)

- *CHEM 3201.03 + 3202.03 Spectroscopy & Separations + Instrumental Methods
- *CHEM 4203.03 + 4205.03 Environmental II + Chemometrics
- Three classes from CHEM 31XX, 33XX, 34XX, 4304†
- *CHEM 8880‡ Honours Qualifying Exam

Oceanography and related classes

- *OCEA 2000.06 The Blue Planet
- OCEA 2800.03 Climate Change
- EARTH 2400.03¹ Marine Geoscience

- *OCEA 3001.03 Introduction to Physical Oceanography
- *OCEA 3002.03 Introduction to Chemical Oceanography
- OCEA 3003.03² Introduction to Biological Oceanography
- OCEA 3004.03³ The Last Billion Years
- OCEA 3420.03⁴ Geochemistry of Aquatic Environments
- *OCEA 4130.03 Introductory Chemical Oceanography
- OCEA 4331.03⁵ History of Marine Sciences
- OCEA 4520.03 Introduction to Atmospheric Sciences
- OCEA 4595.03⁶ Atmospheric Chemistry
- OCEA 4290.03⁷ Advanced Chemical Oceanography (modular)
- *OCEA 4900.06 Honours Research Project

† - CHEM 4203 and 4205 are not taught every year; students may need to take them in the third year of their program.

‡ Students will conduct their Honours thesis work as OCEA 4900, but will defend their project in the Chemistry Department as part of CHEM 8880

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 courses and 1.0 credits of non-required OCEA and related courses.

In addition, one credit from MATH 2001+2002 (calculus), or 2060+2080 (stats).

Recommended other courses (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 course and a Isotope Chemistry course

C. Combined Honours Program: Earth Sciences and Oceanography

Oceanography is designated as the 4-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 7 nor fewer than 4 in either; at a maximum, student will choose 13 credits beyond 1000-level in two subjects with not more than 9 nor fewer than 4 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

**as available

These Oceanography credits must be combined with core Earth Sciences classes, which constitute 5 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 7-credit honours subject and Oceanography the second or 4-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 7 nor fewer than 4 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 Courses

- MATH 3110.03/3120.03 Differential Equations
- MATH 3170.03 Introduction to Numerical Linear Algebra
- MATH 3210.03 Introduction to Numerical Analysis
- MATH 4220.03/4230.03 Partial Differential Equations
- MATH 4270.03 Numerical Software

Remaining Oceanography Electives Should Be Chosen From:²

- OCEA 2800.03 Climate Change
- OCEA 3002.03 Introduction to Chemical Oceanography
- OCEA 3003.03³ Introduction to Biological Oceanography
- OCEA 3004.03 The Last Billion Years
- OCEA 4110.03 Geological Oceanography
- OCEA 4140.03³ 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 4350.03 Marine Geophysics
- OCEA 4380.03 Marine Modelling

1 - 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.

2 - Not all these classes are taught yearly. Students must consult with the Oceanography Department to determine available classes. Students should also be aware of prerequisites or permissions needed for any of these classes.

3 - Only one of OCEA 3003 and OCEA 4140 can be counted towards Combined Honours degree. OCEA 3003 is currently given in the summer session.

Note: Cross-listed classes can only be counted once for the fulfillment of degree requirements.

E. Combined Honours Programs: Physics/Oceanography

Oceanography is designated as the 4-credit component of the Combined Honours Degree. At least 11 credits beyond the 1000 level are required in Physics and Oceanography. The additional 9 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[†]
- PHYC 4160.03: Math Methods in Physics
- PHYC 4100.03: Electrodynamics.

Other required classes as dictated by pre-requisites for the different physics courses offered:

- CHEM 1011.03/1012.03: General 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.

[†] 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:

- 2000X/Y.06 or 2001A/2002B: The Blue Planet
- 4120.03: Physical Oceanography
- 4311.03: Fluid Dynamics 1

The following classes are available to fill the remaining OCEA credits*:

- 4130.03: Chemical Oceanography
- 4210.03: Time Series Analysis in Oceanography and Meteorology
- 4220.03: Numerical Modelling of Atmospheres and Oceans
- 4221.03: Ocean Dynamics
- 4222.03: Estuary, Coast and Shelf Dynamics
- 4250.03: Acoustical Oceanography
- 4350.03: Marine Geophysics
- 4520.03: Introduction to Atmospheric Science
- 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. - Not all classes are taught yearly. Students in the program must consult regularly with the Undergraduate Coordinator in each Department. Students should also be aware of prerequisites or permissions needed for any of these classes as specified by the calendar.

F. Combined Honours Program: Statistics/Oceanography

Oceanography is designated as the 4-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 7 nor fewer than 4 credits in either. At a maximum, the student will choose 13 credits beyond the 1000 level in two subjects, with no more than 9, nor fewer than 4 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 The Moving Ocean

Elective Oceanography courses¹ taken from the following list so that the total number of OCEA credits is at least 4.

- OCEA 2800.03 Climate Change
- OCEA 3002.03 Introduction to Chemical Oceanography
- OCEA 3003.03² Introduction to Biological Oceanography
- OCEA 3004.03 The Last Billion Years
- OCEA 4110.03 Geological Oceanography
- OCEA 4140.03² 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 4290.03 Advanced Chemical Oceanography
- OCEA 4311.03 Fluid Dynamics I
- OCEA 4330.03 Benthic Ecology
- OCEA 4335.03 Environmental Impacts in Marine Ecosystems
- OCEA 4350.03 Marine Geophysics
- OCEA 4370.03 Deep Sea Biology
- OCEA 4380.03 Marine Modelling

Required Statistics/Mathematics Courses

- 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 courses 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 courses 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) Time Series Analysis I

Either

- OCEA 4200.06³ Honours Thesis

or

- STAT 4950.03³ Honours Research Project

1 - Not all these classes are taught yearly. Students must consult with the

Oceanography

Department to determine available classes. Students should also be aware of prerequisites or permissions needed for any of these classes.

2 - 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.

3 - 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.

Fundamental Science

As part of the first year requirements students must take either Integrated Science Program (DISP), or CHEM 1011/1012, MATH 1000/1010, and PHYC 1100.

Possibility of additional MATH/PSYC courses in consultation with advisor.

Honours Qualifying Examination

The Honours Qualifying Examination for students in the combined degree is the same as that for Honours Earth Sciences students, namely a written report on the Advanced Field School and oral presentation and defence of the honours thesis.

III. Class Descriptions**OCEA 2000X/Y.06: The Blue Planet.**

A general survey of Oceanography showing how the oceans, which account for more than 70% of the earth's surface, function as a dominant environmental force. Consideration also is given to man's impact on this ecological system. Designed to give a background or feeling for the ocean, what oceanography is, and what oceanographers do. It is not a good "background to science" class, since little feeling will be obtained for scientific techniques which would otherwise be acquired in a laboratory class. Most of the material covered is descriptive rather than basic, inasmuch as it is impossible in the time allowed and the material covered to also teach the basic required sciences.

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. Hill

FORMAT: Lecture 3 hours

EXCLUSION: OCEA 2001.03/2002.03, OCEA 2850.06, OCEA 2851.03/2852.03

OCEA 2001.03: 2002.03: The Blue Planet.

These classes will cover topics already described under OCEA 2000.06 and are only open to Marine Biology Co-op students that are unable to take OCEA 2000.06 due to their work-term schedules. These students must take both classes as they are mandatory requirements for Marine Biology Honours. The format, instructor and prerequisites are the same as for OCEA 2000.06.

EXCLUSION: OCEA 2000.06, OCEA 2850.06, OCEA 2851.03/2852.03

OCEA 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

CROSS-LISTING: PHYC 2800.03, GEOG 2800.03

OCEA 3001.03: Introduction to Physical Oceanography.

This course introduces the Physics of the Ocean, focusing on issues of interest to undergraduates in ocean-related disciplines. The course starts with a sketch of seawater properties and air-sea interactions, and then moves on to address the dynamics of ocean flows in both general and specific terms. A wide variety of scales will be discussed, from centimeter-scale turbulence to the global "conveyor belt" popularized in recent films. Although some general themes are certain to be covered - e.g., the importance of the ocean to climate and the connection between ocean Physics and ocean Biology and Geology - there is plenty of room for flexibility. The class is tailored to the interests of the students, from year to year.

INSTRUCTOR(S): D. Kelley

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 2000

EXCLUSION: OCEA 3170

OCEA 3002.03: Introduction to Chemical Oceanography.

Why is the sea salty? Why is the dominant salt in the Oceans NaCl? Has it always been that way? Do the salts affect life in the oceans? Does life affect the chemistry of the oceans? Can the chemistry of oceans affect climate? Can man change the chemistry of the Oceans? This course is intended to answer such questions by giving students an understanding of the composition of seawater and the processes that leads to this composition. This understanding will be both qualitative and quantitative through the use of thermodynamic, kinetic and box models to describe the balances that produce the observed chemical distributions in the sea.

INSTRUCTOR(S): H. Thomas

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011 and CHEM 1012 or equivalents, and OCEA 2000

EXCLUSION: OCEA 3170

OCEA 3003.03: Introduction to Biological Oceanography.

This course explores the interrelationships between living organisms in the sea and the ocean environment. The course material provides first a basic background to dynamical biological processes, such as absorption of light, photosynthesis, nutrient uptake, respiration, grazing, microbial degradation, production/decomposition of organic particles, and physiological and population level adaptation to variations in the marine environment. These processes are then considered in the context of the physics and chemistry of large scale oceanographic ecosystems such as upwelling regions, the oligotrophic gyres, coastal environments, and the high latitude oceans. The emphasis is on a quantitative approach.

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 during the last billion years of Earth history. The geological evidence of major events will be described, and the hypothesized causes of the events will be examined critically in the context of that evidence. The goal of this course is to develop on the part of students an understanding of the functioning of the earth/ocean/atmosphere system, with emphasis on the connections among various processes that regulate and record Earth's biogeochemical cycles. Students will receive basic instruction in plate tectonics, in dating methods, and in the use of stable isotopes as environmental proxies. Examples of events to be studied include the Neoproterozoic "Snowball Earth," mass extinctions at the close of the Paleozoic and Mesozoic eras, Mesozoic ocean anoxic events, the Cenozoic cooling, the Messinian salinity crisis, the onset of ice ages in the Pleistocene, and glacial outbreak floods. The course will have two field trips.

INSTRUCTOR(S): P. Hill

PREREQUISITE: OCEA 2000X/Y and EARTH 1010 and EARTH 1020 or permission of the instructor

OCEA 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

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 1011.03/1012.03 or equivalent and EARTH 1010.03/1020.03

CROSS-LISTING: EARTH 3420.03

OCEA 4110.03: Geological Oceanography.

This class is intended to give a broad survey of topics in marine geology and geophysics for new students in Oceanography at a graduate level. No previous background in Geology or Geophysics is required. The class content covers recent methods and observations with quantitative applications to an understanding of geophysical and geological processes. Some topics covered in Part 1 are plate tectonics and seismic, heat flow, gravity, and magnetic methods. In Part 2 patterns and processes of sediment transport and deposition are explored. Some laboratory exercises augment the lectures, including a field cruise to Bedford Basin.

INSTRUCTOR(S): K. Loudon

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 5110.03, EARTH 4110.03

OCEA 4120.03: Physical Oceanography.

This class explores the physical forces driving the oceans, and describes the responses of ocean water to these forces. Scales of ocean motion discussed range from currents of oceanic dimensions, like the Gulf Stream, through tides and waves, down to very small-scale random movements of water known as turbulence. This class takes a quantitative approach in which equations describing the fluid motions and phenomena are derived, analyzed, and discussed. 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): R.M. Moore

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.

Biological oceanography is a quantitative science. Its goal is to describe how physical, chemical and biological processes interact to determine the species composition, biogeochemical activities, and trophic structure of marine communities. At the conclusion of this introduction to biological oceanography, students should possess a basic knowledge of biological oceanographic processes, and how they interact with the Earth's physical and chemical environment. Outstanding problems currently facing biological oceanographers and earth systems scientists will be discussed, as will current attempts and methodologies to address them. Students will demonstrate their accomplishment of these objectives by satisfactory performance on two examinations, completion of assignments including quantitative problem solving, and satisfactory participation in class discussion. Students should be competent in mathematics through calculus.

INSTRUCTOR(S): J. Cullen

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 5140.03, BIOL 4661.03, 5661.03, MARI 4661.03

OCEA 4160.03: Fisheries Oceanography.

Students who are not competent with fundamental population dynamics, ecology, physical oceanography, calculus, statistics, and computerized analysis should not enroll. The class focuses on the ecology of marine fish (including significant advances made in freshwater systems) and on the biotic and abiotic influences on marine fish population dynamics and production, distribution and abundance. Lectures include reproduction, early life history, feeding, growth, metabolism, mortality, and recruitment variability and forecasting. Emphasis is placed on: 1) hydrological and meteorological processes influencing the above and on 2) the primary literature, current problems and hypotheses, and fruitful research directions, approaches and techniques. Some emphasis is also placed on the application of scientific insights to fishery management techniques. Students are required to write a primary publication-style research paper.

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 those students in the honours program. It will consist of a research project carried out under the supervision of a faculty member and will contain some original component on any aspect of oceanography. The results of the research will be submitted to the Department as a report that will be graded. The student must also make oral presentations of this work to the Department. Students wishing to enter this class must have an appropriate background in Chemistry or Earth Sciences and Oceanography, and they must meet with the Coordinator of Honours projects before undertaking their project. The consent and signature of the Coordinator are required. In addition, a research advisor must be identified amongst the faculty members of the Oceanography Department, and that person's written consent is also 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.

PREREQUISITE: This class is open only to students enrolled in the Combined Honours in Chemistry and Oceanography, the Combined Honours in Mathematics and Oceanography or the Combined Honours in Statistics and Oceanography or the Combined Honours in Earth Sciences and Oceanography. Students enrolled in the Combined Honours in Marine Biology and Oceanography must enrol in BIOL 4900.

Chemistry students must also be enrolled in CHEM 4880 and participate in all activities associated with that class. All Earth Science students must simultaneously attend all classes and activities associated with EARTH 4200.

All Mathematics students must simultaneously attend all classes and activities associated with MATH 4950. All Statistics students must

simultaneously attend all class and activities associated with STAT 4950.

Students will have completed all OCEA 3000 level courses and have the consent of the Oceanography Undergraduate Coordinator.

OCEA 4210.03: Time Series Analysis in Oceanography and Meteorology.

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. INSTRUCTOR(S): K. Thompson
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 is intended for students who will benefit from an in-depth knowledge of numerical modelling techniques for simulating atmospheric and oceanic circulations. Material includes: review of derivation of the governing equations; finite difference, finite element, and spectral methods of solving spatial partial differential equations; Eulerian, semi-implicit and semi-Lagrangian time integration techniques; accuracy and computational stability analyses; an introduction to data assimilation and ensemble prediction methods; boundary treatment for ocean models. Evaluation is based on periodic assignments, tests, computer laboratory exercises, and a final exam. 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 graduate 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, waves of frequency f , response to surface forcing (steady and unsteady), baroclinic/barotropic instability, quasi and semi-geostrophic frontogenesis, and tropical dynamics. INSTRUCTOR(S): B. Ruddick
CROSS-LISTING: OCEA5221.03

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, themohaline 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

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. Emphasis is on the current literature. INSTRUCTOR(S): M. Lewis/J. Cullen
FORMAT: Lecture 3 hours, some labs
PREREQUISITE: Instructor's consent
CROSS-LISTING: BIOL 4662.03, OCEA 5230.03, MARI 4662.03

OCEA 4250.03: Introductory Acoustical Oceanography.

This class is intended to provide an Introduction to Acoustical Oceanography for students at the senior undergraduate and graduate levels, and for the non-specialist in ocean studies.

The class covers the basic theory of sound propagation and scattering in the ocean environment, and the applications to acoustic remote sensing of the ocean interior. The areas of application include: Physical oceanography, biological and fisheries oceanography, and marine geophysics and geology. The class is open to students with backgrounds in the life and environmental sciences, as well as in the physical sciences and engineering.

INSTRUCTOR(S): A. Hay

FORMAT: Lecture 3 hours

PREREQUISITE: MATH 2001.03 and 2002.03 or equivalent and instructor's consent

CROSS-LISTING: OCEA 5250.03

OCEA 4290.03: Advanced Chemical Oceanography.

This class presents topics that are at the cutting-edge of research in chemical oceanography, taught as 3-4 self-contained modules. Example topics include, the oceanic CO₂ system and its relation to climate change, chemical reactions in sediments and the consequent exchange of chemicals with the ocean, photochemistry in the upper ocean, and inferring the chemistry of ancient oceans through the isotope record in sediments. INSTRUCTOR(S): Moore, R.

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

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.

An advanced level graduate class concentrating on the major problems of benthic ecology, such as how food is supplied to benthic animals, what factors control the structure of biological communities, and how the benthos is related to geomicrobiological processes in the sediments. The class is heavily oriented to the current literature. 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. Students are required to have a background in ecology, statistics and invertebrate zoology.

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.

Marine environments are subject to a variety of environmental impacts caused by resource extracting and utilization as well as waste disposal. These impacts arise from oil and gas production, ocean dumping, coastal habitat alteration and eutrophication, effluent inputs, urbanization, shipping, fisheries, and aquaculture. This course will review the effects of these types of activities on marine environments, with a focus on ecosystem level influences including dispersion, elemental fluxes benthic impacts, food webs, and biodiversity. Approaches to quantifying these processes and predicting impacts will be explored. Specifically, simulation modelling of impacts and ecosystems will be undertaken using Stella graphical modelling software as well as other tools. The course will examine practical solutions to environmental assessment, monitoring, and prediction using modelling, data collection, and analysis. classes will include lectures, modelling examples (computer projection), and discussion of research papers, Course requirements will consist of problem sets and a student modelling project.

INSTRUCTOR(S): J. Grant

FORMAT: Lecture

CROSS-LISTING: OCEA 5335.03

CO-REQUISITE: BIOL 2001.03, 2060.03, MATH 1000.03, STAT 1060, or permission of the instructor.

OCEA 4370.03: Deep Sea Biology.

The class examines the biology of organisms inhabiting deep sea environments. We will explore physiological adaptations to the physical, chemical and geological environmental characteristics; describe spatial and temporal distributional patterns of the biological assemblages; examine regulatory factors of these patterns, such as ocean circulation, food availability, reproduction and recruitment; and delve into habitats of special interest such as hydrothermal vents and cold seeps.

INSTRUCTOR(S): A. Metaxas

PREREQUISITE: At least 2 of BIOL 2060.03, BIOL 2001.03 or OCEA 2850.06

CROSS-LISTING: BIOL 4350.03, BIOL 5370.03, MARI 4370.03, OCEA 5370.03

OCEA 4380.03: Marine Modelling.

A graduate level survey of modelling techniques applied to biological-physical problems in oceanography. Lecture material includes: philosophy of modelling, dimensional analysis, parameterization of unresolved processes, numerical representation of ordinary or partial differential equations, model validation and fundamental limits to predictability and frequency domain analysis. Students are given the opportunity to study special topics in the current literature, e.g. prey-predator models, spatial patchiness models, models of the biomass size spectrum, models of pollutant dispersal, etc.

INSTRUCTOR(S): K. Fennel

FORMAT: Lecture 3 hours

PREREQUISITE: OCEA 4120.03, MATH 4220.03 and Instructor's consent

CROSS-LISTING: OCEA 5380.03

OCEA 4411.03: Atmospheric Dynamics I.

See class description for PHYC 4411.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4412.03: Atmospheric Dynamics II.

See class description for PHYC 4412.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4470.03: Introduction to Seismic Imaging.

See class description for EARTH 4470.03 in the Earth Sciences section of this calendar.

CROSS-LISTING: EARTH 4470.03

OCEA 4480.03: Advanced Seismic Imaging.

See class description for EARTH 4480.03 in the Earth Sciences section of this calendar.

CROSS-LISTING: EARTH 4480.03

OCEA 4500.03: Atmospheric Physics I.

See class description for PHYC 4500.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4510.03: Atmospheric Physics II.

See class description for PHYC 4510.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4520.03: Introduction to Atmospheric Science.

See class description for PHYC 4520.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4541.03: Synoptic Meteorology I.

See class description for PHYC 4540.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4550.03: Synoptic Meteorology II.

See class description for PHYC 4550.03 in the Physics and Atmospheric Science section of this calendar.

OCEA 4595.03: Atmospheric Chemistry.

See course description for PHYC 4595 in the Physics and Atmospheric Science section of this calendar.

INSTRUCTOR(S): R. Martin

FORMAT: Lecture 3 hours

PREREQUISITE: Instructor's consent

CROSS-LISTING: OCEA 5595.03, PHYC 4595.03, PHYC 5595.03, CHEM 4595.03

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Associate Professors

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Hewitt, K., BSc (Toronto), PhD (Simon Fraser), P. Phys.
Hill, I.G., BSc, PhD (Queen's)
Kyriakidis, J., BSc, MSc (Dal), PhD (Basel)

Labrie, D., BSc (Montreal), MSc, PhD (McMaster)
Lesins, G.B., PhD (Toronto)
Maksym, G.N., PhD (McGill), primary appointment in the School of Biomedical Engineering
Martin, R.V., BS (Cornell), MS, PhD (Harvard), cross appointment with Environmental Programs, Chemistry
Rutenberg, A.D., BSc (Toronto), PhD (Princeton)
Tindall, D.A., BA, PhD (Cantab), P. Phys.

Assistant Professors

Bonev, S.A., MSc (Dalhousie), PhD (Cornell)
Hall, K.C., MSc, PhD (Toronto), Canada Research Chair, Ultrafast Science
Hale, M., BSc, PhD (UNB), primary appointment with Radiation Oncology
Kreplak, L., MSc (Supelec), PhD (Univ. Paris XI)
Monchesky, T., BSc (Toronto), PhD (Simon Fraser)
Robar, J., MSc (McGill), PhD (UBC), primary appointment with Radiation Oncology
Wells, S.M., BSc (Western), PhD (Toronto) (NSERC University Faculty Award), primary appointment with Medicine

Senior Instructors

Fyfe, F.M., MSc (Dal)
Zukauskas, W., BSc (Dal)

Adjunct Professors

Austin, R., PhD (McMaster) Astronomy & Physics, SMU
Azzouz, M., PhD (J.F., France), Physics & Astronomy, Laurentian University
Barkanova, S., PhD (Univ of Manitoba), Acadia
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), Astronomy and Physics, SMU
Chylek, P., PhD (U of Cal), LANL
Hornidge, D., PhD (U of Saskatchewan) Physics, Mount Allison
Lohmann, U., PhD (Hamburg), ETH, Zurich, Switzerland
Paton, B.E., PhD (McGill), Dalhousie
Robertson, M., PhD (Waterloo), Physics, Acadia
Sarty, A., PhD (U of Saskatchewan) Astronomy and Physics, SMU

Postdoctoral Fellows/Research Associates

Bayinder, Z., PhD (Clark)
Garsuch, A., PhD (Leipzig)
Garsuch, R., PhD (Leipzig)
Hatchard, T., PhD (Dal)
Lamsal, L., PhD (Universität Bremen)
Payne, S.H., PhD (Cantab)
Stevens, D., PhD (Dal)
Sudiarta, W., PhD (Dal)
Wang, R.L., PhD (Dal)
Westreich, P., PhD (Simon Fraser)
Yang, R., PhD (CAS, Beijing)
Zhao, F., PhD (University of Science & Technology of China)

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 1100X/Y.06, and 1300X/Y.06 both give a general introduction to physics, but each has its own particular approach and selection of topics.

PHYC 1100X/Y.06 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.

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 (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 567 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 concentration 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 65 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 1100X/Y.06 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 2135.03 or MATH 2300.03 or MATH 2400.03)
- MATH 3110.03/3120.03
- Three 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

A full-credit class in scientific computer programming is recommended to be taken before the end of the second year.

Honours Qualifying Exam

In general terms, the "honours qualifying examination" grade is determined by averaging Grade Points of the best ten third and fourth year ½ credit honours classes. For full details see the department website (www.physics.dal.ca)

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 "15-credit BSc with Concentration 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: www.physics.dal.ca.

C. 20-credit BSc with Major in Physics

A 20-credit BSc with major in Physics will normally include the following classes:

1000 level

- PHYC 1100X/Y.06 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

Classes from other departments

- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- CHEM 1011.03/1012.03

D. 15-credit BSc with Concentration in Physics

A 15-credit BSc with Concentration in Physics will normally include the following classes:

1000 level

- PHYC 1100X/Y.06 or 1300X/Y.06 or SCIE 1501X/Y.27 or SCIE 1510X/Y.33

2000 level

- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03

3000 level

- Four physics half credits at the 3000 level or above

Classes from other departments

- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- CHEM 1011.03/1012.03

The 15-credit BSc can be combined with a Diploma in Engineering (see also III below)

Completion of the 15-credit BSc 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 Program Advisor for your work term sequence.

See the "Co-operative Education in Science" section of this calendar, or 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 www.physics.dal.ca and follow the links to the Science Co-op website.

Co-op Program Advisor in Physics: D. Labrie (494-2322)
Email: 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 (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.

Physics and Engineering

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 www.physics.dal.ca for more information).

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.

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.

Minor in Business

A Minor in Business may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Degree Requirements section of this calendar for details.

Minor in Canadian Studies

The Minor in Canadian Studies is available to students registered in the BSc 20-credit major and honours programs. The requirements are as for the appropriate degree program with one full credit in French at the 1000 level (or a transfer credit in an aboriginal language), plus four full credits above the 1000 level as described on page 76.

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:

- PLAN 1001.03 and PLAN 1002.03
- Either PLAN 2001.03 or PLAN 2002.03
- Seven additional half-classes (21 credit hours) in PLAN classes. See page 86 for further details

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 certain CSCI classes. For details on which classes to include, consult the Faculty of Computer Science.

BCS with a Minor in Physics

The Minor in Physics requires completion of the physics classes specified in the 15-credit BSc with Concentration in Physics. See section II, Degree Programs on page 491.

Minor in Environmental Studies

A Minor in Environmental Studies may be completed as part of an Honours or Major degree, each of which involves 20 credits. Consult the Environmental Programs section of this calendar for details.

Minor in Film Studies

A Minor in Film Studies is available as part of a BA, BSc Major and BA Honours (20-credit) degree only. Consult the Degree Requirements section of this calendar for details.

IV. Diploma in Meteorology**A. 20-credit BSc with 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 1100X/Y.06
- PHYC 2140.03/2150.03
- PHYC 2515.03/2510.03
- Two other half credits at the 2000 level or above in physics

- MATH 1000.03/1010.03
- MATH 2001.03/2002.03
- MATH 2030.03 and (MATH 2040.03 or MATH 2300.03 or MATH 2400.03)
- MATH 3110.03
- CHEM 1011.03/1012.03
- Plus 13 half-credit electives (some of which could be additional physics classes)

The required Meteorology classes are:

- PHYC 4500.03/4510.03
- PHYC 4540.03/4550.03
- PHYC 4411.03/4412.03
- PHYC 4520.03/4595.03
- OCEA 4120.03
- PHYC 4570.03, 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://www.atm.dal.ca/dmet/>.

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 1000X/Y.06: Survey of Physics.

PHYC 1100X/Y.06: Introduction to Physics.

Primarily for students interested in the Physical Sciences and Engineering. This class is required for all Engineering programs.

Students entering this class should be familiar with algebra, graphs and trigonometry, and should be taking calculus (MATH 1000.03/1010.03) concurrently. The class concentrates on three main areas: Mechanics, Oscillations and Waves, and Electricity and Magnetism. As far as possible, the basic ideas are introduced through in-class demonstrations, enabling students to relate the verbal and mathematical descriptions to events in the real world. In addition, students are able to explore the physical world via labs.

1. Students taking this class must register in both X and Y in consecutive terms; credit will be given only if both are completed consecutively.
2. Labs do not start until the second week of 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.

INSTRUCTOR(S): K.C. Hall, J. Dahn

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. 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, 1280.03/1290.03, 1300X/Y.06, or 1310.03/1320.03

PHYC 1280.03/1290.03: Introduction to Physics.

These two half classes are, as a pair, equivalent to PHYC 1100X/Y.06. They are available ONLY to accommodate special circumstances; permission from the Department is required.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 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.

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: 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): 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. 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, 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.

EXCLUSION: Credit will be given for only one of PHYC 1000X/Y.06, 1100X/Y.06, 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. The aim of this class is the development of a coherent, though temporary and incomplete, view of the astronomical universe, a view where both familiar elements and strange each have their places. Topics include "naked eye" astronomy; nature and properties of Sun and stars, stellar evolution from gas cloud to black hole; cosmology - the origin and fate of the universe; the solar system. Occasional evening observing.

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. 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): W. Zukauskas

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 2050.03: Computer Simulations in Science.

Computer simulation is one of the most powerful methods in science today. This class introduces techniques in computer simulation, including continuous and discrete-event models, Monte Carlo methods, object-oriented design and scientific visualization. Examples, assignments, projects and tutorials will be chosen from physics, chemistry and mathematics. The course is suitable for students in Science, Computer Science and Engineering.

PREREQUISITE: PHYC 1100.03, CHEM 1011.02/1012.03, MATH 1000.03/1010.03

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): L. Kreplak

FORMAT: Lecture 3 hours, Tutorial 1 hour

PREREQUISITE: PHYC 1100X/Y.06 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): I. Hill

FORMAT: Lecture 1 hrs, Lab 5 hrs

PREREQUISITE: PHYC 1100X/Y.06 or 1300X/Y.06 or SCIE 1500X/Y.30 and a 1000-level calculus class, or permission of instructor

PHYC 2240.03: Biophysics.

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.

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 1100X/Y.06 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 1100X/Y.06 or PHYC 1300X/Y.06, MATH 1010.03, CHEM 1011.03

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 2500.03: Oscillations and Waves.

PHYC 2505.03: Mechanics and Relativity.

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): L. Kreplak

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 introduction to quantum physics discusses some of the difficulties of classical physics in explaining blackbody radiation, photoelectric effect and the Compton effect. The concept of wave-particle duality is introduced for light and particles, de Broglie waves and electron diffraction are discussed. The Schroedinger equation is applied to one-dimensional examples. The concept of tunnelling through classically forbidden regions is discussed. Tutorials are offered.

INSTRUCTOR(S): A. Rutenberg

FORMAT: Lecture 3 hours, tutorial 1.5 hours

PREREQUISITE: PHYC 1100.06 or PHYC 1300.06 or SCIE 1500.03, and a 1000 level calculus class

PHYC 2520.03: Thermodynamics.

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 1100.06 or PHYC 1280.03 or permission of the instructor

PHYC 2800.03: Climate Change.

The Earth's climate has changed on time scales from hundred's of millions of years as a result of tectonic activity to tens of thousands of years due to changes in the Earth's orbital parameters to as short as decades from the burning of fossil fuels by humans. Special attention will be given to the unique role that varying atmospheric carbon dioxide concentrations have had in determining climate throughout the history of the Earth and its influence for future global warming which may become the greatest environmental issue of this century. Although this course is inherently multidisciplinary borrowing concepts from physics, geology, chemistry, biology, meteorology and oceanography it is designed to be a first introductory course for students interested in the explanation of climate change and is open to all students from all backgrounds.

INSTRUCTOR(S): G. Lesins

FORMAT: 3 hours

CROSS-LISTING: GEOG 2800.03, OCEA 2800.03

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.

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.

INSTRUCTOR(S): D. Labrie

FORMAT: Lecture 1.5 hours, lab 6 hours

PREREQUISITE: PHYC 3000.03, or permission of instructor

PHYC 3160.03: Topics in Physics.

PHYC 3170.03: Topics in Physics.

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): D.A. Tindall

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.

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.

In this class the tools are developed to link the physical laws of the microscopic world to those of the macroscopic world, and the underlying atomic processes of the laws of thermodynamics are explored.

INSTRUCTOR(S): H.J. Kreuzer

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

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 1100X/Y.06 or 1300X/Y.06 and a 2000-level Calculus class, or permission of the instructor

PHYC 3303.03: Materials Science.

The emphasis of this class will be on the exposition of the underlying principles involved in understanding physical properties of materials, such as thermal and mechanical stability, and electrical and optical properties. All phases of matter will be examined: gases, liquids, films, liquid crystals, perfect crystals, defective solids, glasses. The principles of important processes such as photography and Xerography will be explained.

INSTRUCTOR(S): M.A. White

FORMAT: Lecture 3 hours

PREREQUISITE: CHEM 2301.03 or PHYC 3200.03 or EARTH 2001.03/2002.03 or ENGI 2800.03 or permission of the instructor

CROSS-LISTING: CHEM 3303.03

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 3540.03: Optics and Photonics.

Topics in physical and geometrical optics will be covered. Selected applications will be presented in certain areas of photonics, including micro-optic sensors, semiconductor lasers and detectors, optical waveguides and fibres, optical signal processing and telecommunications.

INSTRUCTOR(S): I. Hill

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2150.03 and PHYC 2510.03 or MATH 2002.03

PHYC 3590.03: Advanced Classical Mechanics.

Topics include: central force motion, the principle of virtual work, Lagrange's equations, the principle of least action, Hamilton's equations, canonical transformations, Hamilton-Jacobi equation.

INSTRUCTOR(S): T. Monchesky

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03, MATH 2002.03

PHYC 3640.03: Quantum Physics I.

This course is a modern introduction to quantum theory. Dirac notation is introduced and used throughout. The structure of the theory is investigated through the physics of spin-1/2 particle. Topics covered include Stern-Gerlach experiments, matrix mechanics, angular momentum, time evolution, wave mechanics, and symmetry in the two-body problem.

INSTRUCTOR(S): A. Rutenberg

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.

INSTRUCTOR(S): B. E. Paton

FORMAT: Lecture 3 hours, computer lab 3 hours

PREREQUISITE: PHYC 2150.03, PHYC 3340.03

CROSS-LISTING: CSCI 3122.03

PHYC 4100.03: Electrodynamics.

Topics include electrostatics and magnetostatics, boundary value problems, fields in matter, time-dependent phenomena, Maxwell's equations, electromagnetic waves, radiation and special relativity.

INSTRUCTOR(S): D.A. Tindall

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2150.03, MATH 3110.03

CROSS-LISTING: PHYC 5100.03

PHYC 4151.03: Quantum Physics II.

This class is a continuation of PHYC 3640.03. Topics include: time-independent perturbation theory, the variational principle, the WKB approximation, time-dependent perturbation theory, scattering, Born approximation.

INSTRUCTOR(S): A. Rutenberg

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 3640.03

CROSS-LISTING: PHYC 5151.03

PHYC 4152.03: Quantum Physics III.

Topics covered include scattering theory, symmetries, relativistic quantum mechanics, second quantization, many-body systems and quantum applications in materials science.

INSTRUCTOR(S): A. Rutenberg

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4151.03

CROSS-LISTING: PHYC 5152.03

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 4170.03: Topics in Mathematical Physics.

Topics will likely include functional integrals and derivatives applied to quantum systems, (e.g., Feynman path integrals and their generalizations) statistical systems, tensor analysis, general relativity and Noether's theorem relating symmetry to conservation laws in physics.

INSTRUCTOR(S): J. Kyriakidis

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4160.03 or permission of instructor

CROSS-LISTING: PHYC 5170.03, MATH 4175.03

PHYC 4180.03: Nuclear and Particle Physics.

This is an introductory class in nuclear physics. Topics discussed include: nucleon-nucleon interactions, nuclear structure, gamma transitions, alpha decay, beta decay, nuclear reactions and elementary particle physics.

INSTRUCTOR(S): R.A. Dunlap

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 3640.03

CROSS-LISTING: PHYC 5180.03

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): R. Dunlap

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 4311.03/5311.03

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): T. Duck

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 and MATH 3110.03 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): T. Duck

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4411.03 or permission of the instructor.

CROSS-LISTING: PHYC 5412.03, OCEA 4412.03/5412.03

PHYC 4500.03: Atmospheric Physics I.

The first part of the course deals with an overview of classical thermodynamics and its application to the atmosphere where the role of water in all its phases is emphasized. The second part of the course is on the solar and terrestrial components of atmospheric radiative transfer.

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03 or permission of the instructor

CROSS-LISTING: PHYC 5500.03, OCEA 4500.03/5500.03

PHYC 4510.03: Atmospheric Physics II.

The major topics covered in this class are the physics of clouds and storms. Other topics include aerosol physics, lightning and radar techniques. Other topics are covered at the discretion of the instructor.

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 4500.03 or permission of instructor

CROSS-LISTING: PHYC 5510.03, OCEA 4510.03/5510.03

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.

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.

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.

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.

FORMAT: Lecture 3 hours

PREREQUISITE: PHYC 2140.03, PHYC 2510.03

CROSS-LISTING: PHYC 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: PHYC 2140.03 and a first year chemistry course

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. Rotermund

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 honours 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

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 courses 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 www.physics.dal.ca.

Psychology

Location: Life Sciences Centre
1355 Oxford Street
Halifax, NS B3H 4J1
Telephone: (902) 494-3417
Fax: (902) 494-6585
Website: <http://psychology.dal.ca/>

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

Chairperson of Department

Brown, R.E., BSc (Victoria), MA, PhD (Dalhousie)

Academic Advisors

To be put in touch with an academic advisor, please go to the Psychology Main Office (LSC 3263), or phone (902) 494-3417.

Professors Emeriti

LoLordo, V.M., AB (Brown), PhD (Penn)
Mitchell, D.E., BSc, MAppSc (Melb), PhD (Berkeley)

Professors

Brown, R.E., BSc (Victoria), MA, PhD (Dal)
Bryson, S.E., BA (Guelph), PhD (McGill), Major appointment in Pediatrics, Joan and Jack Craig Chair in Autism Research
Camfield, C., BS, MD (Michigan), Major appointment in Pediatrics
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
Klein, R.M., BA (SUNY), MA, PhD (Oregon), University Research Professor, Graduate Program Coordinator
Lyons, R., BA (Dalhousie), MEd (St. FX), PhD (Oregon), Major appointment in School of Health and Human Performance; Canada Research Chair in Health Promotion; Director, Atlantic Health Promotion Research Centre
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), Faculty of Science Killam Professor in Psychology
Robertson, H., MSc (Western), PhD (Cantab), Major appointment in Pharmacology
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, Faculty of Science Killam Professor in Psychology
Wassersug, R., BA (Tufts), PhD (Chicago), Major appointment in Anatomy and Neurobiology

Associate Professors

Abbass, A., BSc (Ottawa), MD (Dalhousie), FRCPC (Toronto), Major appointment in Psychiatry
Adamo, S., BSc (Toronto), PhD (McGill)
Breau, L., BA (MtA), PhD (Dalhousie), Major appointment in the School of Nursing

Blanchard, C., BA (UPEI), MA, PhD (Alberta), Major appointment in Medicine
Chambers, C.T., BSc (Dalhousie), MA, PhD (UBC), Joint appointment in Pediatrics; Canada Research Chair in Pain and Child Health, Clinical PhD Program Associate Director of Training
Corkum, P.V., BSc (Dalhousie), MA, PhD (Toronto), Clinical PhD Program Director of Training
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
Kieffe, M., BA (MUN), MSc, PhD (Alberta), Major appointment in the School of Human Communication Disorders
McGlone, J., BA, MA, PhD (Western)
Perrot-Sinal, T.S., BSc, PhD (Western)
Porter, S.B., BSc (Acadia), MA, PhD (UBC)
Smith, I., BA (Dalhousie), MSc (Brown), PhD (Dalhousie), Major appointment in Pediatrics
Taylor-Helmick, T.L., BA (Calgary), MSc, PhD (Dalhousie)

Assistant Professors

Barrett, S.P., BA (St. FX), PhD (McGill)
Crowder, N.A., BSc, PhD (Alberta)
Deacon, H., BSc (UPEI), PhD (Oxon)
Duffy, K., BA (St. Thomas), PhD (McMaster)
Frankland, B.W., BSc (McMaster), MSc, PhD (Dalhousie)
Harman, K., BSc (Toronto), MSc (Ottawa), PhD (Carleton), Major appointment in Physiotherapy
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)
Newman, A., BA (Winnipeg), MSc, PhD (Oregon), Canada Research Chair in Cognitive Neuroscience
Phillmore, L., BA (UWO), MA, PhD (Queen's)
Sherry, S.B., BA (York), MA (UBC), PhD (Saskatchewan)
Westwood, D.A., BSc, MA, PhD (Waterloo), Major appointment in the School of Health and Human Performance

Senior Instructors

Gadbois, S., BPs, MAPs (Univ de Moncton), PhD (Dalhousie)
Hoffman, R.S., BA (Colorado), MA (Dalhousie)
Leary, J., BSc (Dalhousie), MSc (MUN), PhD (Adelaide)
Schellinck, H., BSc, MSc, PhD (Dalhousie)
Stamp, J., BSc (Dalhousie), PhD (Cambridge)

Adjunct Professors

Backman, J., BA (Dalhousie), MA, PhD (Carleton), Psych/IWK Health Centre
Barresi, J., BSc (Brown), MA (S. Calif.), MS, PhD (Wisc), Psych/Dalhousie
Chipman, K., BA (UPEI), MA, PhD (Western), Psych/Nova Scotia Hospital
Cohen, A.J., BA (McGill), MA, PhD (Queen's), Psych/UPEI
Connolly, J.F., AB (Holy Cross), MA (Sask), PhD (London), Univ. de Montreal
D'Arcy, R.C.N., BSc (Victoria), MSc, PhD (Dalhousie), Institute for Biodiagnostics (Atlantic)/National Research Council Canada
Dunham, P.J., BA (DePauw), MA, PhD (Missouri), Psych/Dalhousie
Ellsworth, C., MA, PhD (Queen's), Psych/IWK Health Centre
Fentress, J.C., BA (Amherst), PhD (Cantab)
Fisher, M.L., BA (York), MSc (McMaster), PhD (York), Psych/Saint Mary's
Fisk, J., BSc, MA, PhD (Western), Psych/QEII Health Sciences Centre
Ivanoff, J., BSc, MA (Guelph), PhD (Dalhousie), Psych/Saint Mary's
MacDonald, G.W., BA (St.FX), MA, PhD (Windsor)
Marchand, Y., MCS (Univ. of Paris), PhD (Compiègne), Institute for Biodiagnostics (Atlantic)/National Research Council Canada
McLeod, P., BSc (Mt.A), MSc (MUN), PhD (Dalhousie), Psych/Acadia
O'Neill, P., MSc, PhD (Yale), Professor Emeritus/Acadia
Rodger, R.S., MA (Edin), PhD (Queen's, Belfast)
Santor, D., BA (Western), PhD (McGill), School of Psychology/Ottawa
Service, E., BA, MA, Lic. Phil., PhD (Helsinki), Psych/ Helsinki and Montreal

Shaw, S.R., BSc (London), PhD (St. Andrews), Psych/Dalhousie
 Smith, S.M., BA (Bishop's), MA, PhD (Queen's), Psych/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), Canada Research Chair in
 Psychoneuroimmunology, Biomedical Science, AVC/UPEI
 Symons, D., BSc (McMaster), MA, PhD (Western), Psych/Acadia
 Symons, S., BSc (Dalhousie), MA, PhD (Western), Psych/Acadia
 Vallis, T.M., BSc (Dalhousie), MA, PhD (Western), Psych/QEII Health
 Sciences Centre
 Waschbusch, D.A., BSc (Wisconsin), MSc, PhD (Pittsburgh), Center for
 Children and Families/ Buffalo
 Watt, M., BA (St. FX), PhD (Dalhousie), Psych/St. Francis Xavier
 Yoon, M.G., BS (Seoul), PhD (Berkeley)

Research Associates

Fröhlich, A., Diplom, Dr. rer. Nat. (Freie Universität Berlin), MSVU
 Pyza, E., PhD (Jagiellonian Univ.), Inst. of Zoology, Jagiellonian Univ.

Postdoctoral Fellows

Borowska, J., PhD (Jagiellonian Univ., Kraków, Poland)
 Borycz, J., PhD (Polish Academy of Sciences, Kraków, Poland)
 Borycz, J.A., PhD (Jagiellonian Univ., Kraków, Poland)
 Darredeau, C., PhD (McGill)
 Greiner, B., Dr. Phil. (Univ. of Lund, Sweden), Schrödinger and Killam
 Postdoctoral Fellow
 Groh, C., Dr. rer. nat (Univ. of Würzburg, Germany)
 Hamanaka, Y., PhD (Osaka City Univ., Japan)
 Kelly, C., PhD (Toronto)
 King, S., PhD (Dalhousie)
 Li, M., MD, PhD (Jilin Univ., Changchun, China)
 O'Connor, R.M., PhD (Washington)
 Takemura, S. -Y. PhD (Yokohama City Univ., Japan)

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. However, potential Major and Honours students, and those intending to enrol in the 15-credit BA or BSc Concentration 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, and should have an alternate plan in case they are unsuccessful.

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 Concentration 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, and those who have declared a 15-credit BA or BSc Concentration program in Psychology may enrol in PSYO 2000.03 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 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, Honours and Concentration 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:

- 20-credit BA and BSc with Honours in Psychology
- 20-credit BA and BSc with Major in Psychology
- 15-credit BA and BSc with Concentration in Psychology

While these programs are described below, a more detailed and up-to-date description is available from the Psychology Main Office (LSC 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 65 of this calendar.

A. BA or BSc with Honours in Psychology

Students enrolled in either the BA or BSc Honours program must take 9-11 full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. The earliest students can gain formal admission to the Honours program is at the end of their second year of study. Applicants carrying a full course load will normally be expected to maintain high academic standards including an A- average in their Psychology classes at the time of application.

Students should follow the course 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 Main Office (LSC 3263 or 494-3417).

Registration Notes:

1. Students wishing to undertake an Honours program must meet with an Honours advisor, and complete a Departmental Honours Application form. Application for admission to Honours is normally undertaken at the end of the second or during the third year of study. Admission to the Honours program requires Departmental (and then University) approval.
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 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 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
- PSYO 2770.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

OR

PSYO 2470.03 Introduction to Neuroscience I. Brain Systems (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 Cognition
 - PSYO 2140.03 Learning
 - PSYO 2160.03 Animal Behaviour
 - PSYO 2170.03 Hormones and Behaviour
 - PSYO 2220.03 Abnormal Behaviour
 - PSYO 2570.03 Introduction to Neuroscience II. Cellular Neurobiology
- (Total = 3 full or 6 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 3005.03 Perceptual Processes
 PSYO 3043.03 Neurobiology of Learning
 PSYO 3044.03 Learning and Conditioning Lab (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 3165.03 Neuroethology* (LAB)
 PSYO 3190.03 Psycholinguistics
 PSYO 3227.03 Principles of Human Neuropsychology
 PSYO 3237.03 Drugs and Behaviour
 PSYO 3260.03 Biological Rhythms*
 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*

*Requires PSYO/NESC 2470.03 as prerequisite.

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 3580.06 History of Psychology

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 = 3 full or 6 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 = 3 full or 6 half credits)

Overall Total = 9 full-credit or 18 half-credit classes.

B. 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 course 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
 - PSYO 2770.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)
- OR
- PSYO 2470.03 Introduction to Neuroscience I. Brain Systems (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 4500X/Y.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 five full credits (or an equivalent number of half credits) of Psychology classes specified in the Concentration program will constitute the Psychology component of the Combined Honours program.

C. Honours with a Certificate in Forensic Psychology

A Certificate indicating a specialization in Forensic Psychology is available to suitably-qualified students. Applications for the Certificate will be accepted **only** from students admitted directly into the Honours BA or BSc program at the end of their second year of study at Dalhousie. Admission will be limited to 3-4 students per year. A selection committee will interview applicants and make selections based on academic performance and possession of interpersonal skills suitable for work with forensic staff and populations.

To satisfy the Certificate in Forensic Psychology requirements, the regular BA or BSc Honours program must include:

- PSYO 3224.03 (A- or better)
- PSYO 4500X/Y.06 thesis research and 4000.03-level seminar addressing forensic topics (A- or better)
- Two Sociology classes in forensic-related topics: SOSA 2180X/Y.06 and one of SOSA 3275.03, 3281.03, 3285.03 or 3295.03 (B- or better)
- Completion of two 160-hour practica in approved forensic settings prior to graduation

For further information about this program, obtain a Certificate in Forensic Psychology description from the Psychology Main Office (LSC 3263).

D. 20-Credit BA or BSc with 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 Main Office (LSC 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 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 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
- PSYO 2770.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)

OR

PSYO 2470.03 Introduction to Neuroscience I. Brain Systems (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 Cognition
PSYO 2140.03 Learning
PSYO 2160.03 Animal Behaviour
PSYO 2170.03 Hormones and Behaviour
PSYO 2220.03 Abnormal Behaviour
PSYO 2570.03 Introduction to Neuroscience II. Cellular Neurobiology
(Total = 3 full or 6 half credits)

3000 level

- Four full credits or eight half credits at or above the 3000 level are required to graduate. 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 3005.03 Perceptual Processes
PSYO 3043.03 Neurobiology of Learning
PSYO 3044.03 Learning and Conditioning Lab (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 3165.03 Neuroethology* (LAB)
PSYO 3190.03 Psycholinguistics
PSYO 3227.03 Principles of Human Neuropsychology
PSYO 3237.03 Drugs and Behaviour
PSYO 3260.03 Biological Rhythms*
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*

*Requires PSYO/NESC 2470.03 as prerequisite.

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 3580.06 History of Psychology

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 = 4 full or 8 half credits)
Overall Total = 7 full-credit or 14 half-credit classes.

E. 20-Credit BA or BSc with Double Major in Psychology

The five full credits, or half-credit equivalents, of Psychology classes specified in the Concentration program will constitute the Psychology component of any 20-credit Double Major program.

F. 15-Credit BA or BSc with Concentration in Psychology

The Psychology Department does not encourage students to take a 15-credit degree, although that option is available to students who wish only to concentrate their studies in Psychology. Students are strongly urged to take a 20-credit Major or Honours degree.

Students in both the BA and BSc programs must take at least five full credits and no more than eight full credits (or half-credit equivalents) in Psychology classes beyond the 1000 level. At least two full credits (or half-credit equivalents) must be taken 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 Main Office (LSC 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.

Departmental Requirements

1000 level

- PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 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
 - PSYO 2770.03 Brain and Behaviour (recommended for students planning to take advanced Psychology classes)
- OR**
- PSYO 2470.03 Introduction to Neuroscience I. Brain Systems (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 Cognition
 - PSYO 2140.03 Learning
 - PSYO 2160.03 Animal Behaviour
 - PSYO 2170.03 Hormones and Behaviour
 - PSYO 2220.03 Abnormal Behaviour
 - PSYO 2570.03 Introduction to Neuroscience II. Cellular Neurobiology
- (Total = 3 full or 6 half credits)

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. Classes in Category C are intended for students planning to enter the Honours program.

Category A. Brain, Language, Learning, and Cognition

PSYO 3005.03 Perceptual Processes
PSYO 3043.03 Neurobiology of Learning

PSYO 3044.03 Learning and Conditioning Lab (LAB)
PSYO 3051.03 Sensory Neuroscience 1. 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 3165.03 Neuroethology* (LAB)
PSYO 3190.03 Psycholinguistics
PSYO 3227.03 Principles of Human Neuropsychology
PSYO 3237.03 Drugs and Behaviour
PSYO 3260.03 Biological Rhythms*
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*

*Requires PSYO/NESC 2470.03 as prerequisite.

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 3580.06 History of Psychology

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 = 2 full or 4 half credits)

Overall Total = 5 full-credit or 10 half-credit classes.

G. Other Programs

Other programs are available in cooperation with various departments. These programs are designed to meet the needs of students whose specific interests may be in areas other than those covered by the Major and Honours programs offered by the department. For example, a Minor in Business, Computer Science or Environmental Studies may be completed as part of the 20-credit Honours or Major degree. Consult the Degree Requirements section of this calendar about other available Minor programs.

Students in Computer Science may undertake a Minor in Psychology by completing the five full-credit requirements specified for completion of the 15-credit Concentration program in Psychology. It is recommended that students in other programs wishing to Minor in Psychology elect to undertake a Double Major in Psychology and their primary field of study. For further information students should contact the Chair of the Undergraduate Program Committee.

H. Repeating Classes

Students may repeat a class in which they have earned a passing grade with permission from the department, but the class instructor should be consulted prior to registering. Refer to Regulation 17.4 (Academic Regulations section of this calendar) for further information.

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 and 1012.03 or PSYO 1021.03 and 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.

This class offers an overview of psychology and equips students with the information necessary to undertake more advanced studies in psychology. Class coverage includes the historical background, research methodology, neural mechanisms that underlie behaviour, as well as sensory and perceptual processes, learning, development and states of consciousness. Typically, the class is taught by several different instructors with expertise in the topics covered. Biweekly laboratory tutorials add depth to the material covered in lectures.

COORDINATOR: H. Schellinck

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, Required biweekly labs 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

PSYO 1012.03: Introduction to Psychology and Neuroscience II: From Social Interaction to Psychopathology.

This class extends the coverage of psychology offered in PSYO 1011.03 or 1021.03. The class provides an introduction to memory and forgetting, cognition, intelligence, motivation, social behaviour, personality, and psychopathology. Typically, the class is taught by several different instructors with expertise in the topics covered. Biweekly laboratory tutorials add depth to the material covered in lectures.

COORDINATOR: H. Schellinck

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and PSYO 1022.03.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours, Required biweekly labs 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

PSYO 1021.03: Introduction to Psychology and Neuroscience I: From Neuron to Person.

This class offers an overview of psychology and equips students with the information necessary to undertake more advanced studies in psychology. Class coverage includes the historical background, research methodology, neural mechanisms that underlie behaviour, as well as sensory and perceptual processes, learning, development and states of consciousness. Typically, the class is taught by a single instructor with broad experience in teaching at the introductory level. Unlike PSYO 1011.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and 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

PSYO 1022.03: Introduction to Psychology and Neuroscience II: From Social Interaction to Psychopathology.

This class extends the coverage of psychology offered in PSYO 1021.03 or 1011.03. The class provides an introduction to memory and forgetting, cognition, intelligence, motivation, social behaviour, personality, and psychopathology. Typically, the class is taught by a single instructor with broad experience in teaching at the introductory level. Unlike PSYO 1012.03, biweekly laboratory tutorials are not available to supplement material covered during lectures.

NOTE: Students wishing to take 2000-level classes in Psychology must have a minimum grade of B- in both half-credit introductory psychology classes. Students should take the following combination of classes: PSYO 1011.03 and PSYO 1012.03 or PSYO 1021.03 and 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

PSYO 2000.03: Methods in Experimental Psychology.

An introduction to the methodological tools research psychologists use to study behaviour. Emphasis is placed on experimental design and the legitimacy of inferences derived from experimental results. Lectures proceed from a discussion of the general problems of using the scientific method in studying behaviour to a more specific examination of the analytic procedures commonly employed to investigate human and animal behaviour. Students conduct and analyze in written reports a series of experiments in the laboratory that illustrate important concepts discussed in class. Students taking PSYO 2000.03 must attend the first lecture session. Due to enrolment limitations, only Dalhousie students with a Major or Concentration in Psychology may enrol in this class, unless space is available after the first class.

INSTRUCTOR(S): S. Gadbois, R. Hoffman and J. Leary

FORMAT: Writing Intensive, lecture 3 hours, lab 2 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

EXCLUSION: NESC 2007.03

PSYO 2080.03: Social Psychology.

Some major issues in social psychology are introduced through a critical analysis of theories and research in which the actions of individuals are seen as products of their social context. Both the lectures and the textbook are intended to promote a close and skeptical evaluation of our knowledge of 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 gender roles. Questions on such matters are given to the students to work on out of class and the examinations are composed of some of those questions.

INSTRUCTOR(S): S. Sherry

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (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

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (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, coherent world of everyday experience 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 the internal representations used in thinking and remembering.

INSTRUCTOR(S): T. Taylor-Helmick

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

CROSS-LISTING: NESC 2130.03

PSYO 2140.03: Learning.

This class traces the experimental study of learning from the turn-of-the-century research of Pavlov and Thorndike to the present. Development of the field of animal learning is described in terms of the ways in which particular conceptions of the learning process have guided experimentation, and have in turn been revised on the basis of the outcomes of that experimentation. Some important concepts discussed are: association, attention, biological constraints on learning, classical conditioning, discrimination, expectancies, law of effect, learning-performance distinction, operant conditioning, S-S and S-R bonds, and stimulus control. The value of various approaches is discussed with respect to 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), rather than on learning a number of facts about animal learning.

INSTRUCTOR(S): V. LoLordo

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with a grade of B- or better)

CROSS-LISTING: NESC 2140.03

PSYO 2160.03: Animal Behaviour.

Using concepts from evolutionary theory, neuroscience, endocrinology and psychology, animal behaviourists attempt to explain why animals behave the way they do. The class will examine topics such as mate choice, the evolution of behaviour, and animal communication. We will study the behaviour of a wide range of animals.

INSTRUCTOR(S): S. Adamo or S. Gadbois

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03, or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27 or 1510X/Y.33 (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.

An introduction to chemical signals of the neural, endocrine, and immune systems and the ways in which these neuro-chemicals interact to influence the brain and behaviour. Emphasis is on the mechanisms by which neurotransmitters, cytokines, and the hormones of the hypothalamus, pituitary gland, gonads and adrenal gland control neural and behavioural development, sexual, aggressive and maternal behaviour. Other topics covered are: hormone receptors in the brain, the menstrual cycle and human reproduction, puberty, sex differences in the brain, neurotransmitters, pheromones, stress.

INSTRUCTOR(S): R.E. Brown

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1502X/Y.21, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (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). For each disorder, various theoretical accounts of etiology and approaches to intervention will be considered. This class focuses not only on what is known about the causes and treatments of abnormal behaviour, but also on the scientific techniques clinical psychologists have developed to better understand and better intervene with various forms of behavioural dysfunction.

INSTRUCTOR(S): S. Stewart or S. Barrett

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (with grade of B- or better)

PSYO 2470.03: Introduction to Neuroscience I. Brain Systems.

This lecture class is intended to provide an introduction to the gross structures and functions of the brain. The class treats the brain as a set of neural systems, each with relatively well-defined anatomical substrates and functional roles. The class examines each neural system one at a time, exploring its anatomical architecture, connections and function. These systems may include the peripheral nerves, the mechanisms of sensation and motor control, the cranial nerves, the brainstem, cerebral cortex and cerebellum. For each of the neural systems, the class examines some of the clinical consequences of injury or pathology. Introduction is also provided to recent advances in brain imaging and brain chemistry. This class does not cover cellular or molecular mechanisms of brain function in any detail; students wishing explicit instruction in those fields should see the Calendar entries for PSYO/NESC 2570.03 and/or PSYO/NESC 3970.03, respectively.

INSTRUCTOR(S): D. Phillips

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (a grade of B- or better), or BIOL 1010.03/1011.03 or BIOL 1020.03/1021.03

CROSS-LISTING: NESC 2470.03

PSYO 2500.03: Contemporary Research Problems in Psychology.

As a continuation PSYO 2000.03, this class introduces prospective Honours students to the design, execution and analysis of independent research. Each student works with a supervisor on a one-to-one basis preparing a research project which the student then conducts. The lecture periods are devoted to an introduction to the design and statistical analysis of experiments. In the lab meetings, the student will give oral reports on the proposed research. At the end of the class formal oral reports will be given in an all-day conference for the entire class. A formal written report on the research is submitted at the end of the term. This class is a preparatory class for students planning to do an Honours degree in Psychology, and admission will be restricted to students whose academic record indicates an ability to perform at the honours level. No one will be admitted until they have completed PSYO 2000.03 with a grade of B or better; a high level of performance in other Psychology classes along with an overall average of B+ (GPA 3.30) will normally be expected.

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 valid interpretation and, therefore, on the link between the assumptions of various statistics procedures and the associated experimental or quasi-experimental designs. Specific topics include univariate and bivariate descriptive statistics, and univariate (z-test, t-test, ANOVA), and bivariate inferential statistics. Only students undertaking a Concentration, Major or Honours degree in Psychology or Neuroscience are eligible for enrolment.

INSTRUCTOR(S): S. Jacques
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO 2000.03 or NESC 2007.03, or instructor's consent
 EXCLUSION: PSYO 3501.03

PSYO 2570.03: Introduction to Neuroscience II. Cellular Neurobiology.

Building on the knowledge of holistic aspects of brain function gained in PSYO 2470.03, this class explores the neuronal basis of activity in all nervous systems. Starting with an analysis of the structure of neurons, the function of nerve cells will be explored with respect to the ionic and molecular basis of resting potentials and of electrical activity in nerve cells; synaptic transmission; the release and postsynaptic action of synaptic transmitters; aspects of the neurochemistry of synaptic transmitters and of drug action; and glial cells. Cellular phenomena relevant to neurological dysfunction will be discussed.
 INSTRUCTOR(S): N. Crowder
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO/NESC 2470.03 or instructor's consent
 CROSS-LISTING: NESC 2570.03

PSYO 2770.03: Brain and Behaviour.

This lecture class examines the brain's role in controlling experience and behaviour in both animals and humans. The class will focus on the functional anatomy of brain systems, in particular on neural pathways involved in motivation, mood, memory, and sensation/perception. There will be an emphasis on recent research findings and understanding methodology for studying brain and behaviour. This class is designed for Psychology students undertaking a Concentration, Major or Honours program. Students planning to take advanced Neuroscience classes should register for PSYO/NESC 2470.03
 INSTRUCTOR(S): J. Stamp
 FORMAT: Lecture 3 hours
 PREREQUISITE: PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 or SCIE 1501X/Y.27, 1503X/Y.21, 1504X/Y.27, or 1510X/Y.33 (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 further experience and understanding of psychological research. Students not in the Honours program normally will be expected to have a grade of B or better in PSYO 2000.03, a high level of performance in other psychology classes, and an overall B+ (GPA 3.30) average. A student in the class chooses a faculty member who serves as an advisor throughout the academic year, and under whose supervision independent research is conducted. Before registering for this class, a student must provide the instructor of the class with a letter from the faculty member who has agreed to supervise the class of study. Class approval will not be given until this is done.
 SIGNATURE REQUIRED
 COORDINATOR: B. Earhard
 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 4 hours
 PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, 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 further experience and understanding of psychological research. Students not in the Honours program normally will be expected to have a grade of B or better in PSYO 2000.03, a high level of performance in other Psychology classes, and an overall B+ (GPA 3.30) average. A student wishing to take this class must find a faculty member who is prepared to supervise a directed research project. Before registering for this class, a student must provide the coordinator of the class 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.

COORDINATOR: B. Earhard

NOTE: This class cannot be used to fulfill the department's research laboratory requirement.

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, 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 3005.03: 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 2000.03 or NESC 2007.03, and PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3005.03

EXCLUSION: PSYO/NESC 2150.03

PSYO 3010X/Y.06: Advanced General Psychology.

For the advanced student, a review of general psychology with the aim of consolidating the student's knowledge. The method is unconventional. With the assistance of the instructor, the student prepares material assigned to PSYO 1011.03 and 1012.03 students at a level which enables him or her to instruct introductory students in tutorial lab classes. The class is designed primarily for Honours students, or other advanced Psychology or Neuroscience students who may be suitably qualified. Prospective students are advised to consult the instructor in the spring of the preceding year.

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): H. Schellinck

FORMAT: Lecture/seminar 2 hours, tutorial lab 1 hour, skills lab

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. Students learn about the principles and techniques of constructing psychological measures, are exposed to both basic and advanced analytic methods used to evaluate the scale performance, and examine key issues central to the possibility of quantifying human traits, abilities and syndromes. Quantitative topics, such as types of validity and reliability, are balanced with more philosophical issues, such as measuring IQ. For the laboratory component of this class, students contribute individually to the design of a new measure and report individually on data that is collected and analyzed as a class. Students are evaluated through written assignments and examinations.

INSTRUCTOR(S): B. Frankland

FORMAT: Lecture 2 hours, research lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2501.03

PSYO 3043.03: Neurobiology of Learning.

This class provides examination of the various forms of learning and neurological systems associated with these processes. Topics will include imprinting, song learning by birds and classical and operant conditioning. We will also discuss the biological significance and evolutionary origins of these systems.

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.

Students will learn hands-on several methods of examining learning and memory in animals, while also understanding some of the neurological systems involved. They normally work in small groups, each responsible for conducting a series of experiments. While cooperating in their research and in some aspects of data analysis, each student write his or her own reports on the experiments completed; students will also complete a final, independent paper.

INSTRUCTOR(S): L. Phillmore

FORMAT: Research lab 4 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, 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.

Because our visual perceptions are rich, varied and with few exceptions, arise quickly, flawlessly and without apparent cognitive effort, it might be thought that the underlying processes are simple. That this is not the case is illustrated by the difficulty with which the performance of our biological visual system can be matched by artificial systems. Beginning with a description of the information available in the retinal image, this class will examine the neural basis for the perception of light, colour, movement, depth and form in a variety of species chosen to illustrate common as well as specialized mechanisms of neural processing. In addition, the class will describe the development of perception and discuss the extent to which performance at any age is constrained by the anatomical and physiological development at various levels within the visual pathway.

INSTRUCTOR(S): K. Duffy

FORMAT: Lecture 3 hours, research lab 1 hour

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2150.03 or PSYO/NESC 2470.03 or PSYO 2770.03

CROSS-LISTING: NESC 3051.03

PSYO 3052.03: Sensory Neuroscience II. Hearing and Speech.

Hearing and speech are two behavioural capacities of fundamental importance to normal human communication. This lecture class is designed to provide a basic understanding of the peripheral and central neural mechanisms of hearing, and of some psychological and physiological processes involved in speech production and speech perception. The class is intended for those students anticipating more advanced training in neural mechanisms of hearing, speech science, human communication disorders and/or audiology. The class emphasizes normal hearing and speech mechanisms, but will address pathology where evidence from pathological subjects is pertinent to understanding normal function. Class content: introductory acoustics; structure and function of the outer and middle ears; structure and function of the cochlea; hair cell physiology and sensory transduction; coding of simple and complex sounds in the auditory nerve; sound localization mechanisms as an example of the correspondence between the physical properties of the stimulus, neural sensitivity and behavioural performance; theories of speech production; theories of speech perception; acoustic and linguistic contributions to speech 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.

The primary goal of this class is to develop students' skill level in empirical analysis in social psychology. We examine how the tools of science can be used to help us understand more about social thinking and social behaviour. The class is primarily a skills class emphasizing active student learning rather than didactic teaching. Students will be required to

complete two research projects during the term. The projects will 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, and PSYO 2080.03

PSYO 3084.03: Social Cognition.

How do people understand themselves and others as social beings? This class will consider a variety of approaches to try and provide an answer to this question. We will look at evolutionary factors, and the way in which humans differ from other species in their understanding of social phenomena. We will look at different stages in the development of social cognition. We will consider empirical and theoretical studies delineating different mechanisms of social perception and social cognition. Finally, we will give attention to how historical and cultural factors have influenced the character of social cognition.

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 is a survey of the research methods that are used in developmental psychology. It largely assumes knowledge of basic methodology and design issues common to all areas of psychology and concentrates on those methods that are of special relevance to the study of development in humans from birth through childhood. In addition to the lectures, students will carry out 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, 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 show how perceptual, cognitive, emotional, social, and linguistic changes occurring during the first five years of life are integrated in the psychological life of the child to allow the development of social understanding.

INSTRUCTOR(S): H. Deacon

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 will focus on the psychological processes underlying language acquisition and how these processes influence the development of our ability to read and write. The role that perceptual biases, linguistic input, and advances in learning and cognition play in language learning will be examined. The interaction between linguistic awareness, cognitive processing and pedagogical approaches in the acquisition of literacy skills will also be explored.

INSTRUCTOR(S): H. Deacon

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2090.03

Please note. Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

PSYO 3122.03: Methods in Experimental Clinical Psychology.

This class focuses on the methods used in the experimental study of abnormal human behaviour. Students learn how to conduct research on topics in applied clinical psychology. Lectures proceed from a discussion of the general problems of using the scientific method in studying

abnormal behaviour, to a more specific examination of the analytic procedures commonly employed to investigate topics in clinical psychology. Students conduct a series of research projects in the laboratory by serving both as subjects and experimenters. These studies will illustrate some of the important concepts discussed in class. Students are required to analyze the results of these studies in written lab reports. Due to enrolment limitations, this class will be limited to students majoring in Psychology, unless space is available after the first class.

INSTRUCTOR(S): S. Barrett

FORMAT: Lecture 2 hours, research lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and PSYO 2220.03

PSYO 3129.03: Childhood Psychopathology.

This class examines a wide range of behaviour disorders in children (e.g. reading disability, autism, attention deficit disorder). The goal is to gain a better understanding of the nature of these disorders by exploring empirical findings from both the social and physical sciences. Discussion will focus on problems of definition, and the relative merits of different theoretical accounts. Data on therapeutic outcome and ethical issues regarding intervention will also be considered.

INSTRUCTOR(S): P. Corkum

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03; PSYO 2220.03 is recommended

PSYO 3131.03: Research Methods in Attention.

Most closely associated with selection (our ability to focus on some things to the exclusion of others), attention is an umbrella term that also covers the concepts of alertness, arousal, preparation and control. Neglected by mainstream Psychology for the first half of the 20th century, this gateway to awareness has since returned to centre stage. In this laboratory class, we will explore the methods, findings and theories that have driven recent advances in our understanding of attention. While laboratories will emphasize behavioural methods that have been used to isolate and reveal the components of attention, in class we will also cover neuroscientific evidence (human neuroimaging, single unit recording, breakdowns following brain damage, etc.) and computational models 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, and one of PSYO/NESC 2130.03 or PSYO/NESC 2150.03 or PSYO/NESC 3005.03

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 meaning is extracted from visual information in the environment: how it is represented in memory, transformed as knowledge, and used to direct our behaviour. It involves the processes of perception, memory, attention and motor response. This class will investigate object, face and word recognition as revealed by normal behaviour, 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, and one of PSYO/NESC 2130.03 or PSYO/NESC 2150.03 or PSYO/NESC 3005.03

CROSS-LISTING: NESC 3132.03

EXCLUSION: PSYO/NESC 3130.06

PSYO 3133.03: Research Methods in Memory.

This class will focus on the study of human memory from the perspective of cognitive psychology and, to a lesser extent, cognitive neuroscience. Topics may include, but will not be limited to: Sensory memory, the modal model, working memory models, processing perspectives, forgetting, implicit memory, autobiographical memory, amnesia, and reconstructive processes. The lectures will emphasize cognitive behavioural 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, and PSYO/NESC 2130.03

CROSS-LISTING: NESC 3133.03

EXCLUSION: PSYO/NESC 3130.06

PSYO 3134.03: Research Methods in Psycholinguistics.

This class builds on the fundamentals of Psycholinguistics covered in PSYO/NESC 3190.03, providing students with hands-on experience using various methodologies employed in the study of language processing, and using these to explore topics in Psycholinguistics in greater depth. Labs will provide hands-on experience with numerous psycholinguistic methods including reaction time, priming, self-paced reading, computational modeling, corpus-based research, and event-related brain potentials. Topics include processing at the phonological, morphological, syntactic, and semantic levels; reading; signed language; and computational modeling of language processing. Students will 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, and PSYO/NESC 3190.03

Please note: Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class. CROSS-LISTING: NESC 3134.03
EXCLUSION: PSYO/NESC 3130.06

PSYO 3137.03: Research Methods in Cognitive Neuroscience.

Cognitive neuroscience aims at understanding the neural bases of perception, cognition, and action through the integration of behavioural and neuroimaging techniques. This class will focus on the various techniques used in this endeavour, including the technologies available, the methodologies employed, and the limitations of these techniques. Examples from various areas of inquiry (e.g., language, vision, attention, memory) will be used to illustrate both applications and limitations. Techniques to be covered include event-related potentials (ERPs), functional magnetic resonance imaging (fMRI), diffusion MRI tractography (DTI), magnetoencephalography (MEG), positron emission tomography (PET), near-infrared optical imaging (NIRS), transcranial magnetic stimulation (TMS), and intracranial electrical recording and stimulation. The laboratory component will include experience in the recording and analysis of ERP data and in the analysis of fMRI data, as well as demonstrations of fMRI data acquisition. Students will 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, and PSYO/NESC 2130.03

CROSS-LISTING: NESC 3137.03

PSYO 3165.03: Neuroethology.

Neuroethology explores how assemblies of neurons work together to produce behaviour. This new scientific discipline lies at the intersection of behavioural ecology and neuroscience. In this class, we will examine the neural control of selected behaviours taken from a wide range of animals, both invertebrate and vertebrate. From this comparative perspective we will determine whether there are common themes in the physiological control of behaviour. All of the experiments in the laboratory component of the class will involve insects. Students will need to handle the 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 3070.06 or MARI 3071.06; 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 3190.03: Psycholinguistics.

An introduction to the processes in the use of language by human beings. The main topics are: 1) the nature of language, 2) syntactic organizations, 3) propositions, 4) thematic structures, 5) speech comprehension, 6) speech production, 7) speech acts, 8) discourses, and 9) language development.

INSTRUCTOR(S): A. Newman

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO/NESC 2130.03

Please note. Major and Honours students in the third year of the Linguistics program do not require these prerequisites. They will, however, require a Prerequisite Override from the instructor before being able to register for the class.

CROSS-LISTING: NESC 3190.03

EXCLUSION: PSYO/NESC 2190.03

PSYO 3220.03: Clinical Psychology.

This survey class reviews content and professional issues relevant to the practice of clinical psychology in hospitals, private practice, schools, the court system, and the community. The student can expect to become knowledgeable about psychological services, and to develop an understanding of the training, ethics and expertise that clinical psychology brings to the delivery of mental health and healthcare. Students will learn also to appreciate some of the limitations and challenges of this profession. Completion of the class conveys no professional skills or qualifications.

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 will provide an introduction to the application of psychology to the various areas of the criminal justice system (i.e., courts, corrections, policing). In addition, there will be a discussion of the professional and ethical issues which arise when psychological knowledge is applied in forensic contexts. Guest speakers will be invited from within the criminal justice system to come and discuss their experiences in class. The class will be of interest to students planning on careers in applied psychology or other forensically-related fields (e.g., law, policing, social work).

INSTRUCTOR(S): S. Porter

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2220.03

PSYO 3225.03: Health Psychology.

Health Psychology is devoted to understanding psychological influences on how people stay healthy, why they become ill, and how they respond when they do become ill. Using a biopsychosocial model, this class will examine topics such as health behaviours and prevention, stress and coping, the patient in treatment settings, and management of chronic and terminal illness.

INSTRUCTOR(S): Staff

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and PSYO 2220.03

PSYO 3227.03: Principles of Human Neuropsychology.

This survey class examines how higher cognitive, emotional, and social functions are organized in the human brain. Topics covered include: What happens to these abilities when parts of the brain are damaged or diseased? How do clinicians diagnose and rehabilitate clients with brain disorders? Which behavioural interventions help individuals adjust to aphasia, apraxia, dyslexia, neglect, spatial disorientation, visual agnosia, amnesia, and inattention? Students integrate empirical findings from several technologies and research methodologies such as structural and functional brain anatomy and imaging, early and late brain lesions in animals and humans, clinical diagnosis, neuropsychological testing, and clinical outcomes. The class should provide students with insight into the professional life of clinical neuropsychologists.

INSTRUCTOR(S): J. McGlone

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and either 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 will be discussed. Specific topics will cover alcohol, tobacco, amphetamines, cocaine, opiates, hallucinogens, tranquilizers, and antipsychotic drugs.

INSTRUCTOR(S): J. Stamp

FORMAT: Lecture 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, and one of PSYO/NESC 2150.03, 2170.03, 2470.03, 2570.03, or PSYO 2770.03

CROSS-LISTING: NESC 3237.03

PSYO 3260.03: Biological Rhythms.

The temporal structure of animal and human physiology is governed by both homeostatic mechanisms and by a system of biological clocks. These internal clocks generate rhythms with various periods in virtually every physiological and behavioural system. Daily (circadian) clocks are the most prominent; they generate rhythms in sleep, reproduction, intellectual performance and many other functions. This class examines the nature of these biological clocks and their physiological substrates, with an emphasis on the neural mechanisms involved in rhythm generation and synchronization in a variety of species. It also explores the hypothesized role of circadian mechanisms in sleep disorders, jet lag and depression.

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 PSYO/NESC 2170.03 or PSYO/NESC 2470.03

CROSS-LISTING: NESC 3260.03

PSYO 3270.03: Developmental Neuroscience.

This class introduces students who are already familiar with the structural organization and functional properties of the mature nervous system to aspects of neural development, especially at the cellular level. The first part of the class will link the early events of neural development to general embryonic development. Cell determination, pattern regulation, cell production, cell-lineage analysis, and neuronal differentiation, movement and migration will be discussed. Special attention will then be given to later developmental events such as neuronal growth cones, cell death, growth factors, neuron-neuron interactions and synapse formation using invertebrate and vertebrate examples.

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.

In this class a person is treated as a unified whole. Personality deals with questions such as: Is a science of persons possible? What forms can it take? 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.

The two classes PSYO/NESC 3370.03 and 3371.03 (see next entry) are coordinated and provide introduction to several techniques used in contemporary neuroscience. The following information applies to these classes as a pair, between which the exact distribution of experimental approaches may vary from year to year according to availability of equipment and material, and numbers enrolled. Usually, electrical recording methods from several types of preparation are emphasized in 3370.03, while detailed neuroanatomically-based approaches are favoured in 3371.03. Regularly scheduled labs with students working in groups of 2 or 3 under supervision are supplemented by occasional lectures, in both classes. Students become familiar with electrical recording and stimulation methods and related techniques, currently using both sensory and motor

system preparations. Neuroanatomical analysis is introduced by way of techniques usually selected from the following: Golgi impregnation of neurones, immunocytochemistry, dye-tracing of connections, and electronmicroscopy of the visual system or central nervous system.

SIGNATURE REQUIRED

INSTRUCTOR(S): S.R. Shaw

FORMAT: Lab 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO/NESC 2470.03 and 2570.03, or 3270.03, and instructor's consent

CROSS-LISTING: NESC 3370.03

PSYO 3371.03: Neuroscience Laboratory II.

For a description of this type of neuroscience lab class, see the entry under 3370.03 above; usually, 3371.03 is coordinated closely with 3370.03. Lab II usually, but not always, runs in the second term and develops different research approaches.

SIGNATURE REQUIRED

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, and instructor's consent

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): C. Moore

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 Neuroscience or Psychology. Class work includes computer-based assignments.

SIGNATURE REQUIRED

INSTRUCTOR(S): B.W. Frankland

FORMAT: Lecture 4 hours, skills lab 2 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03, PSYO 2501.03, and instructor's consent

PSYO 3580.06: History of Psychology.

In writings dating from antiquity to the early years of the 20th century, we explore the understanding of such abiding sources of our curiosity as individual, racial and sexual differences, the distinctions between man and animal, the sources of odd actions, the nature of the brain and of vision.

INSTRUCTOR(S): T. Jukes

FORMAT: Writing Intensive, Seminar 3 hours

PREREQUISITE: PSYO 2000.03 or NESC 2007.03

PSYO 3670.03: Genes, Brain and Behaviour.

This class will examine the application of genetic techniques to the study of brain and behaviour in animals and humans. The class will consist of four sections: basic genetics, neurogenetics, neurogenetic analysis of animal behaviour, and neurogenetic analysis of human behaviour. During the class, topics in bioinformatics and neuroinformatics and the use of genetic data bases will be considered. Substantial attention will be given to transgenic laboratory mouse models of human neurological and behavioural disorders. Students will acquire information about the genetic basis of cognitive abilities, psychopathology, personality disorders, 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 will also be explored.

INSTRUCTOR(S): T. Perrot-Sinal

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 1501X/Y.27 or SCIE

1502X/Y.21 or SCIE 1503X/Y.21 or SCIE 1504X/Y.27; 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 concerns itself with the neural mechanisms underlying a variety of behavioural phenomena. Its subject matter includes the neural mechanisms controlling a variety of regulatory and motivational systems, including: feeding, drinking, reward, sexual and parental behaviour, temperature regulation, sleep and waking, motor and sensory system function, learning and other forms of behavioural plasticity, memory, and the physiological mechanisms underlying behavioural disorders. Students should be familiar with experimental research methods, and have some background in biological or neural aspects of psychology.

INSTRUCTOR(S): S. Gadbois

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

EXCLUSION: PSYO/NESC 3070.06 or 3071.06

PSYO 3775.03: Behavioural Neuroscience Laboratory.

The purpose of this laboratory class is to expose students who are motivated to pursue a career in neuroscience, or in a related biomedical discipline, direct experience of research involving studies of the nervous system in relation to behaviour. Students will be expected to acquire skills in animal handling, animal care, recovery surgery, behavioural observations, and histological analysis of the brain. Acquisition of these methods during the class should facilitate students' research efforts in their honours theses.

SIGNATURE REQUIRED

INSTRUCTOR(S): T. Perrot-Sinal

FORMAT: Research lab 3+ hours

PREREQUISITE: PSYO/NESC 3770.03 and instructor's consent

CROSS-LISTING: NESC 3775.03

EXCLUSION: PSYO/NESC 3070.06

PSYO 3790.03: Neurolinguistics.

The class will cover: 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, f-NMR scan experiments, and 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 continues concepts introduced in PSYO/NESC 2570.03, from the cellular/molecular basis of neuronal function to the role of gene expression in development, maintenance, and pathology of the nervous system. Models of normal and pathological neuronal function are presented and dissected to the level of messengers, receptors, intracellular signaling cascades, transcription factors, and genes. The mechanisms underlying normal neuronal function are presented using both developmental and adult model systems. The role of genetic versus epigenetic factors in development of the functioning nervous system is covered. As well, the importance of gene products like neurotrophic factors in developing and adult brain is stressed. Part of the class is also devoted to understanding how normal cellular and molecular processes can go awry to produce neuropathology, which may underlie neuropsychiatric and neurodegenerative disorders. Throughout the class, there is an emphasis on learning the theory underlying basic cellular and molecular neuroscience tools.

INSTRUCTOR(S): N. Crowder

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. Class format is usually 2 hours, instructors vary by topic. Consult the department for the specific class descriptions.

PSYO 4000.03: Senior Seminar.

This class is an individually tailored reading or study class. It is designed to allow a student to focus on a particular issue, or set of related issues, that are not part of the regular program. Students may register for this class if they can find a staff member who is prepared to supervise the course of study. Before attempting to register for this class, a student must provide the chairperson of the Undergraduate Program Committee with: (a) a one page description of the proposed course of study, (b) a letter from a staff member agreeing to supervise the program outlined. A copy of the completed project, and a mark, must be submitted to the Undergraduate Program Committee chairperson by December 15 or April 15.
SIGNATURE REQUIRED
COORDINATOR: B. Earhard
CROSS-LISTING: NESC 4000.03

PSYO 4001.03: Contemporary Issues in Psychology.

FORMAT: Seminar 2 hours

PSYO 4040.03: Learning Applications in Clinical and Social Psychology.

FORMAT: Seminar 2 hours

PSYO 4050.03: Topics in Perception.

FORMAT: Seminar 2 hours
PREREQUISITE: PSYO/NESC 3051.03 or instructor's consent
CROSS-LISTING: NESC 4050.03

PSYO 4070.03: Neuroscience Seminar.

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.

FORMAT: Seminar 2 hours

PSYO 4090.03: Development of Social Behaviour.

FORMAT: Seminar 2 hours

PSYO 4120.03: Topics in Clinical Psychology.

FORMAT: Seminar 2 hours

PSYO 4130.03: Topics in Human Information Processing.

FORMAT: Seminar 2 hours
CROSS-LISTING: NESC 4130.03

PSYO 4140.03: Animal Learning Topics.

FORMAT: Seminar 2 hours

PSYO 4160.03: Topics in Behavioural Biology.

FORMAT: Seminar 2 hours
CROSS-LISTING: NESC 4160.03

PSYO 4170.03: Topics in Behavioural Neuroendocrinology.

Topics in Behavioural Neuroendocrinology will consist of discussions of the most current literature relating to the role of steroid hormones in development, maintenance, pathology, and aging of the brain. We will discuss how the brain is affected by steroids at both cellular and systems levels and how this ultimately impacts on a diverse range of behaviours from reproduction to cognition. Students will be assessed with regard to their ability to actively engage in discussions during class time, provide

insightful reviews of particular topics in the form of written papers, and present scientific papers to the class.

FORMAT: Seminar 2 hours

PREREQUISITE: Restricted to PSYO/NESC Honours Students

CROSS-LISTING: NESC 4170.03

PSYO 4224.03: Topics in Forensic Psychology.

FORMAT: Seminar 2 hours

RESTRICTION: Restricted to Psychology Honours students

PSYO 4230.03: Human Performance Topics.

FORMAT: Seminar 2 hours

CROSS-LISTING: NESC 4230.03

PSYO 4500X/Y.06: Honours Thesis.

The purpose is to acquaint the student with a current experimental problem and the related research procedures in experimental psychology. Each student works with a staff member who advises the student about research in the area of interest, and closely supervises an original research project carried out by the student. The students meet together occasionally throughout the year to describe their proposed research and their progress. Each student must submit a formal written report of the completed research in APA style. The final grade is based upon the originality and skill displayed in executing the project, with emphasis upon the submitted report and an oral presentation.
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): Staff

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.

This seminar class will examine current research in the study of the neurobiology of learning and memory through presentations and discussions of journal articles. Classes will consist of review papers and research papers. Students will present the research papers and direct the class in the discussion. Grades will be given for presentations and participation in discussion and for an essay, which will be a critical enquiry into one of the topics covered in the class.

FORMAT: Seminar 2 hours

PREREQUISITE: PSYO/NESC 2470.03, PSYO/NESC 2140.03

CROSS-LISTING: NESC 4740.03

Science, Interdisciplinary

Dean

Taylor, K., BSc (St. FX), PhD (U of Alberta)

SCIE 1050.03: Foundations for Science Learning.

This course is intended for any entering or second-year student in the Faculty of Science and has the dual purpose of introducing students to the culture of the university and enhancing students' academic performance in science disciplines. Classroom experiences are designed to develop a practical understanding of the learning process at the university level and include topics such as performance expectations at the university level, basic conventions of scientific methods, discipline-specific learning strategies, identifying and applying transferable knowledge between disciplines, academic critical reading and writing, preparing for office conferences, research preparation, knowledge management, forming peer-based learning communities, methods of self-evaluation, and effective use of University resources.

EXCLUSION: ASSC 1050.03

RESTRICTION: Restricted to students having 30 credit hours or less

SCIE 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.

CROSS-LISTING: ASSC 1100.03

SCIE 1111.03: Elements of Writing.

This half class consists of three lecture hours per week for one term and fully meets the Writing Requirement in the Faculty of Science. The lectures cover a brief history of writing and information theory, a review of the rules of grammar and punctuation, the construction of effective sentences and paragraphs, a detailed treatment of the elements of scientific style, and an extended coverage of the standard sections of proposals and scientific papers. Weekly writing assignments develop the skills learned in the lectures.

FORMAT: ✍ Writing requirement for Faculty of Science BSc students only

SCIE 1501X/Y.27: DISP for Biomedical Science.

This program provides particularly good first-year preparation for the full range of degree programs in the biomedical sciences at Dalhousie.

Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Mathematics, Physics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Sciences component. SCIE 1501 includes a full year of Calculus and Physics, and it satisfies the full Social Science requirement and the full Writing Class requirement. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

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 14 hours/lab and other activities 8 hours/tutorials 3 hours (optional)

CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03, MATH 1000.03 and MATH 1010.03, PHYC 1100.06 or

PHYC 1300.06, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1502X/Y.21: DISP for Environmental Science.

A recommended route into the Environmental Science degree, this program integrates concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Earth Science, Mathematics, and Statistics. Field trips are an important component of this DISP option. This option provides particularly good first-year preparation for degrees in Biology, Marine Biology, and Earth Sciences, as well as the Biology, Earth Sciences, Ecology, and Marine Biology Areas of Emphasis of Environmental Science. Students interested in other Areas of Emphasis (Chemistry and the Environment, Statistics and the Environment, and Atmospheric Science), or degrees in Chemistry, Environmental Engineering, Mathematics, or Oceanography may need to take additional first year classes in Physics and Mathematics in subsequent years. SCIE 1502 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics) and the first-year Writing Class requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. This option provides flexibility for DISP students to take an elective or a lighter load if they work part-time.

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 approx. 10 hours / lab and other activities approx. 7 hours / tutorials 1 hour

CROSS-LISTING: BIOL 1010.03 and BIOL 1011.03, CHEM 1011.03 and CHEM 1012.03 or EARTH 1080.03 and EARTH 1090.03, MATH 1000.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1503.21: DISP for Life Science.

This program prepares for students for degrees in Biology, Psychology, or Microbiology and Immunology by integrating concepts and techniques at the first-year introductory level across five subjects: Biology, Chemistry, Mathematics, Psychology, and Statistics. A few field trips are included, but this option lacks a formal Earth Science component. Students interested in degree programs in Biochemistry, Chemistry, Mathematics, Neuroscience, or Oceanography will need to take additional first-year classes in Mathematics and Physics in subsequent years. SCIE 1503 satisfies the first-year Math requirement (through one term of Calculus plus one term of Statistics), the first-year Writing Class requirement, and the Social Science requirement. This 3.5 credit DISP program, combined with the half-credit PHIL 1050, is 4.0 full credits. SCIE 1503 allows students to take a full credit elective in addition to PHIL 1050 during their first year. This option provides flexibility for DISP students to take an elective in first year or a lighter load if they work part-time.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.

FORMAT: Writing requirement, Lecture 10 hours/lab and other activities 6 hours / tutorials 1 hour (optional)

CROSS-LISTING: BIOL 1010.03/1011.03, CHEM 1011.03/1012.03, MATH 1000.03, PSYO 1011.03/1012.03 or PSYO 1021.03/1022.03 and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1504.27: DISP for Life Sciences.

This program provides comprehensive preparation for the Life Sciences at Dalhousie. Concepts and techniques at the first-year introductory level are integrated across six subjects: Biology, Chemistry, Earth Sciences, Mathematics, Psychology, and Statistics. Field trips and other hand-on activities are important components of this class. SCIE 1504 includes a full year of Calculus, and it satisfies the full Social Science requirement and the full Writing Class requirement. SCIE 1504 does not include Physics, so it is not recommended for students intending to continue in the Physical Sciences (e.g., physics, chemistry, engineering). Students will have all of the first-year science and math prerequisites for a major or honours degree in Biology, Marine Biology, Microbiology and Immunology, and Psychology. This 4.5 credit DISP program, combined with the half-credit PHIL 1050, is 5.0 full credits, a full class load.

NOTE: Students taking this class must register in both X and Y in consecutive terms; credit will only be given if both are completed consecutively.

FORMAT: ✍ Writing requirement: Lecture 13 hours / labs and other activities 7 hours / tutorials 2 hours (optional)

CROSS-LISTING: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1080.03 and 1090.03, MATH 1000.03 and 1010.03, PSY 1011.03/1012.03 or PSY 1021.03/1022.03, and STAT 1060.03

CO-REQUISITE: PHIL 1050.03

SCIE 1510X/Y.33: Dalhousie Integrated Science Program.

This program provides comprehensive first-year preparation for any science major or honours degree, including any area of emphasis of Environmental Science, as well as Oceanography, Biological or Environmental Engineering, and Medicine. SCIE 1510 is the most challenging DISP option, it leaves a student's options wide open for second-year science, and it provides the broadest background of all the DISP options. Concepts and techniques at the first-year introductory level are integrated across seven disciplines: Biology, Chemistry, Mathematics, Physics, Earth Sciences, Psychology, and Statistics. Because the essential material from all of these disciplines is studied, the workload of a SCIE 1510 student is heavier than the workload of students in other DISP options or traditional first-year science at Dalhousie. This option satisfies the full Social Science requirement and the full Writing Class requirement. The 5.5 credit SCIE 1510 combined with the half-credit PHIL 1050 is 6.0 credits, a full-credit overload.

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 16 hours / lab and other activities 10 hours / tutorials 3 hours (optional)

CROSS-LISTING: BIOL 1010.03 and 1011.03, CHEM 1011.03 and 1012.03, EARTH 1080.03 and 1090.03, MATH 1000.03 and 1010.03, PHYC 1100.06 or 1300.06, PSY 1011.03/1012.03 or PSY 1021.03/1022.03 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: 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. Lehoux, S. Snobelen, G. McQuat

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 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, 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 the fall term of the year they join Science Co-op. 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 for further information.

INSTRUCTOR(S): A. McKinnon, A. Dunsworth

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

CROSS-LISTING:

EXCLUSION: EARTH 3500.03, ENVS 3500.03, GEOG 3500.03, EARTH 5600.03

SCIE 4001.03: 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, MARI 4664.03

Statistics

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Taylor, K., BSc (St. FX), PhD (U of Alberta) (Mathematics)

Chair of the Department

Dilcher, K., PhD (Queen's)

Director of Division

Hamilton, D., MA, PhD (Queen's)

Faculty Advisors

Gu, H., MSc (Peking), PhD (Hong Kong), (Undergraduate and Co-op)
Susko, E., PhD (Waterloo) (Graduate)

Professor Emeritus

Field, C.A., MSc, PhD (Northwestern)

Professors

Gabor, G., MSc, PhD (Eotvos)
Hamilton, D.C., MA, PhD (Queens)
Smith, B., MSc (Calgary), PhD (Berkeley)
Thompson, K., MSc (Manchester), PhD (Liverpool) - (jointly with Oceanography)

Associate Professors

Gu, H., MSc (Peking), PhD (Hong Kong)
Susko, E., PhD (Waterloo)
Zhao, Youggan, MSc (Western Kentucky, PhD (British Columbia) - (cross appointment with Management)

Assistant 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)
Flemming (Mills), J., MSc (TUNS), PhD (Dal)
Herbinger, C., MSc (Paris), PhD (Dal) - (jointly with Biology)
Hilburn, R., BSc, MSc, PhD (Washington)

Adjunct Professors

Astatke, T. (NSAC)
Chipman, H. (Acadia)
Cole, David (U of T)
Gupta, R.P. (Dal)
Millar, M. (Mt. Saint Vincent)

Postdoctoral Fellow

Wang, H., PhD (Ottawa)

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 majors 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 65 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 1000.03/1010.03
- 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***
- STAT 2050.03***
- Two to 6 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 courses chosen in consultation with the statistics honors advisor.

4000 level

- STAT 4066.03
- Two 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 Director of Statistics through whom a suitable course of study can be arranged.

C. 20-credit Major in Statistics

Please consult the Degree Requirements section, item 1.6 for detailed information.

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
- STAT 2050.03

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 2400 may be taken in place of CSCI 1101

***Some students may take either CSCI 1100.03/1101.03 and/or STAT 2050.03 and/or 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.

D. 15-credit BSc with Concentration in Statistics

Departmental Requirements

1000 level

- MATH 1000.03/1010.03
- STAT 1060.03.

2000 level

- MATH 2001.03
- MATH 2030.03
- MATH 2040.03 or MATH 2002.03
- STAT 2060.03
- STAT 2080.03
- STAT 2050.03

3000 level

- STAT 3340.03
- STAT 3360.03
- STAT 3380.03 or 3350.03
- STAT 3460.03

NOTE: Some students may take STAT 2050.03 and/or STAT 2080.03 in the spring term of their 1st year if they have taken STAT 1060.03 in the fall term. Students are also advised to take STAT 2300.03 and CSCI 1100.03/1101.03 or CSCI 1100.03/MATH 2400.03 in their 2nd or 3rd year.

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 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 www.sciencecoop.dal.ca

Co-op Academic Advisor in Statistics: Dr. Gu. (494-7161)
Email: hgu@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. 4-Credit Minor in Statistics for Computer Science Majors

2000 Level

- MATH 2001.03
- MATH 2030.03
- STAT 2060.03
- STAT 2080.03
- STAT 2050.03 or MATH 2002.03

3000 level

- 1.5 credits in Statistics at the 3000 level or beyond

II. Class Descriptions

Certain courses 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 (www.ssc.ca) 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 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, 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 the fall term of the year they join Science Co-op. Co-operative Education seminars are required by the Canadian Association for Co-operative Education. Student 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.dal.ca/scicooop for further information.
INSTRUCTOR(S): A. Little and others
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 real-life examples drawn from a variety of disciplines. The first part of the class is about designing experiments properly and then describing and summarizing the results of the studies by using descriptive statistics. From there we move to analyzing relationships between variables. In the final part of the class, we develop the basics of statistical inference explaining how to make valid generalizations from samples to populations. Both estimation and hypothesis testing are carried out for one and two sample problems for both means and proportions as well as for simple linear regression. Students will learn to use the statistical package MINITAB. The natural sequel for this class is STAT 2080.03. Other possibilities are STAT 2060.03 and STAT 2050.03. Credit will not be given for STAT 1060.03 if credit has previously been obtained for STAT 2060.03.
FORMAT: Lecture 3 hours, tutorial 1 hour, MLC
PREREQUISITE: Nova Scotia Mathematics advanced 11 and advanced 12 (or pre-calculus) or equivalent
CROSS-LISTING: MATH 1060.03
EXCLUSION: COMM 2501.03, MGMT 2501.03, DISP

STAT 2050.03: Exploratory Data Analysis.

This class is designed to introduce the student to exploratory data analysis and graphical techniques making extensive use of statistical software such as S-plus. Data sets from both experimental and observational studies will be used extensively and the emphasis will be on finding patterns and structure in the data. The student completing the class will be able to do sophisticated graphing, data reduction and data handling. The skills learned will be very useful in several of the advanced statistics classes.
FORMAT: Lecture 3 hours
PREREQUISITE: STAT 1060.03 or STAT 2060.03 or DISP

STAT 2060.03: Introduction to Probability and Statistics.

Rigorous introduction to probability and statistical theory. Subject matter is developed systematically beginning with the fundamentals of probability and following with statistical estimation and testing. The interrelationship between probability theory, mathematical statistics and data analysis will be emphasized. 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 and either MATH 1010.03 or 2030.03, or DISP

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. The class begins with an introduction to model building in linear models and develops the techniques required for multiple regression. From here we consider analysis of variance, factorial designs, analysis of covariance using the general techniques for linear models. The last part of the class will include techniques for two and three way tables along with logistic regression. The use of a computer package for carrying out the computations will be an integral part of the class. 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.

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

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, 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

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, 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. Starting from the location problem, we will move on to regression and to multivariate problems by means of robust covariance estimates. We will also consider robust techniques in time series. Some simple programming will be required to implement various procedures.

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 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 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
 Canada Research Chair: Renee Lyons, PhD
 Other: Project Coordinators, Research Assistants, affiliated faculty and students
 Tel: (902) 494-2240
 Fax: (902) 494-3594
 Website: www.ahprc.dal.ca

The Atlantic Health Promotion Research Centre (AHPRC) was established in May, 1993 through a Centres of Excellence grant from the Social Sciences and Humanities Research Council of Canada (SSHRC) and the National Health Research Development Program (NHRDP). Since 1993, the Centre has generated over \$18 million in research grants and contracts.

The AHPRC is currently supported by the Faculties of Health Professions, Medicine, and Dentistry 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, Canadian Health Services Research Foundation, Nova Scotia Health Research Foundation and Health Canada.

Current research areas include health systems reform, knowledge translation, prevention of chronic illness and disability, settings and health and youth obesity.

AHPRC is the Atlantic representative in the Canadian Consortium for Health Promotion Research which includes university-based health research centres from across Canada.

Atlantic Institute of Criminology

Director: D.H. Clairmont, BA, MA, PhD

The Atlantic Institute of Criminology was established to provide a centre for research in the areas of criminology, policing, and other concerns of the justice system. Associate memberships are available to interested and qualified persons.

Atlantic Region Magnetic Resonance Centre

Director: J.W. Zwanziger, BA, MS, PhD
 Coordinator: M.D. Lumsden, BSc, PhD
 Other Staff: U. Werner-Zwanziger, BSc, PhD

Established in 1982 with assistance from the Natural Sciences and Engineering Research Council, the Centre is located in the Department of Chemistry and involves faculty, researchers and graduate students in all Maritime universities 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) and Avance-500 NMR spectrometers for liquids, Bruker Avance DSX 400 and Avance 700 NMR spectrometers for solids and a dual purpose solids/liquids Bruker AMX-400 NMR spectrometer. 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 current director, Professor J. Zwanziger, holds the Tier 1 Canada Research Chair in NMR Studies of Materials.

The Centre offers facilities for hands-on use by researchers and also provides NMR spectra and expertise to scientists throughout the Atlantic Region. It also interacts widely with Maritime industries.

For information see: www.armrc.chemistry.dal.ca

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/>), 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 Anatomy & Neurobiology, Faculty of Medicine)
 Website: <http://www.brainrepair.ca/>

The Brain Repair Centre (BRC) is a joint research institute of Dalhousie University and the Capital District Health Authority. The BRC is a multi-disciplinary unit focusing on research that can lead to the treatment and repair of the brain to overcome the effects of neurological and psychiatric disorders such as Parkinson's disease, Alzheimer's disease, Huntington's disease, Amyotrophic Lateral Sclerosis (ALS), 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 came together at a meeting held in the Halifax Infirmary in 1999 and decided to focus on stem cell neural transplantation and neuroimaging as areas of innovation at Dalhousie University, Capital Health and the IWK Health Centre.

Examples of developments that have contributed to BRC's research strengths and capabilities include:

- Establishment of a \$12 million magnetic resonance imaging facility with the National Research Council's Institute for Biodiagnostics (NRC-IBD).
- In 2006, the BRC won a \$5.5 million infrastructure grant 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.
- In the neurotransplantation field, the BRC is unique in Canada and one of only four centres worldwide involved in clinical application of neural transplantation.
- 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 neural transplantation and 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 Brain Repair Centre is playing a pivotal role in the development of a new research complex (the Life Sciences Research Institute or LSRI) to support the BRC and provide it an adjacent integrated, up-to-date animal care research facility. When the LSRI is completed, the Brain Repair Centre will become the anchor tenant of this new research and commercialization facility.

The BRC is pursuing a number of approaches to brain repair including neural transplantation, neuroimaging and neuroprotection. 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. To that end, BRC works in close collaboration with the University Industry Liaison & Innovation Office and other related entities.

Canadian Institute of Fisheries Technology (CIFT)

Director: T.A. Gill, PhD
 Telephone: (902) 494-6030
 Fax: (902) 420-0219
 Website: www.dal.ca/cift.engineering.dal.ca

The Canadian Institute of Fisheries Technology 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 fish supplies in Canada and throughout the world.

In addition, the CIFT offers unique opportunities for undergraduate, graduate and doctoral training and research through the Food Science program. Major areas of emphasis are: food biochemistry and microbiology; fats, oils and nutraceuticals; physical properties of foods; fish/food process engineering; computerized control in the food processing industry; food safety and preservation; food rheology, food fermentation and beverage science.

Facilities

The Canadian Institute of Fisheries Technology 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
- seafood 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 instruments 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 and smoking, centrifugal separation, meat-bone separation and modified atmosphere storage.

The pilot plant is especially well equipped for thermal processing with a modern 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 Daltix 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

Undergraduate (BASC) and 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 Ullicki

This Centre, established in 1975, advances instruction, publication, research and development education programs in African Studies. Associated faculty hold appointments in departments and units concentrated in the social sciences and humanities. 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 Lester Pearson International Office.

Centre for Environmental and Marine Geology

Director: Professor D.B. Scott

This center 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 center 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 3 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 center 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 Foreign Policy Studies

Director: Dan Middlemiss, PhD

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 and international politics. It is funded through the Security and Defence Forum of the Department of National Defence and other foundations, government agencies, international organizations, publications' sales, and contracts.

The Centre's work is concentrated in the area of Canadian and comparative maritime strategy and oceans policy, but it also deals with international political economy, regional and global development and peace-building and democratization. Its geographical specializations include foreign policy in Canada, Europe, the South (especially Africa, Asia and the Caribbean), and the U.S. The Centre encourages activities in these areas by Senior Research & Doctoral Fellows, and advances communication among local and international communities in these fields through seminars, workshops, conferences and colloquia, often co-sponsored by local, national and/or international organizations. It publishes occasional papers and monographs on comparative and Canadian defence and security policy 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: www.dal.ca/~centre.

Centre for International Trade and Transportation

Location: 6100 University Avenue
5th floor, Suite 5063
Halifax, NS
B3H 3J5

Director: Gregory Hebb
Phone: (902) 494-1802
Fax: (902) 494-1483
Email: gregory.hebb@dal.ca

Administrative Secretary: Maggie Lapp
Phone: (902) 494-6553
Fax: (902) 494-1483
Email: m.e.lapp@dal.ca

Student Exchange Coordinator: Timothy Richard
Phone: (902) 494-2224
Fax: (902) 494-1483
Email: tim.richard@dal.ca

Website: <http://ise.management.dal.ca>

The Centre was established in 1975, and is primarily funded by Export Development Canada with a mission to foster international business teaching and research and enhance Canada's global competitiveness through innovative programs and outreach services. It carries out these functions within the administrative framework of the School of Business Administration. CITT supports a wide range of learning experience including the Foreign Business Program and the Student Export Awareness Program. Each year the Centre hosts the International Business Student Research Symposium, which is an opportunity for students to present their research to academic and business leaders. CIBS offers research fellowships to international business majors in their final year of MBA study.

Centre for Marine Vessel Development and Research (CMVDR)

Acting Director: Farid Taheri, PhD, PEng

The Centre was established in 1989 to provide specialized technical services to the Marine Industry. Emphasis is on pure and applied research in marine dynamics, with particular focus on the performance prediction analysis of marine vessels and offshore structures.

Areas of expertise include:

- Fundamental research in marine hydrodynamics
- Ship/boat motion and wave-loads, including response of offshore structures in waves
- Vessel seakeeping and safety studies, including swamping and capsize behaviour in extreme seas
- Optimal hull forms for minimum resistance
- Ship maneuverability in restricted waters
- Computer simulation of ship and offshore structure motions and flow fields
- Small Craft model tank tests
- Full scale tests, at sea

CMVDR has a policy to involve graduate students of the Naval Architecture Program as much as possible in its research contracts with industry.

Research Facilities:

Marine Craft Model Towing Tank

The marine craft model towing tank is located in the Civil Engineering Hydraulic Laboratory on Sexton Campus. The tank's dimensions are 1m x

1m x 30m. The carriage has a maximum velocity of 4.0m/s (13ft/sec) and can sustain a constant carriage speed over a usable rail length of 25m. The fully-automated carriage control system allows the operator to pre-select a desired test velocity profile so that a maximum constant velocity window is obtained within the safe operating limits of the tank.

A computer-controlled wave-making system is installed in the tank, comprising two wave-makers, one at each end. Each can act as a wave-maker or a wave-absorber. The system can make progressive or standing waves, as well as regular or irregular waves. The maximum wave height is about 0.3m (1 ft).

Computing Facilities

CMVDR and the post-graduate Naval Architecture Program has sophisticated and networked Computer Systems to support its advanced research work.

The computer systems are used for running numerical computations, required for the on-going development of numerical techniques to solve complex hydrodynamic problems. Advanced 2D and 3D visualization software is also developed on the systems so that real-time dynamic simulations can be carried out and displayed.

In addition to advanced hydrodynamic and hydroelastic software developed in-house, CMVDR has commercial hull design and analysis software packages, including FastShip, GHS, Shiphul 2000, AutoShip and ABS Safehull. These are used to complement research efforts, and to instruct naval architecture students.

RBC Centre for Risk Management, Faculty of Management

Director: Ronald Pelot, PhD, PEng
Phone: (902) 494-1769
Coordinator: Janet Lord, Centres for Integrated Research and Learning, Faculty of Management
Phone: (902) 494-7104
Website: riskcentre.dal.ca

The mission of the RBC Centre for Risk Management is to be a catalyst for the interdisciplinary study of risk and for knowledge transfer between the various fields of study on risk management. Approaches to the management of risk are of significant interest to most academic disciplines at Dalhousie and functional areas of operation within any industry. One of the important strengths of the RBC Centre for Risk Management is a multidisciplinary approach to the research and the involvement of partners from the public and private sectors. Dalhousie researchers will bring to the Centre expertise in disciplines such as:

- **Decision Analysis:** development of formal models of decision making;
- **Engineering:** reliability in geotechnical engineering and marine risk analysis;
- **Statistics:** estimation of probabilities and risk matrices for extreme events;
- **Economics:** exploration of utility, trade offs and cost/benefit analysis;
- **Finance and Insurance:** use of derivative instruments and insurance for managing risk;
- **Public Administration:** consideration of the dynamics and impact of institutional, legislative and regulatory decisions;
- **Health Sciences:** public health risk, workplace safety;
- **Environmental Studies:** assessment of local and global environmental threats;
- **Information Management:** framework for the organization of massive levels of information and access/security issues of information systems;
- **Legal Studies:** guidelines governing the rights and liabilities of contractual obligations designed to manage risk within national and international jurisdictions.

The RBC Centre for Risk Management will generate a regional, national, and international profile and create a source of competitive advantage for Dalhousie in an area of fundamental importance to public and private sector institutions. The accumulation of knowledge and skills in risk management will enrich individual faculty and strengthen the degree programs not only in the Faculty of Management's four Schools of Business Administration, Public Administration, Resource and

Environmental Studies and Information Management, but also in virtually every other school and discipline on the Dalhousie campus including science, law, engineering, medicine, social sciences. The Centre could lead to the creation of a knowledgeable and effective workforce facing today's issues, and ultimately make the difference in building a strong and healthy society.

Guided by a prominent Executive Advisory Council, the Director of the Centre will engage in research and scholarly activities, generate funding through grants and contracts and develop conferences and programs in response to the educational demands of the risk management industry.

Centre for Water Resources Studies

Director: W.C. Hart, PhD

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.

Eco-Efficiency Centre, Faculty of Management

Director: Ray Cote
Phone: (902) 494-6656
Technical Manager: Gerry McDonell
Program Coordinator: Penny Slight
Website: 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 and industrial ecology 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 and industrial ecology 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
5. foster sustainable business practices as models and develop local case studies for teaching purposes.

Eco-efficiency is identified as a dimension of competitive advantage for businesses. The research of the Centre provides SMEs with the tools necessary to increase eco-efficiency by investigating and applying techniques such as pollution prevention, life cycle analysis and eco-industrial networking. The Centre's research also influences the development of new government policies at all levels using an action research mode. The Centre 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, and education of personnel.

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.

With support from HSBC Bank Canada, the Centre and the Faculty of Management have established a high profile lecture series on business and the environment, which began in 2004. The Centre has developed relationships with organizations all over the world, including: the Canadian Eco-Industrial Network, the North American Eco-Industrial Development Council, the Eco-Industrial Network- Asia, the Symbiosis Institute, Denmark, and the United Nations Environment Program. These relationships have created opportunities for collaborative research in the areas of eco-efficiency, pollution prevention, and eco-industrial networking.

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 in eco-efficiency in Atlantic Canada and Canada generally. Co-op students are hired regularly and a new program will support Master of Resource and Environmental Management and Master of Business Administration students in completing internships involving both traditional and action research.

Eco-efficiency 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 working relationships with the Atlantic Canada Opportunities Agency, Natural Resources Canada's Office of Energy Efficiency, Environment Canada, the Nova Scotia Department of Environment and Labour, Conserve Nova Scotia and Office of Economic Development, and the Resource Recovery Fund Board Nova Scotia Inc.

European Union Centre of Excellence

Director: F. Laursen, PhD
Telephone: (902) 494-6611
Principal Investigator: R. Boardman, PhD

Established in 2006, the European Union Centre of Excellence in Canada gives Dalhousie University recognition from the European Union to carry out projects and activities that promote greater awareness of the EU in Canada. Dalhousie has joined three other centres in Canada with this title, located at Carleton University, the University of Toronto, and Université de Montréal/McGill University. While based in the Faculty of Arts and Social Sciences, with special emphasis on the Department of Political Science, this centre coordinates exchanges of faculty and students, conferences, workshops, symposia, and other projects and activities from other faculties as well, including Law, Management, and Science. Some of the activities include the study of international oil and gas, security issues, the EU and Africa, health issues, immigration, merger policy, biodiversity policy, and EU constitutional issues. Funds from the centre will also support activities in the Centre for Foreign Policy Studies and the Metropolis Project, and will support new EU teaching initiatives, as well as graduate students through fellowships and research assistantships. Support will also be provided to the Killam Library to strengthen its collection of EU materials.

Health Law Institute

Director: William Lahey, BA, B.A., LLB, LLM
Dalhousie University
6061 University Avenue
Halifax, NS B3H 4H9
Phone: (902) 494-6881
Fax: (902) 494-6879
Email: hli@dal.ca
Website: 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 in Canada 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: Mary Anne White, BSc, PhD
Administrative Offices: 6136 Coburg Rd.
Halifax NS B3H 3J5
Phone: (902) 494-6373
Fax: (902) 494-8016
URL: www.irm.dal.ca

Established in 2002, IRM is made up of about 100 faculty members in six faculties (Science, Engineering, Dentistry, Medicine, Architecture and Planning and Management) and seventeen 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. Graduate students associated with these research groups are invited to become Associate Members of IRM. See www.irm.dal.ca/graduatestudies.php for details.

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 Atlantic Region Magnetic Resonance Centre)
- Scanning electron microscope
- Focused ion beam
- X-ray photoelectron spectrometer (XPS)
- Secondary ion mass spectrometer (SIMS)
- Sputtering system
- Ultra-high speed optical systems
- Physical properties measurement system (PPMS)
- Scanning thermal microscope (SThM)
- Beowulf computer system
- 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 for details.

Law and Technology Institute

Director: Chidi Oguamanam, LLB, LLM, PhD
Associate Director: Michael Deturbide, BSc, BJ, LLB, LLM
Location: Dalhousie Law School
6061 University Avenue
Halifax, NS B3H 4H9
Phone: (902)494-1469
Fax: (902)494-1316
Email: lynda.corkum@dal.ca
Website: <http://www.dal.ca/law/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 commenced 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. 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, edited by Professors Deturbide and Scassa. The CJLT, which is published three times per year, 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

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

Director: David L. VanderZwaag, MDiv, JD, LL.M, PhD
 Associate Director: Meinhard Doelle, BSc, LL.B, LL.B, JSD
 Location: Dalhousie Law School
 6061 University Avenue
 Halifax, NS B3H 4H9
 Phone: (902) 494-1988
 Fax: (902) 494-1316
 Email: MELAW@dal.ca
 Website: www.dal.ca/law/MELAW

The Institute, which is housed in the Law School, carries out research and consultancy activities and also directs the MELP academic specialization. Its current Director and primary researcher is the holder of an appointment as a senior Canada Research Chair in Ocean Law & Governance. In addition to their scholarly research and publication activities, MELP 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 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. 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*.

The MEL Institute 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. The MEL Institute 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, and the recently established Ocean Tracking Network (OTN) led by the Department of Oceanography. The MEL Institute 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.

Minerals Engineering Centre

Director: Georges J. Kipouros, Ph.D, P.Eng
 Phone: (902)494-6100
 Location: 1360 Barrington Street
 G. Building, Sexton Campus
 Halifax, NS, B3J 2X4
 Phone: (902)494-3955
 Fax: (902)494-3506
 Website: http://minerals.engineering.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. 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 and clay fraction
- Size analysis, including screening, sieving, and sub-sieve analysis
- Dense liquid analysis
- Preparation of thin sections
- Physical and chemical analytical methods using atomic adsorption, spectrographic and wet chemical techniques
- 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.

The Minerals Engineering Centre provides opportunities for undergraduate and graduate students to learn various analytical and mineral 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: Steven Barnes, PhD.
 Contact: neuroscience.institute@dal.ca
 Website: 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. The development of the Institute paralleled the establishment of many such institutes throughout the world and marks the dramatic progress in understanding the workings of the brain.

The Institute 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 and, to this end, the Institute coordinates the activities of neuroscientists in the Faculty of Medicine and the Faculty of Science, facilitating collaboration between clinical and basic scientists in the two Faculties. Some foci of current research activity include: the autonomic nervous system; development and plasticity of the nervous system; and, sensory physiology. The Institute also provides a vehicle to seek new sources of funding, and will encourage 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 a seminar series annually, and coordinates a variety of community outreach events.

Norman Newman Centre for Entrepreneurship

Director: David Roach, MBA, PEng
 Coordinator: Janet Lord, Centres for Integrated Research and Learning
 Phone: (902) 494-7104
 Website: entrepreneurship.dal.ca

The Norman Newman Centre for Entrepreneurship is a research unit within the Faculty of Management. The centre is led by a Director who will engage in research and generate funding through grants and contracts. Faculty across the University have the opportunity to be affiliated with the Centre and can be appointed as research associates. The associates support the activities of the Centre through research, student supervision and participation in seminars, workshops and conferences. Successful entrepreneurs and faculty from other universities are able to participate in the Centre as affiliates.

The primary objective of the Centre is to create a focus for research and curriculum development related to entrepreneurial activity in all of its many forms. Research and teaching concentrate on understanding the successful identification, evaluation and exploitation of entrepreneurial opportunities by both new and established companies.

Other objectives:

- The products of its research contribute to the body of knowledge in an area of practical significance.
- It establishes an organization base to support entrepreneurial activities and initiatives in the Dalhousie community.
- The Centre gives the university a vehicle which can be used to reach out to stakeholders in the local community.
- It provides a platform for national and international linkages with other academic institutions that are involved in the field of entrepreneurship.

The Nova Scotia CAD/CAM Centre

Location: 1360 Barrington Street
 P.O. Box 1000
 Halifax, NS B3J 2X4
 Fax: (902) 422-8380
 Contact: Debbie Brown, Administrative Assistant
 (902) 494-3242

Established: April 29, 1983, as a cost-recovery, industry-oriented Centre within Dalhousie. It is primarily affiliated with the Departments of Mechanical and Civil Engineering, but also works with all other departments.

Mandate: As set out in an agreement with the Province of Nova Scotia, Dalhousie established an "industry-oriented CAD/CAM Centre to assist provincial manufacturers and consulting engineers to develop, design and utilize CAD/CAM applications". Recently, the Centre has undergone a variety of changes and is now comprised of two new groups, the Intelligent Structures and Innovative materials (ISIM) Group and the Advanced Manufacturing Group. It is also pleased to announce that it is home to the Canada Research Chair in Structural Health Monitoring which was awarded to Dr. Jean-Francois Trottier, PEng in June 2001.

Director: Dr. Jean-Francois Trottier, PEng
(902) 494-3990

Admin. Assistant: Debbie Brown
(902) 494-3242

Advanced Manufacturing Group

Coordinator: Dr. Andrew Warkentin (494-3901)

Manager: Mr. Robert Warner, PEng (494-6096)

Manufacturing, research and technical support services to:

- Dalhousie Faculty of Engineering
- private industry
- government agencies: DND, DREA, BIO

Areas of Expertise:

- CAD/CAM training and technical support in MasterCAM, SmartCAM, Solid Edge and Pro/Engineer and Unigraphics
- prototype design and machining with CNC machines
- rapid plastic part prototypes by injection molding
- reserve engineering and inspection with a Mitutoyo CNC Coordinate Measuring Machine (CMM)

Mr. Warner teaches IENG 3321: Manufacturing Processes, and as PACE Coordinator for the University teaches Solid Edge and Unigraphics in Design and Graphics I (NGI 1100), Design and Graphics II (MECH 2100), Manufacturing (MECH 4000) and Design Project I (MECH 4010).

Intelligent Structures and Innovative Materials (ISIM) Group

Adjunct Associate Professor: Dean Forgeron, PEng, PhD (494-2847)

Research Professional: Christopher Barnes, P Eng (494-3904)

- R&D of novel reinforcing fibers and other materials for use in concrete
- fibre reinforced concrete, shotcrete and high performance concrete and their applications
- composite and advanced materials
- advanced sensors for intelligent structured health monitoring of buildings and structures
- remote monitoring and intelligent data processing
- innovative steel-free concrete decks for bridges, wharves and parking garages
- modeling of buckling and post-buckling failures
- operates ISIS - Halifax
- Non-destructive Infrastructure Inspection Applications using Impact-Echo, Spectral Analysis of Surface Waves and Ground Penetrating Radar
- resonant frequency testing of materials
- stiffness profiles of layered media and material specimens
- bridge deck deterioration
- continuous pavement layer thickness
- waterproofing membrane integrity
- detection of voids under jointed portland cement concrete pavements
- detection of water under pavements

Equipment & Software Available for Industry and Dalhousie Use

- MasterCAM, Solid Edge, Pro/Engineer, Unigraphics
- CNC milling centre Mori-Seiki MV Junior 3-axes
- CNC turning centre lathe Mori-Seiki SL-25
- Impact-Echo Inspection System
- Spectral Analysis of Surface Waves Inspection System
- Resilient modules testing of materials
- Co-ordinate Measuring Machine (CMM), Mitutoyo measuring range of 13" x 20" x 12"

- Impact testing machine Tinius Olsen Izod - Model 66
- Digital surface roughness gage
- Injection Molding Machine (25 Ton Arburg, 30 gram shot capacity)
- Ground Penetrating Radar Infrastructure Inspection System (400MHz to 1500 MHz)
- ASTM C1609.06 closed-loop testing
- Australian Round Determinate Panel test
- South African Waterbed test
- Creep and fatigue of materials

Technology Transfer Activities

- contracts from and joint ventures with companies, industry and government
- training programs for industry and government
- technical and application advisory service
- research and development
- technical services
- prototype development
- use of facilities

Actively Seeking

- collaborative projects (Research and Development)
- access to specialized equipment and facilities
- specialized testing contracts

Support by:

- Canada - Nova Scotia cooperation Agreement on Technology Development
- Natural Sciences and Engineering Research Council of Canada (NSERC)
- Canada Research Chairs Program (CRC)
- Canadian Foundation for Innovation (CFI)
- Atlantic Fiber Technologies Limited

Trace Analysis Research Centre

Director: A. Chatt, BSc, MSc, PhD

With the assistance of a grant from the National Research Council, the Centre was established in 1971 to train analytical chemists and, through research, to contribute to the advancement of analytical chemistry. A major facility of the Centre is a low-power nuclear reactor (SLOWPOKE) which is available to researchers within Dalhousie and elsewhere.

Vehicle Safety Research Team

Director and Principal Investigator: C.R. Baird, PhD, PEng

The Vehicle Research Safety Team (VSRT) is one of six university-based teams located across Canada. These teams operate on a non-profit basis under contract to Transport Canada (Surface), and were established to conduct research into vehicular crashes.

The VSRT has been in operation since 1972 and, in addition to participating in national programs, has been involved in several other studies, including an on-going and expanding program of seeking out and examining alleged safety-related defects. The major portion of the program is geared to relating injuries from vehicular-crashes to the injury-causing mechanisms or sources in vehicles. As such, results of collision studies are continually being related to Transport Canada Vehicle Standards.

The team is composed of two professional engineers from the Faculty as well as two full-time investigators, one of whom is a professional engineer. In addition, an advisory committee exists, providing liaison and interaction with medical personnel, policing agencies and provincial transportation authorities. The VSRT has special research interests in causal factor evaluation methods, in computer-aided collision reconstruction, in data base management and modular analysis procedures, particularly in relation to injury severity and injury-causal factors.

The team is currently participating in a number of national programs including injuries associated with air-bag deployments and side impact collisions.

Resources and Services

1. Alumni Association/Alumni Relations

The Alumni Association is comprised of over 100,000 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 (494-8801/1-800-565-9969). 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.

2. Anti-Plagiarism Service

Plagiarism is considered a serious academic offence. At the recommendation of Senate (June 2002), Dalhousie subscribed to Turnitin.com. Academic Computing Services and the Dalhousie University Libraries jointly support this service. Faculty who wish to use this service can get started at <http://integratedlearningonline.academiccomputing.ca/Learner%20Resources/Turnitin.com/>. Resources for developing awareness among students, and to help them avoid plagiarising are available at <http://learningandteaching.dal.ca/nas/ai.html>

3. Athletics and Recreational Services

Athletics and Recreational Services offers a wide range of programs for every Dalhousie student. An extensive program of club and intramural activities offer fun, fitness and competition while 14 varsity sports provide excitement for athletes and spectators alike. For those who prefer recreational activities, there are a great number of fitness, leisure and aquatic instructional programs.

Recreation facilities on campus include: Dalplex-offering a 50,000 sq. ft. fieldhouse, international-size pool, two weight rooms, two regulation-size hardwood basketball/volleyball courts, numerous "no-fee" racquet courts, an indoor jogging track, a rock climbing centre, a golf driving cage, and family-fitness features such as the Fun Zone play area, a family change room; Dalhousie Memorial Arena, Studley Gym, and F.B. Wickwire Memorial Field (one of Canada's largest artificial playing surfaces). The Cardio Fitness Centre, as well as babysitting services, are available for additional fees. The F.H. Sexton Memorial Gymnasium on the Sexton Campus includes a gym, weight room, squash court and other facilities. For details on fitness and recreation at Dalhousie contact Dalplex at 494-3372, F.H. Sexton Memorial Gymnasium at 494-3550, the Intramural Office at 494-2002 or visit www.athletics.dal.ca.

4. Black Student Advising Centre

The position of the Black Student Advisor was created by Dalhousie University, initiated by the Black Canadian Students' Association, to provide information to assist and support new, prospective and returning students of African or Black descent. The Centre is intended to foster a sense of community with other students on campus and to increase intercultural awareness.

The advisor may organize program activities and arrange local community tours which assist students in developing contact within the African Nova Scotian Community. The advisor can provide confidential services, individual and/or group assistance, impartial observation, relevant resource materials, along with a referral service which may benefit your academic, personal and social development on and off campus.

There is a small student resource room for meeting, peer support, reading and studying. Information is also available on scholarships, bursaries, employment and upcoming community events.

The Centre is meant to be beneficial to ALL students, faculty and staff as a means of increasing awareness and sensitivity to students of African or Black descent and their issues and presence within the University community.

For further information contact: phone (902) 494-6648; fax (902) 494-8013; email BSAC@dal.ca; webpage www.dal.ca/bsac

5. Career Services Centre

The Career Services Centre assists you in:

- exploring a full range of career and work possibilities that match your career goals;
- preparing job-search competencies and tools 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.

Please refer to Career Services Centre website at www.dal.ca/csc 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. To fulfill this primary goal, CLT organizes a range of programming for faculty and teaching assistants. Workshop series, presentations, 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. All workshops are open to the full Dalhousie community.

Confidential Consultations. Confidential consultations on teaching and learning issues are also available to colleagues. The Peer Consultation Program pairs experienced colleagues who have been recognized for their teaching excellence with colleagues seeking to improve students' learning. In addition, CLT staff members provide consultation services to graduate students, faculty, and administrators on a wide range of topics.

Annual Events: On an annual basis, CLT coordinates New Academic Staff Orientation, TA Days, Recording Teaching Accomplishment Institute, 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 organizes several university-wide teaching awards, including the Dalhousie Educational Leadership Award, the Alumni 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.

Grants: The CLT administers a small number of grants to assist faculty engaged in pedagogical initiatives aimed at enhancing student learning.

Publications: The CLT newsletter, *Focus on University Teaching and Learning*, is published twice a year and is available online on the CLT website (www.learningandteaching.dal.ca). Also available online is *University Teaching and Learning: An Instructional Resource Guide for Teaching Assistants at Dalhousie University*. Available to purchase or borrow from CLT are *Recording Teaching Accomplishment: A Dalhousie Guide to the Teaching Dossier* and *Learning through Writing: A Compendium of Assignments and Techniques*. CLT's lending library includes both print and video resources on topics related to teaching that may be borrowed by faculty, teaching assistants, and students.

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.

- Studley Audio-Visual Classroom Services supplies equipment, training, and support to students, staff, and faculty. AV Staff provide technical support for classrooms and operate equipment loan pools on Studley campus, 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, promotional, or other academic or administrative purposes. Staff bring creative and technical expertise to productions for broadcast, for the web, or for the classroom.
- 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>.

Distance Education: CLT provides consultation on the development of distance education courses, and maintains an information Website for students and faculty (www.distanceeducation.dal.ca). Information about specific Distance Education courses or programs is also available from the Registrar's Office.

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 (494-1622), (CLT@dal.ca), or you can visit the CLT website at: <http://learningandteaching.dal.ca>

7. Counselling Services

The Counselling Services Centre offers programs for personal, career and learning disability concerns. Counselling is provided by professionally-trained counsellors and psychologists. Strict confidentiality is ensured. Counselling is available both individually and on a group basis. Topics covered by regularly offered group programs, or individual counselling, include Career Decision Making, What to do with a Degree in . . . , Exam Anxiety Reduction, Public Speaking Anxiety Reduction, Grief and Loss, Sleep and Relaxation, Overcoming Procrastination, Anger Management, and Attention-deficit Disorder. Information on a wide variety of careers and academic programs is available in The Frank G. Lawson Career Information Centre. The Internet, CD-ROMS, reference files and books, magazines and newsletters, as well as a variety of takeaway tip sheets, all form part of the Centre's large and growing resource collection.

The Counselling Services offices and its Frank G. Lawson Career Information Centre are located on the 4th Floor of the Student Union Building. In addition to regular office hours, the Centre is open one evening a week during the academic year. Inquire or make appointments by dropping in or calling 494-2081. Detailed information on services and the scheduling of group programs and workshops is available on the Dalhousie Counselling Services website: www.counsellingservices.dal.ca.

8. DalCard

The DalCard (also referred to as the Dalhousie University ID Card or Banner Card) is a convenient multi-purpose card, which gives the cardholder access to various facilities and services. 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. Employees may obtain a DalCard at the DalCard Office or at the Student Service Centre on the Sexton campus. See www.dal.ca/dalcard for more information.

9. 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 1040 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.

10. Dalhousie Multifaith Centre

The chaplains at Dalhousie provide confidential counselling on personal and spiritual issues and provide opportunities for prayer and worship, retreats, workshops and social outings. The Centre provides a non-threatening environment where students and staff can address the basic questions of meaning and purpose in their lives.

Chaplains currently represent the Anglican, Buddhist, Christian Reformed, Jewish, Lutheran, Muslim, Roman Catholic, and United Church faith traditions. They are, however, available and receptive to all students, faculty, and staff regardless of religious background or can refer you to religious leaders of many other denominations and religions. For students who are concerned about religious groups on campus, the chaplains have developed four brochures, "Dalhousie Multifaith Centre," "Religious Groups: What to Expect, What to Accept, and What to Avoid," "Places of Worship At and Near Dalhousie," and "Frequently-Asked Questions on the Dalhousie Multifaith Centre."

In the event of an emergency, contact the Student Union Building information desk at 494-2140 for chaplains' home telephone numbers. Feel free to drop by the office any time to introduce yourself and to find out more about the office and its services. Visit the website at www.dal.ca/dmc.

11. 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 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 a.m. to 4:30 p.m. Monday through Friday, phone number 494-1106 or email dsu@dal.ca. Check out the website at www.dsu.ca, or my.dsu.ca.

12. Housing/Residence Services

The University is pleased to guarantee housing in University-owned properties for all new students. It is, however, 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 housing information. They will also be asked to pay an Admission Deposit. It is 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.

Students with disabilities are encouraged to contact the Residence Office at (902) 494-1054, or email: housing@dal.ca, for information and assistance.

The traditional style residences at Dalhousie are chiefly for undergraduate students; very few graduate spaces are allocated and in many cases students pursuing advanced degrees are not prepared to live with the exuberance of first and second-year students. All students living in traditional style residences are required to participate in one of the meal plan options available.

The information below gives a description of 1. traditional on-campus residences, 2. non-traditional on-campus housing which includes apartment style housing owned by the university, 3. the services offered by the off-campus housing listing service, and 4. general information. For information on housing 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 listing services provided by the Off-Campus Housing office.

Although accommodation in residence is guaranteed, students must apply online and are encouraged to submit their residence application immediately upon receiving their letter of academic admission.

1. Traditional On-Campus Residence

A. Studley (Main) Campus

i. Howe Hall

Centrally located on campus, Howe Hall, provides accommodation for 700+ undergraduate students. The sprawling, grey ironstone complex is divided into 6 houses: Bronson, Cameron, Fountain, Henderson, and Smith. Houses are co-ed. Each house has its own distinctive identity and student government. The ratio of seniors to first-year students is approximately 30/70.

The houses offer both double and single rooms with singles assigned to senior undergraduates and first-year students and doubles for first-year students. Facilities include a dining room, lounges, television rooms in each house, a canteen, games room, squash courts, study areas, laundry rooms, computer room and 24-hour front desk. Within residence rooms, ResNet (high speed Internet), local telephone service and cable TV service are provided.

ii. Shirreff Hall

Shirreff Hall provides accommodation to 407 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 4 areas - the Annex, Newcombe House (female only), while Old Eddy & New Eddy are co-ed, with alternating female and male floors. Old Eddy and New Eddy have both single and double rooms while Newcombe has single rooms only.

Shirreff Hall offers a dining room, an elegant library and visitors' lounge, study areas, computer rooms, games room, television lounges, kitchenettes, canteen, laundry room, and 24-hour front desk. ResNet (high speed Internet), local telephone service and cable TV service are provided within each room. Students also have access to two pianos.

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), local telephone service and cable TV service are provided.

iv. Risley Hall

Dalhousie's newest co-ed residence, Risley Hall, opened in September, 2004. It 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, computer room and a 24-hour front desk and within each room ResNet (high speed Internet), local telephone service and cable TV service are provided.

v. Lyall House, DeMille House, Colpitt House

These properties, which were formerly faculty offices, have been converted into 3 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 residences, a meal plan is required and meals are usually eaten at Howe Hall. Services include a shared laundry area, ResNet (high speed Internet), local telephone service and cable TV service.

B. Sexton Campus

i. Gerard Hall

Gerard Hall is a 12-story traditional style co-ed residence that houses 200+ students in single and double rooms. It is located at the corner of Morris and Barrington Streets. Gerard Hall offers laundry facilities, a computer lab and a big screen TV, DVD player and satellite access in the main lounge. Within residence rooms, ResNet (high speed Internet), 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 Hall, Risley Hall or Shirreff Hall.

2. Non-Traditional On-Campus Housing, including apartments

A. Studley (Main) Campus

i. 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. Although they

are generally occupied by students in graduate programs or professional schools, a few spaces are reserved for undergraduates.

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. A trained senior student acts as a House Assistant and liaises with the Residence Life Manager to provide administrative and resident related services. ResNet (high speed Internet), local telephone service and cable TV service are provided. Meal plans are not mandatory, but may be purchased separately to use at any dining hall on campus.

ii. 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. Preference is given to senior undergraduates, especially to those who apply in groups of three.

Glengary has 12 furnished apartments, each with space for three students in three single rooms. 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), local telephone and cable TV service are provided in all apartments. Coordinators are available for security and administrative services and also act as a resource for students who may need advice or assistance.

B. Sexton Campus

i. Graduate House

This facility houses 14 graduate students, aged 25 and older, in single rooms. It is located a short walk from Gerard Hall on Morris St. ResNet (high speed Internet), local telephone service and cable TV service are provided.

Meal plans are not mandatory, but may be purchased separately to use at any dining hall on campus.

ii. Fenwick Place

Dalhousie's 33-storey Fenwick Place offers students the privacy and the independence of apartment living. Located in south end Halifax, it is only a 15-minute walk or a short bus ride from Studley campus, or a 5-minute walk to Sexton campus. Fenwick houses both single students and families in a harmonious living environment.

Many of the 252 apartments in Fenwick Place are furnished to accommodate students in groups of two, three or four. Priority is given to students who apply in groups or to those who are currently living in a Dalhousie residence. Each of these apartments has a full kitchen and bathroom, furnished living room and dining area and a balcony. Bedrooms have desks and a mate-style bed. Heat, hot water and electricity are included in the residence fee. ResNet (high speed Internet), local telephone and cable TV service are included in all apartments. Linens, dishes, utensils, bedding and small appliances are not provided.

Fenwick also has a number of unfurnished bachelor, one and two-bedroom apartments which are rented to single students or families. Each of these apartments has a full kitchen and bathroom. Heat, hot water, and satellite television are included in the rent. Laundry facilities are available on every floor of Fenwick Place. The front desk is open 24 hours a day with staff available to provide security, information and advice to students. ResNet (high speed Internet), local telephone and cable TV service are included in all apartments.

3. Living Off-Campus

Dalhousie's Off-Campus Housing office assists students who do not want to live on campus or who have been unable to find a place in residence or in University apartments and houses. Located in Risley Hall, this office is designed to help students find off-campus accommodation.

The Off-Campus Housing office provides centralized information on available housing in the Halifax metro area, including apartments, shared accommodations, rooms, condos and houses. Up-to-date computerized

printouts of these listings are available for viewing as well as telephones for calling landlords and material such as maps and transit schedules.

Off-Campus Housing has a website: <http://www.dal.ca/och>. You can search for accommodations as well as list your own place at no charge if you are a Dalhousie student.

Although the housing staff cannot arrange, inspect or guarantee housing, they will do everything they can to help students find accommodation that is pleasant, inexpensive and close to campus.

Because of 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

- Online applications must be accompanied by an application fee in Canadian funds, payable to Dalhousie University. Fee and deposit amounts are listed on the Housing website (www.dal.ca/housing).
- Acceptance into an academic program guarantees a place in residence, but a separate housing application, submitted online, is required.
- To live in any of the University-owned buildings, students must maintain full-time status at Dalhousie throughout the academic year.

For further information on living at Dalhousie, or for a hard copy of the residence application form, do not hesitate to contact:

Howe Hall, Eliza Ritchie Hall, Shirreff Hall, Gerard Hall, Risley Hall and Mini Residences

Location: Residence Office
1443 Seymour St.
Dalhousie University
Halifax, N.S. B3H 3M6
Telephone: (902) 494-1054
Email: housing@dal.ca
Website: www.dal.ca/housing

Fenwick Place, Glengary Apartments, Graduate House and Residence Houses

Location: Accommodation Office
Fenwick Place
Dalhousie University
5599 Fenwick Street
Halifax, N.S. B3H 1R2
Telephone: (902) 494-2075
Email: fenwick@dal.ca
Website: www.dal.ca/housing

Director of Housing, Conference and Ancillary Services

Location: 1443 Seymour St.
Dalhousie University
Halifax, N.S. B3H 3M6
Telephone: (902) 494-3365

Off-Campus Housing

Location: Off-Campus Housing
Risley Hall, Room 1023
1233 LeMarchant Street
Halifax, N. S. B3H 3P6
Telephone: (902) 494-2429
Email: och@dal.ca
Website: www.dal.ca/och

ResNet

Location: Dalhousie University
1443 Seymour St.
Halifax, NS B3H 3M6
Telephone: (902) 494-8036
Email: resnet@dal.ca

13. International Student & Exchange Services

The International Student & Exchange Services (ISES) office is committed to welcoming, supporting and servicing new and returning international and exchange students to Dalhousie. ISES provides a resource and activity centre for international students. Advisors are available to meet with students on a variety of issues including finances, immigration matters, exchange opportunities, health insurance and personal issues. Referrals are also made to other areas on campus when necessary. The ISES Office organizes orientation activities that assist international students in adjusting to a new culture and in achieving their educational and personal goals. A variety of social, cultural and information programs are also held throughout the year. The International Student Advisor is also available to meet with students on Wednesday morning at the Student Service Centre (Sexton Campus) at 1360 Barrington Street.

Student exchange and study abroad services are facilitated by the Student Mobility Advisor at the ISES Office. 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.

The ISES Office is located in Room G 25 the Killam Library. You can email the ISES Office at ises@dal.ca, or by calling (902) 494-1566.

14. Lester Pearson International (LPI)

Lester Pearson International (LPI) was founded in 1985 to promote Dalhousie's involvement in international development activities. In 1987, LPI merged with the Centre for Development Projects and was given responsibility for the guardianship of all externally-financed international development programs and projects at Dalhousie. Since then, its mandate has been further expanded to support a broader range of activities which help to internationalize the university.

In general, LPI supports the Dalhousie community's involvement in international activities. Towards this end, LPI helps to develop, support and oversee the university's international projects; coordinates a development education program entitled DAL-Outreach which organizes seminars and events; disseminates information concerning international activities and opportunities to both the external and internal communities; serves as the university's International Liaison Office/Officer (ILO) which provides a central contact point for donor agencies, international officials/embassies, etc.; facilitates the university's international agreements and maintains the Agreements of Cooperation Register; and hosts many official international visitors, visiting scholars, and delegations to the university. Although LPI is not an academic unit of the university, it encourages and supports the study of international issues and serves as a resource centre for students, faculty and staff. LPI is located in the Henry Hicks Academic Administration Building on the third floor.

15. 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 system is made up of the following components: the Killam Memorial Library - Humanities, Social Sciences and Science, the Sir James Dunn Law Library, the Kellogg Health Sciences Library, and Sexton Design and Technology Library - Architecture, Engineering, and Planning.

As of April 1, 2007, the holdings of the Dalhousie Libraries include over 1,900,823 volumes of books, bound periodicals, documents and bound reports, 452,520 microfilm and microfiche, 95,235 maps and other media, 10,906 music scores and 11,798 music recordings. The libraries subscribe to 61,482 serials titles, including 57,132 electronic titles.

Dalhousie libraries participate in Novanet, a network which shares a single automated online catalogue of the holdings of the member libraries (Mount Saint Vincent University, Nova Scotia College of Art & Design, Saint Mary's University, University College of Cape Breton, University of King's College, the Atlantic School of Theology, St. Francis Xavier

University, Nova Scotia Agricultural College and Nova Scotia Community College). Users borrow from Novanet libraries upon presentation of their University ID card.

16. Mature Student Services

Mature Student Services assists individuals 23 years of age and older who have been out of high school for at least 4 years, and anyone without a high school diploma wishing to gain entrance to university.

Services include pre-admission counselling and university preparation courses, such as Writing for Academic Study, Chemistry, Physics, Academic Math, Pre-Calculus. Call 902-494-2375 or visit <http://collegeofcontinuing.dal.ca>.

17. 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 of Prohibited Discrimination; the Personal Harassment Policy; and the Sexual Harassment Policy. The Human Rights & Equity Advisor and the Harassment Prevention Advisor 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, and a Diversity Glossary.

Contact: Bonnie Best-Fleming, Human Rights & Equity Advisor
Gaye Wishart, Harassment Prevention Advisor
Where: Room 2, Basement Level, Henry Hicks Academic Administration Building, Studley Campus
Phone: 494-6672 / 494-1137
Fax: 494-1179
Email: hrehp@dal.ca
Website: www.hrehp.dal.ca

18. Office of the Ombudsperson

The Dalhousie Office of the Ombudsperson offers assistance and advice to anyone experiencing problems with the Dalhousie community, including difficulties associated with finances, academics, or accommodations. This student-run office can help resolve particular grievances and attempts to ensure that existing policies are fair and equitable. Jointly funded by the University and the Dalhousie Student Union, the Ombudsperson can provide information and direction on any University-related complaint. Clients retain full control over any action taken on their behalf by the Office of the Ombudsperson, and all inquiries are strictly confidential.

The Office of the Ombudsperson is located in Room 106, 1321 Edward Street. Regular office hours are posted on the door at the beginning of each semester. The Ombudsperson can be reached by phoning (902)494-6583 or by Email: ombudsperson@dal.ca, Website: ombudsperson.dal.ca.

19. Registrar's Office

The 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, 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. The Registrar's Office also mails tens of thousands of letters and packages annually in response to requests for information and student records, from application to graduation and beyond.

Among the staff are people with expertise in financial aid and budgeting who are available for consultation.

The fact that the Registrar's Office is in contact with every student and every department means that it is ideally placed to provide or to guide students and prospective students to the source of the advice or assistance they need.

Students can access the services of the Registrar's Office at two locations. The main office is located in Room 133 of the Henry Hicks Academic Administration Building on the Studley Campus. Students attending classes at Sexton Campus can also access Registrar's Office services at the Student Service Centre which is located in Building B on the Sexton Campus.

Inquiries may be directed to:
The Registrar
Dalhousie University
Halifax, NS
Canada B3H 4H6
Telephone: (902) 494-2450
Fax: (902) 494-1630
Email: admissions@dal.ca

20. Student Accessibility Services

Dalhousie University is committed to providing an accessible environment in which members of the community can pursue their educational goals. Ongoing efforts consistent with a reasonable and practical allocation of resources are being made to improve accessibility and provide special services.

The Advisor provides support and advocacy for students with disabilities. In cooperation with faculty, staff, and other student services at the University, the Advisor endeavours to provide appropriate support services as needed by the student. Early consultation is advised to ascertain that we can fulfill your needs. We can be contacted by phone: voice (902) 494-2836, or by email (access@dal.ca). Please refer to our website for further information: www.studentaccessibility.dal.ca.

Please note that due to chemical sensitivities of persons who work and frequent this office, our environment must be scent free.

21. Student Advocacy Service

The Student Advocacy Service was established by the Dalhousie Student Union and is composed of qualified students from the University. The main purpose of the Service is to ensure that the student receives the proper information when dealing with the various administrative boards and faculties at Dalhousie. An Advocate may also be assigned to assist students with academic appeals or in a disciplinary hearing for an academic offence. Our goal is to make the often unpleasant experience of challenging or being challenged by University Administration less intimidating.

The Advocates may be contacted through:
Location: Student Advocacy Service
Room 310
Dalhousie Student Union Building
Telephone: (902) 494-2205
Email: dsas@dal.ca
Website: www.dsu.ca/services/advocacy

22. Student Clubs and Organizations

Students seeking information on clubs and societies should call the Dalhousie Student Union offices at 494-1106 or check the DSU Website at www.dsu.ca. 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. 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.

23. Student Services

Located in Room G28 on the Main Floor of the Killam Library, the Office of the Vice-President, Student Services, provides a point of referral for any student concern. The Vice-President, Student Services, is the chief student services officer, coordinating the activities of student services across campus: Student Academic Success Services (which encompasses Academic Advising; the Black Student Advising Centre; the First-Year Advising Centre; Learning Connections; the Multifaith Centre; Student Accessibility Services; Studying for Success Program; Tutoring Service; the Writing Centre); Athletics and Recreational Services; Bookstores; Career Services Centre and Volunteering; Conference and Ancillary Services; Counselling Services; Health Services; Housing; International Student and Exchange Services; Office of the Ombudsperson; Registrar's Office; Sexton Student Service Centre; Trademarks; University Food Services.

Students who experience difficulties with their academic programs or who are uncertain about educational goals, major selection, honours or advanced major information, degree regulations, changing faculties, inadequate study skills, or conflicts with faculty and regulations, can seek the assistance of the Academic Advisors in the Vice-President's Office.

24. Studying for Success

As part of Student Academic Success Services, Studying for Success offers programs to help you reach your academic potential during your time at Dalhousie. Our primary goal is to assist you in becoming a more efficient and effective learner. Help is available by group and individually. Workshops are offered to small groups of students to develop or enhance personal learning strategies and, when applicable, 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, getting the most from textbooks, delivering oral presentations, writing research papers, preparing for and writing exams. Students who could benefit from individual assistance may also book an appointment with one of our personal coaches.

For more details contact Studying for Success:
Room G28, Main Level, Killam Library
Telephone: 494-3077
Website: <http://sfs.studentservices.dal.ca/>

25. Tutoring Service

The Dalhousie Tutoring Service matches students who require tutoring in a particular subject, with upper-year and graduate student tutors. For information on finding or becoming a tutor, consult the Tutoring Service website at www.dal.ca/tutoring.

26. 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 all 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 Stationery department carries all necessary and supplementary stationery and supplies. The Campus shop carries gift items, mugs, clothing and crested wear, cards, jewelry, class rings, backpacks, novelties and briefcases. A Special Order department is located at the customer service area and will order and ship books worldwide.

The 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 9:00 a.m. - 4:00 p.m. 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 Bookstore recently added an e-commerce component to their services. The Community can order any item the Bookstore carries and have it delivered to their door. Visit us at www.dal.ca/bookstore today!

27. University Computing and Information Services

University Computing and Information Services (UCIS) provides computing and communication services for students, faculty and staff for instructional, research and administrative purposes. The department is responsible for all centrally managed computing, networking and telecommunications facilities.

UCIS manages a variety of systems including email, MyDal, Blackboard Learning System (BLS), net storage, web servers and many others. UCIS also supports numerous computer labs which are situated throughout the campuses. All students may have access to campus computing facilities on an individual basis or in conjunction with the classes that they take. Network ports or wireless connections for personal computers are available in several campus locations and in residence rooms.

Computer Help Desks are located in the Killam Computer Centre and in the B Building, Sexton Campus. UCIS also manages the campus computer store (PCPC), provides non-credit computer courses, offers a hardware maintenance service for computers, a web authoring service, an Electronic Text Centre and is a partner in the Killam Library Learning commons.

UCIS manages a campus-wide communications network which interconnects all areas of the university. This network is connected to the CANARIE research and education network and to the Internet.

28. University Health Services

The university operates a medical clinic, in Howe Hall, at Coburg Road and LeMarchant Street staffed by family doctors, nurses and a psychiatrist. Further specialists' services are available and will be arranged through the Health Service when indicated. All information gained about a student by the Health Service is confidential and may not be released to anyone without signed permission by the student.

Appointments are made during the clinic's open hours, from 9 a.m. to 10 p.m., Monday to Friday and 10:00 a.m. to 6:00 p.m. Saturday and Sunday, by calling 494-2171. In the event of an urgent medical problem, students may seek medical advice during clinic hours. After hours, students may wish to seek assessment at the local emergency room. The QEII emergency room on Summer Street is the closest emergency room.

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. 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 the Health Services; preferably with a statement from the doctor. Further information is available on our website at www.healthservices.dal.ca.

29. Volunteering

Please refer to Career Services Centre.

30. 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 more. 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 Learning Commons allows students to obtain advice on writing issues. Tutors also work part of the week at the Sexton Library, the Kellogg Library, and the Rowe Building. Finally, 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 Learning Commons, calling 494-1963 or emailing at writingcentre@dal.ca. Students can also obtain information on services, hours of operation, and links to writing resources at www.writingcentre.dal.ca.

Fees

Student Accounts Office

Mailing Address: Henry Hicks Academic Administration
Building (Room 29)
Halifax, NS B3H 4H6

Website and online payment:
<http://www.dal.ca/studentaccounts>

Service Location: Studley Campus - Basement Henry Hicks Academic
Administration Bldg.
Sexton Campus - Student Service Centre

Telephone: (902) 494-3998
Fax: (902) 494-2839
Email: Student.Accounts@Dal.Ca
Office Hours: Studley Campus - Monday to Friday 9:00 a.m. -
4:00 p.m.
Sexton Campus - Monday to Friday 9:00 a.m. -
4:00 p.m.

2008/2009 Important Dates:

September

- 19 Fees due for fall term
Last day to pay without late registration fee of \$50
Last day for complete refund

October

- 31 \$50 reinstatement fees assessed on all outstanding accounts over \$275

November

- 3 Last day for partial refund fall term

January

- 16 Fees due for winter term and second instalment of regular session
Last day to pay without late registration fee of \$50
Last day for complete refund

February

- 27 \$50 reinstatement fee assessed on all outstanding accounts over \$275

March

- 9 Last day for partial refund for winter term

NOTE: Please consult the online summer school timetable for the summer school registration schedule.

Website and Online Payments

<http://www.dal.ca/studentaccounts>

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 www.dal.ca for information on registration dates and fees.

All fees are subject to change by approval of the Board of Governors of Dalhousie University. An Academic Fee Schedule will be available in June 2008.

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.

- Fees must be paid in Canadian funds by cash, electronic bank transfer, interac, negotiable cheque, money order, Mastercard, Visa, or American Express.
- If payment is by cheque and returned by the bank as non-negotiable, there will be an additional fee of \$20.00 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 canceled and, if permitted to re-register, a late fee will apply.
- Accounts in arrears must be paid by cash, certified cheque, money order, interac, Visa, Mastercard, or American Express prior to registration in a future term.

A. Deposits

1. Admission Deposit - note these rates are for 2007-2008. For information only

A non-refundable deposit of \$200 is payable on admission by all new undergraduate and some graduate students. Students in specified limited enrolment programs (see below) must pay the deposit within three weeks of receiving an offer of admission. Undergraduate students accepted by March 15 are required to pay the deposit by May 15. Undergraduate students accepted after March 15 must pay the deposit within three weeks of receiving an offer of admission.

International Dentistry, Qualifying Dentistry and Internet working students are required to pay a non-refundable \$2500 admission deposit.

Limited Enrolment Programs include:

- Master of Business Administration
- Master of Environmental Studies
- Master of Library and Information Studies
- Master of Public Administration

All programs in the following faculties:

- Faculty of Dentistry
- Faculty of Health Professions
- Faculty of Law
- Faculty of Medicine

The admission deposit will be credited towards fees at time of registration.

2. Registration Deposit

All returning students (except those in the Faculties of Law, Medicine, Dentistry or Graduate Studies) are required to pay a registration deposit before they are eligible to register and select courses. The deposit will be credited towards fees at time of registration. Note: A registration deposit is not required if an admission deposit is paid for the term.

B. Registration

A student is considered registered only after financial arrangements have been made with Student Accounts (i.e., a deposit has been paid as noted above).

Payment of the deposit and selection of course(s) is deemed to be an agreement by the student for the payment of the balance of fees.

APPROVED TUITION FEES 2007/2008

Degree Program	Program Fee	Per Course Fee
Architecture, Community Design		580
Arts and Social Sciences		553
Computer Science		634
Dentistry		
Dentistry	13,574	
Dental Hygiene	7,030	
International and Qualifying	35,000	
Engineering		634
Health Professions		
Health Services Administration		634
Health Science		652
Nursing & Kinesiology		652
Pharmacy		673
Recreation & Health Promotion		652
Social Work		616
Law	8,666	
Management		
Commerce Co-op		640
Management & Public Administration		556
Medicine		
MD	13,318	
Post-Graduates	1,998	
Science		634
GRADUATE		
Masters		
Architecture and Planning		
Post-Professional	6,754	676
First Professional, Masters of Architecture		
Environmental Design Studies	6,754	
Planning		712
Planning Studies	6,754	
Arts and Social Sciences	5,881	
Computer Science	6,754	
Dentistry (MD/MSc (Oral and Maxillofacial))	13,981	
Electronic Commerce	7,542	
Engineering, Applied Science, Biomedical Engineering & Food Science	6,754,	
Engineering - Internet Working (per course)		2,020
Health Informatics	7,542	
Health Professions		
Applied Health Services Research	5,976	
Clinical Vision Science	7,360	
Health Promotion, Leisure Studies	6,754	
Health Services Administration		682
Human Communication Disorders (Years 1 and 2)	8,610	
Human Communication Disorders (Year 3)	7,048	
Kinesiology and Nursing	7,360	
Pharmacy	8,608	
Occupational Therapy		
Entry Level	12,517	
Post Professional	8,608	
Physiotherapy		
Entry Level	12,517	
Rehabilitation Research	8,608	
Social Work		655
Law	8,444	
Management		
Business Administration (2-year program)		589
Business Administration (10-month program)		754
Environmental Studies	5,953	
Library and Information Studies		754
Public Administration		589
Resource and Environmental Management		589
Marine Management	5,953	
Medicine		
Community Health & Epidemiology	7,360	
Medicine - Except Community Health & Epidemiology	6,754	
Science	6,754	
Doctorate		
Arts and Social Sciences	6,199	
Computer Science	7,081	
Engineering, Applied Science & Biomedical Engineering	7,081	
Law	8,749	
Nursing	7,687	
Science	7,081	
Continuing Fee		
All Programs	1,936	

International Student Differential Fee		
All Programs except Graduate Thesis-based	7,620	
Graduate Thesis-based Programs	5,190	
International Dentistry, Qualifying Dentistry and Internet working are exempt.		
International Health Insurance	609 per year	
Note: Complete fee schedules are available online URL: www.dal.ca/studentaccounts . The 2007/2008 fee schedule currently online is expected to be updated in June of 2008 with the 2008/2009 academic fees. Tuition fees reflect the Nova Scotia Tuition Reduction credit for all eligible students. Per course fees are based on a 3 credit hour course.		

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 \$50.00 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.

D. Academic Fees

The 2008/2009 academic fee schedule is not yet available. Once fees are approved for 2008/2009, a complete schedule showing the required payments of the academic fees and deposits will be made available. The official schedule will be available online at www.dal.ca/studentaccounts.

NOTE: Students registered in more than one program are required to pay separate academic fees for each program.

E. 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, non-cash payments are accepted by mail. Fees paid by mail must be received by Student Accounts on or before the deadlines specified in order to avoid late payment and/or delinquency charges.

Credit card payments can be made through our online payment site www.dal.ca/studentaccounts. Payments are authorized immediately and normally posted to the student's account by noon the next business day.

The following regulations apply to the payment of academic fees. For further information on regulations regarding withdrawal of registration, please refer to "Class Changes, Refunds and Withdrawals" on page 533:

- 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 returned to Student Accounts by September 19 or January 16 for the respective term. The form is available online at www.dal.ca/studentaccounts
- Those paying the balance of their account by Canada Student Loan must negotiate the loan by September 19 or January 16 for the respective term. Interest will be charged after these dates and a late registration fee will apply.
- 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 19 or January 16.
- 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.
- Scholarships or awards paid by or through Dalhousie University will be applied to academic and residence fees.
- When a Canada Student Loan, provincial loan or co-payable bursary is presented at the Student Accounts Office, any unpaid charges, will be deducted.
- Fees cannot be deducted from salaries paid to students employed at Dalhousie University.
- Any payments will first be applied to overdue accounts.

F. Access to 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 www.dal.ca/studentaccounts.

G. International Students

1. Differential Fee

Registering students who are not Canadian Citizens or permanent residents are required to pay an additional fee referred to as a "Differential Fee" in the amount of \$3630.00 maximum per term, subject to increase in 2008/2009. 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 4.8 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, proof of residency must be submitted to the Registrar's office prior to the last day of classes of that term.

2. Health Insurance

International students will be charged for an International Student Health Insurance Plan when they register. If a student already has health coverage, they can apply to opt out of the International Student Plan at the International Student & Exchange Services Office (ISES) before the last day to register for classes. Costs for the health plan change yearly. More details on the international student health plan costs and opt out process can be found at the ISES website (www.international.studentservices@dal.ca).

Health Insurance - International Students (2007/2008 fees, for information only)

- Single - \$609.00 per year
- Couple - \$1189.00 per year
- Family - \$1494.00 per year

H. 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.

I. Class Changes, Refunds and Withdrawals

Please consult Student Accounts for all financial charges and the Office of the Registrar for academic regulations.

Refund Conditions

Students withdrawing from all courses must submit written notification to the Office of the Registrar. Non attendance does not constitute withdrawal so please ensure courses are dropped. Refunds due to course withdrawals will be effective when a course(s) is dropped online at www.dal.ca/online or written notification is received at the Office of the Registrar. Please contact Student Accounts to have your refund processed.

In the Faculties of Architecture and Planning and 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 continue to attend class until their withdrawal has been approved.

Refunds will be processed as follows:

- a. Based on the withdrawal date, fees are refunded based on the percentages outlined in the online refund schedule www.dal.ca/studentaccounts.
- b. 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.
- c. A student who is dismissed from the University for any reason will not be entitled to a refund of fees.
- d. Refunds will be made to the National Student Loan Centre if a student has received a Canada or provincial student loan.
- e. Refunds will be prorated on fees paid by Dalhousie scholarships and/or fee waiver.
- f. A valid Dalhousie University ID must be presented in order for the student to receive a refund.
- g. 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 20

J. Refund Schedule

Please visit www.dal.ca/studentaccounts in June of 2008 to view the new refund schedule.

Important Information Regarding Refunds

- A portion of fees as outlined in the refund schedule will be assessed if withdrawal from a course occurs after September 19 (Fall Term) and January 16 (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.

K. Delinquent Accounts

Accounts are considered delinquent when the balance of fees has not been paid by September 19 for the fall term, (January 16 for the winter term).

Interest at a rate set by the University will be charged on delinquent accounts for the number of days overdue.

Effective July 1st, 2007 the rate of interest is 9.00% per annum.

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 \$50.00 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.

L. 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 class load requirements. A late fee of \$50.00 will apply if the loan is negotiated after September 19, 2008. (January 16, 2009 for students registered for winter term, and May 19, 2009 for students registering for the summer term).

M. 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 within one week of 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 class requirements for provincial bursaries. For more information on student loans, bursaries or scholarships inquiries should be directed to the Registrar's Office - on the first floor of the Henry Hicks Academic Administration building, Room 123.

N. Income Tax Credit from Academic Fees

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 www.dal.ca/online no later than February 28.

O. 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 \$15.00 is charged. Regular session ID cards are valid until August 31.

P. Student Fees

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, 2007-2008 full-time student union fees are \$58.00 per term. DSU Health Insurance is \$253.00 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) 449-2146 or visit their website at www.dsu.ca

2. Student Service Fee

Student Service provides and supports various Dalhousie Services including health services and athletics. For information only, 2007-2008 Student Service fee is \$96.00 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)

3. 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.

4. Additional Student Fees

The official fee schedules are available online at www.dal.ca/studentaccounts and include other charges such as auxiliary, society, and facilities renewal fee.

Departments may also charge additional fees on a cost recovery basis not included in the schedules. Examples include but are not limited to; print or copy fees, transportation costs and material fees.

Miscellaneous fees are charged as outlined in the table below.

Miscellaneous Fees 2007-2008		
Fee	Amount	Payable at
Late Registration	\$50	Student Accounts
Reinstatement Fee	\$50	Student Accounts
Returned Cheque	\$20	Student Accounts
Admission Deposit	\$200	Student Accounts
Application Fee	*\$45	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 \$70.00 application fee: Occupational Therapy, Pharmacy, Physiotherapy, Social Work; Diploma programs in Meteorology, Outpost and Community Health Nursing, and 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.		

5. University Bus Pass Fee

All eligible full-time students will receive a Metro-Transit bus pass. For information only, the fee for the pass in 2007/2008 is \$116.00. Please refer to the Student Services website, www.dal.ca/studentaccounts for further information.

Q. Statements and Monthly Notices

Students with current activity will be issued electronic statements. Students will be notified through their official Dalhousie email address when a new statement is available. Subsequent monthly payment reminders will be sent to the student's official Dalhousie email address. Refer to www.dal.ca/studentaccounts for more information.

III. Residence Fees

The following are 2006/2007 rates.

Residence Room and Board Rates vary depending on the location and style of accommodation. For all traditional style residences, a meal plan is mandatory.

Traditional Residences include Howe Hall, Risley Hall, Shirreff Hall, Eliza Ritchie Hall, Gerard Hall and Mini Residences. For all other Residences, a meal plan is optional.

Our Non-Traditional Residences include Fenwick Place, Glengary Apartments, Residence Houses and the Grad House.

All prices are listed per student per term.

Traditional Residences

Rates include a 19 Meal Plan and the Residence Council Fee. All residence fees include local phone service with voice mail features, cable TV service, and ResNet (local Internet access).

Prices listed do not include the non-refundable \$50.00 application fee.

	Fall	Winter	Total
Howe Hall - Fountain House			
Single	\$4,157	\$4,425	\$8,582
Howe Hall - Fountain House			
Double	\$3,847	\$4,095	\$7,942
Howe Hall			
Single	\$3,959	\$4,215	\$8,174
Howe Hall			
Double	\$3,650	\$3,884	\$7,534
Risley Hall			
Single	\$4,157	\$4,425	\$8,582
Shirreff Hall			
Single	\$3,954	\$4,210	\$8,164
Shirreff Hall			
Double	\$3,645	\$3,879	\$7,524
Eliza Ritchie Hall			
Single	\$3,954	\$4,210	\$8,164
Eliza Ritchie Hall			
Double	\$3,645	\$3,879	\$7,524
Gerard Hall			
Single	\$3,905	\$4,157	\$8,062
Gerard Hall			
Super-Single	\$3,979	\$4,236	\$8,215
Mini Residences			
Single	\$3,954	\$4,210	\$8,164

Non-Traditional Residences

Meal plans are NOT included in rates.

All Residence fees include heat, hot water, local phone service with voice mail features, cable TV service, and ResNet (local Internet access). Except as noted, all fees are quoted per student, not per apartment.

Prices listed do not include the non-refundable \$50.00 application fee.

Glengary Apartments (8 month agreements)			
	Fall	Winter	Total
Bachelor	\$3,190	\$3,402	\$6,592
3 Bedroom (shared)	\$2,703	\$2,884	\$5,587
Residence Houses			
Single bedroom	\$2,433	\$2,596	\$5,029
Grad House			
Single bedroom	\$2,682	\$2,861	\$5,543
Fenwick Place - Student-Shared (8 month agreements)			
	Fall	Winter	Total
2 Bedroom (shared)	\$2,964	\$2,964	\$5,928
3 Bedroom (shared)	\$2,742	\$2,742	\$5,484
4 Bedroom (shared)	\$2,487	\$2,487	\$4,974
Fenwick Place - International Exchange Floors			
	Fall	Winter	Total
Single	\$2,559	\$2,559	\$5,118
Fenwick Place - Conventional (12 month agreements)			
** these prices are listed PER APARTMENT, not per student			
	Monthly		
Bachelor	\$642		
1 Bedroom	\$771		
2 Bedroom	\$1,026		

No refund will be made to any resident who is dismissed for misconduct. Discretionary power in exceptional circumstances remains with the Director of Housing, Conferences and Ancillary Services or designate. Once offered admission to an academic program of study at Dalhousie, students are eligible to submit a housing application with the required \$50 fee. However, only when your \$200 admission deposit is received by the Registrar's Office, will your housing application become "active" and will you be offered residence accommodation. All residents, new and returning, who have accepted a room assignment will be required to pay a

deposit of \$500 by June 1 to confirm the assigned space. Students offered accommodation after June 1 will be required to pay the \$500 deposit within two weeks.

Once the \$500 deposit is paid, it is only partially refundable, as outlined in the "Housing Brochure."

Deposits may be made by cheque, bank draft, money order, or credit card (M/C, Visa or Amex) in Canadian funds and payable to Dalhousie University. No reservations will be held on post-dated or "NSF" cheques. Deposits cannot be deducted from scholarships, fellowships, or similar awards.

A. 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 21. Interest is assessed weekly at a rate as set by the University and will be charged on all accounts outstanding after September 21, 2007 and on any second instalment outstanding after January 14, 2008. For the 2006/2007 academic year the rate was 9% per annum. This rate is subject to change. 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.

All residence fees can be paid at the Student Accounts Office, the Student Service Centre (Sexton Campus), the Accommodation Office at Fenwick Place, or online at www.dal.ca/studentaccounts.

Students should make an appointment as soon as possible with the Administrative Coordinator of Residence Life, Manager Sexton Campus, or the Assistant Manager of Student Accounts if they are having financial difficulties.

B. Regulations and Additional Charges

The room and board session 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. Please note that, except at Fenwick Place, students must vacate the residence twenty-four hours after their last exam and that residences are closed over the December break.

In Fenwick Place the rental period is based on a 34-week period beginning on Labour Day. For more specific details on dates of semesters, students should contact the accommodations office at Fenwick Place.

In all other cases, 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.

C. Residence Rates 2007/2008

The residence term for Howe Hall, Shirreff Hall, Eliza Ritchie Hall, Risley Hall, Gerard Hall, Mini-Residences, Glengary Apartments and the Residence Houses cover the time period from the Wednesday in September before classes begin in the College of Arts and Science to the last day of the examination period in the Faculty of Arts and Science in April (December break excluded).

The residence term for Fenwick Place is as follows: First semester - Labour Day to December 31st.; and second semester - January 1 to April 30th. Those students wishing to stay beyond the residence term may do so for a daily or weekly rate. Please contact the appropriate residence for details.

After the student has paid their deposit, the balance is to be paid in two parts per the schedule in Table II: Residence Rates. The first portion is due by September 21, 2007 and the second portion by January 14, 2008.

D. ResNet

All residences are wired for Internet, local phone service and cable TV service. The cost is included in residence fees. Check out the Website at www.dal.ca/resnet (Rental computers are conveniently available).

Awards

Scholarships, Awards, Financial Aid and Bursaries

The Office of the Registrar 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 course 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 course difficulty, the number of university-preparatory subjects beyond the minimum five and the position in the graduating class, expressed either as the top 1-2 per cent or the top 3-5 per cent.

3. Faculty Groupings

There are seven: architecture and planning; arts and social sciences; health professions; management; science; engineering; and computer science.

B. Types of Awards

1. **Scholarships:** A monetary award, at entrance or in-course 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).

C. Statement of Scholarship Terms

This document is given to each awardee at the time of the announcement of a scholarship from the Registrar's Office (Awards). The Statement of Terms contains some of the more pertinent policy items for easy reference. Additional scholarship regulations are listed below.

I. General Policy

(Applicable to those scholarships administered by the Registrar's Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

A. Full Class Load

1. Entering students to whom an entrance scholarship is awarded must undertake a full class load for the regular session immediately following the award in a designated degree or diploma program at Dalhousie University. A full class load for most designated programs consists of not fewer than five full classes (or the equivalent), i.e., 30 credit hours between the fall and winter terms.
2. Continuing regular students are asked to note: To be considered for an in-course scholarship, a student must have carried in the preceding regular session a full class load (five whole classes or the equivalent, i.e., 30 credit hours).

B. Where Scholarships are Tenable

Dalhousie University scholarships are tenable 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 money you must be registered at Dalhousie University.

C. Portability of Undergraduate Scholarships

Most entrance and in-course scholarships are portable among all undergraduate programs for the eligible degree/diploma programs. Please contact the Awards Office prior to changing programs.

D. When Scholarships Are Tenable

Undergraduate scholarships to regular full-time students are tenable in the academic year immediately following their award (regular fall and winter terms)

E. Scholarship Payments and Rebates

To receive scholarship funds, a student must be registered at least as a full-time student (min 9 credit hours) at Dalhousie during the term(s) in which they are receiving the funds.

1. **Payments:** Dalhousie University scholarships of \$3000 or greater are credited towards students' accounts in two installments first and second term. Awards less than \$3000 are credited in full first term. Awards are applied first to tuition and prescribed fees, and secondly for residence fees if and only if you stay enrolled at the University.
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, late October.

F. Scholarship Duration

Dalhousie offers both renewable and non-renewable Entrance Scholarships. Non-renewable scholarships are held for one year. Renewable entrance awards are renewable for the duration of the program (maximum of four years). Holders of renewable scholarships are notified of either the renewal or the non-renewal of their scholarships. Please note that holders of renewable scholarships are NOT entitled also to hold Dalhousie one-year in course scholarships. (Please also refer to section O.)

G. Eligible Classes

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).

Correspondence classes are considered for scholarship purposes.

Please note that classes taken at other institutions are counted, to a maximum of 1 course per term, for scholarship assessment if such classes are taken on Letter of Permission towards an eligible degree/diploma at Dalhousie.

H. Scholarship GPA

1. Calculation

The Scholarship GPA will be calculated for students who have completed a minimum of 30 hours of work over the preceding academic year [September 1 - April (August for co-op students)]. 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.

2. Renewable Scholarships

The renewability point is a SGPA of 3.70. If not attained, students can have these scholarships renewed in future years by attaining a 3.70 SGPA.

I. Qualifying for In-Course Scholarships

All Dalhousie students in eligible programs in the participating faculties who have completed a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. - April) and achieved a minimum SGPA of 3.70 will be considered eligible for in-course scholarships. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms (fall, winter or summer) to be eligible. Students completing two work terms within one academic year (Sept. - Aug.) 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 courses taken within the two terms. Please note that this does not guarantee a scholarship award. Cutoffs and amounts vary from year to year.

J. 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-course or renewable scholarship assessment.

Please direct specific questions to the Office of the Registrar as only pass/fail grades are recorded.

K. Academic Year and Assessment Timing

The academic year consists of three sessions: Fall, Winter, Summer. Student records will be assessed in the fall.

L. Degree Program Considered for Assessment

Changing degree/diploma programs can have implications for scholarship consideration. Scholarship holders considering degree changes should consult the Registrar's Office - Awards.

M. Reduced Class Load and Retention of Scholarship

Scholarship holders considering taking a reduced class load should consult the Registrar's Office - Awards. Holders of renewable scholarships must complete a full class load (i.e., 30 credit hours) within September to April (August for co-op students).

N. Record of Scholarships

Awards are recorded on the academic records of the students. 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).

O. Graduation and Renewable or In-Course 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 4-year degree, you would forfeit eligibility for continuation of your scholarship. Graduation constitutes completion of program. In addition, if you graduate and then decide to upgrade your degree, you cannot be assessed for an in-course scholarship until a further 30 credit

hours over two terms within the regular session is completed and a minimum SGPA of 3.70 is achieved.

P. 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-course awards. Please refer to section I. Qualifying for In-Course Scholarships.

Q. Taxation and Scholarships

Under the Income Tax Act the University is required to report scholarships. On occasion the government may audit your awards. You should retain copies of award letters so that you can forward copies for audit or confirmational purposes.

The University is required by law to prepare a T4A form for the recipient of a University scholarship (applies to bursary, prizes or other monetary awards). The generation of such documents for University scholars shall be for the tax year in which the scholarship was authorized. This is a condition of accepting the scholarship.

R. Student Aid and Scholarships

Provincial Student Aid authorities require that students report their scholarships.

S. Withdrawing

If you must discontinue studies, please do so in writing via the Office of the Registrar. Depending upon the time of withdrawal, students may be entitled to a prorated portion of the scholarship to be credited towards academic fees, if you are enrolled in an academic program other than a 'limited enrollment' one. If you are enrolled in a program having 'limited enrollment' (i.e., Bachelor of Nursing, Bachelor of Science (Health Promotion) or Bachelor of Science (Kinesiology)), no portion of the entrance scholarship may be claimed.

Please note that no portion of the scholarship may be applied against residence fees if you are withdrawing from the University.

T. Government Notification

The University is required to report its award winners to the respective Provincial Student Aid Authority.

U. Scholarship Appeals

The deadline to appeal a scholarship decision for an entrance/in-course/renewable scholarship for the 2008/09 academic year is October 31, 2008.

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 Scholarships

(Applicable to those scholarships administered by the Registrar's Office. Selection criteria may be different for those administered by individual faculties/schools/departments.)

1. To be considered for an Entrance Scholarship, applicants must submit a completed Dalhousie application for admission, and have their high school send an official transcript to the Office of the Registrar by **March 15th**.
2. Dalhousie University offers scholarships in one of two award groups, to outstanding students who are admitted directly from high school to the first year of study. Dalhousie Renewable Entrance Scholarships are

available in each of the following faculties: architecture and planning, arts and social sciences, management, health professions, science, engineering and computer science. In each of these, the scholarships (2007/08 values) were \$4,000, \$5,000, and \$8,000 per year. The renewable scholarships are tenable for the duration of the program or a maximum of four years, provided the holder achieves a Scholarship Grade Point Average of 3.70. In order to be considered for the \$8,000 Chancellor's Scholarships candidates will have demonstrated exceptional academic achievement.

3. The second group, Dalhousie Entrance Scholarships, are awarded for one year's duration (non renewable). Students with an admissions average of 95% or higher are awarded a \$3,000 scholarship (if they do not qualify for a renewable scholarship). Students with an admissions average between 90 and 94% are awarded a \$1,500 scholarship and students with an admissions average between 85 and 89.9% are awarded a \$1,000 scholarship. Students entering Dalhousie from a high school within Atlantic Canada, and have an admissions average between 80 and 84.9%, are awarded a \$500 scholarship.
4. Applicants will be considered for an entrance scholarship in one of seven academic faculty groups, namely that program on record by the deadline date. Although applicants may change their minds, entrance scholarship consideration occurs only once. The faculty groups are architecture and planning, arts and social science, science, health professions, engineering and computer science, and management, each consisting of one or more eligible degrees or diplomas. **Applicants will be considered automatically for either a renewable scholarship or a non-renewable, but not both.** In some cases, the number of scholarships allotted to each faculty group is proportional to the respective populations at Dalhousie. As a direct consequence, cut-off averages will vary among the different faculty groups.
5. Non-renewable scholarships for subsequent years are also available and they are described under "In-Course Scholarships". Entering students who may not qualify for an entrance scholarship may be considered for an in-course scholarship upon completion of first year (30 credit hours) (See In-course Scholarships).
6. In order to receive funds, awardees **must** be registered full-time at Dalhousie University proper (the University of King's College has its own entrance scholarship program).

A. Scholarship Assessment Criteria

The following is a summary of the essential criteria which the University uses for its assessment of records of entering students who wish to be considered for an entrance scholarship:

1. The Application for Admission and official high school transcript (and list of second semester courses or OUAC number, if applicable) must be received by the Office of the Registrar by March 15th.
2. In its assessment of entrance scholarship candidates, the University considers (i) admissions average (based on admission requirements); (ii) the level of course difficulty of classes (AP, IB); (iii) total number of university-preparatory classes beyond the minimum five and; (iv) the applicant's position in the graduating class (top 1%-2% or top 3%-5%).
3. The applicants are assessed on a mutually competitive basis for the available funds allocated to the regular entrance scholarship program.
4. Admitted students will be considered for an entrance scholarship in only one of these academic groups: architecture, arts (includes music and costume studies), health professions (health promotion, health information management, health science, kinesiology, nursing, and recreation), management (includes commerce and management), science (includes DISP), engineering, and computer science.
5. Transfer Students are not eligible for entrance scholarships. Entrants coming from Year II of a CEGEP are considered to be Transfer Students.

The foregoing is not a definitive statement of criteria or policy and is subject to change without notice.

B. Quick View Entrance Scholarships (subject to change)

Entrance Renewable Scholarships

\$32,000 (*Chancellor's Scholarships - \$8,000 per year*)

- renewable to a maximum of four years (minimum average is SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
- awarded on the basis of a very high Adjusted Average
- these awards are not tied to faculty grouping

\$20,000 (*\$5,000 per year*)

- renewable to a maximum of four years (minimum average of SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
- awarded on the basis of a very high Adjusted Average
- these awards are not tied to faculty grouping

\$16,000 (*\$4,000 per year*)

- renewable to a maximum of four years (minimum average of SGPA of 3.70 for renewal) (see C. Scholarship Renewal Criteria)
- awarded on the basis of a very high Adjusted Average
- these awards are distributed on a population basis among faculty groupings (because the populations of the groups differ, the same Adjusted Average can yield different scholarship values in each group)

Entrance Scholarships

\$3000

- tenable for one year
- awarded on the basis of an admissions average of 95% or greater but not qualifying for a renewable entrance scholarship
- these awards are not tied to population

\$1500

- tenable for one year
- awarded on the basis of an Admissions Average of 90.0% to 94.9%
- these awards are not tied to population

\$1000

- tenable for one year
- awarded on the basis of an Admissions Average of 85.0% to 89.9%
- these awards are not tied to population

\$500*

- tenable for one year
- awarded on the basis of an Admissions Average of 80.0% to 84.9%
- these awards are not tied to population

* These scholarships are available to students entering Dalhousie from high schools within Atlantic Canada only.

C. Scholarship Renewal Criteria

A minimum Scholarship Grade Point Average (SGPA) of 3.70 is required to maintain a Dalhousie University renewable scholarship. This must be achieved by completing a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. - April). Exceptions include Nursing (Yrs 2-4) and third year Mechanical Engineering. Co-op students who are on a work term within the calendar year, must also complete 30 credit hours over two terms (fall, winter or summer) to be eligible for renewal. Students completing two work terms within one academic year (Sept. - Aug.) must complete a minimum of 15 credit hours during their one academic term and achieve a minimum term GPA of 3.70 to renew. In those cases where students have taken more than 30 credit hours, assessment is based on all courses taken within the two terms.

Students who fail to re-qualify for their renewable scholarship will be notified in writing. If a student achieves the required 3.70 SGPA in the next academic year, or in any academic year within four years of the original offer, the scholarship will be reinstated.

D. Entrance Scholarship Funds

It is University practice to distribute scholarships among as many students as possible.

Please note: Students entering Third Year Engineering (including students entering from Associated Universities) should refer to "In-Course Scholarships", section "F. Faculty of Engineering" for available scholarships.

1. Entrance Scholarships (application required).

Those awards marked with an asterisk (*) are not administered by the Registrar's Office.

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 at Dalhousie. Candidates will be screened for both the Bissett Scholarship and other entrance awards and the higher amount will be offered. 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. For Bissett consideration nominations should be sent to the Assistant Registrar, Awards by March 15th.

*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 \$4,000. 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 Association Scholarships

With a gift of \$20,000 in September 1968 the Dalhousie Alumni Association established an endowment from which the net annual income would provide scholarships to students of particular merit. These scholarships are open to students entering the University for the first time directly from high school into a course of study leading to an undergraduate degree or diploma. Please submit a completed application to the Assistant Registrar, Awards by March 15. The fund is administered by the Alumni Office. Applications available online at <http://moneymatters.dal.ca>.

Dalhousie Alumni Leadership Scholarships

A small 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 80.0 percent 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. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at <http://moneymatters.dal.ca>.

Jeff D. & Martha Edwards Scholarship

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/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.

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 course load. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at <http://moneymatters.dal.ca>.

First Nations & Indigenous Black Students Scholarship

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. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at <http://moneymatters.dal.ca>.

Helen C. McDowell Frandsen Memorial Scholarship

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. The deadline to apply is March 15. Application forms are to be sent to the Assistant Registrar, Awards. Applications available online at <http://moneymatters.dal.ca>.

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).

Interested students should provide no more than two reference letters detailing their qualities of leadership and/or athletic ability either at school or within the community. Please send letters to the Assistant Registrar Awards, c/o Denton Hurdle Scholarship, by March 15th.

International Baccalaureate (IB) Scholarships

Ten renewable scholarships of \$16,000 (\$4,000 per year) are offered to top students entering from high school who studied the International Baccalaureate program. Automatic consideration if indicated on admission application or contact the Assistant Registrar, Awards to be considered. Minimum 80% admissions average; see Scholarship Renewal Criteria section for details on renewal.

International Baccalaureate (IB) Extended Essay Prizes

Ten \$1,000 prizes for the best IB extended essays for students applying from high school. Essays to be submitted to the Assistant Registrar, Awards by March 15. This one time award will be in addition to any other scholarship offered by Dalhousie University.

The Lockward Memorial Scholarships

These scholarships have been established from an endowment by the late Reginald and Anne T. Lockward of Liverpool, N.S. 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. The renewable scholarships are tenable for the duration of an undergraduate program or a maximum of four years (whichever comes first) based on a 2.70 SGPA over 30 credit hours (full load). Recipients of renewable scholarships may have an opportunity to access further funding if later admitted to the Faculty of Medicine at Dalhousie. Please submit a completed application to the Assistant Registrar, Awards by March 15. Applications available online at <http://moneymatters.dal.ca>.

The Maple Leaf Foods Scholarship*

This Scholarship was established by Maple Leaf Foods for students entering the program of studies leading to the degree of Bachelor of Applied Science (Food Science) within the Faculty of Engineering. It is intended for candidates entering in either first or second year of the program. The scholarships will be awarded in the amount of \$2,500 per annum. Applications should be made through the office of the Associate Dean of Engineering, undergraduate studies, Sexton Campus. Deadline for Application is April 30.

Harrison McCain Scholarship

The Harrison McCain Foundation fund provides four renewable scholarships of \$16,000 (\$4,000 per year) to entering high school students; including one 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. The deadline to apply is March 1. Application forms are to be sent to the Assistant Registrar, Awards. Applications available online at <http://moneymatters.dal.ca>.

Constance "Teak" McKibbin Memorial Bursary

Two bursaries, valued at \$16,000 (\$4,000/year), are awarded based on financial need. Preference will be given to students from Atlantic Canada. Please submit a complete application to the Assistant Registrar, Awards by March 15. Applications are available online at <http://moneymatters.dal.ca>.

Lottie M. Morrison Scholarship*

This is an entrance scholarship intended to assist one student beginning the Bachelor of Science in 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.

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. Minimum 80% admissions average; see Scholarship Renewal Criteria section for details on renewal.

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 fulfil 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 course load. Please note that the value of a holder's scholarship may vary from year to year.

2. Entrance Scholarships (no application required)

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.

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. Application not required.

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). Application not required.

Sheldon and Marjorie 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. Application not required.

The Rowland C. Frazee Undergraduate Scholarships in Business Administration

Two scholarships of \$5,000 each are to be awarded annually to students entering the Bachelor of Commerce program. Sponsored by The Royal Bank of Canada, these scholarships honour Mr. Frazee's long and distinguished career with the bank. Application not required.

The Milton G. Green Memorial Scholarship

This renewable scholarship is offered on a three-year rotational basis to students from the western area of Nova Scotia, Deer Lake, and Cornerbrook, Newfoundland. Recipients must have demonstrated a high level of academic achievement and contributions to his or her community. Application not required.

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. Application not required.

Industrial Engineering Entrance Scholarships*

Up to five scholarships, established by the Department of Industrial Engineering, in the amount of up to \$2000, 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 one or year 2, are eligible. Payment is applied to the student's first academic term in the upper division (year three, term five). Awards are based on the academic records submitted for entry into the Industrial Engineering program and no application is required.

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. No application required.

The A. Murray MacKay Scholarship

The North British Society has established an annual scholarship of \$500 which is open to a student entering Dalhousie from Queen Elizabeth 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 QEHS was constructed. Application not required.

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. Application not required.

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. Application not required.

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. Application not required.

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 course load. Application not required.

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. Application not required.

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. Application not required.

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. Application not required.

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. Application not required.

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 and is tenable, consistent with the Dalhousie scholarship portfolio, to a maximum of four years provided a SGPA of 3.70 is maintained with a full course load. Application not required.

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. Application not required.

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.

3. Endowments or Annual Givings used by the University to fund Students' Scholarships

The following scholarships are administered by the Registrar's Office.

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-course scholarships, and for bursaries. Application not required.

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 provides in-course scholarships also. Application not required.

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. Application not required.

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. Application not required.

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. Application not required.

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-course scholarships. Application not required.

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. No application required.

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. Application not required.

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. Application not required.

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 Queen Elizabeth High School upon entrance to Dalhousie University in the College of Arts & Science. Application not required.

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. Application not required.

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. Application not required.

The Harold A. Renouf Scholarship

An endowment has been established to provide an annual scholarship for students entering the Bachelor of Commerce program. Application not 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. Application not required.

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. Application not required.

Joseph Duncan Stewart Scholarships

A bequest under the Will of the late Joseph Duncan Stewart has made possible the funding of undergraduate scholarships. Application not required.

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. Application not required.

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. Application not required.

E. 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 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-Course Scholarships

All Dalhousie students in eligible programs in the participating faculties who have completed a full class load (a minimum of 30 credit hours for most programs) over two terms within the previous regular session (Sept. - April) and achieved a minimum SGPA of 3.70 will be considered eligible for in-course scholarships. Co-op students who are on a work term during the calendar year, must also complete 30 credit hours over two terms (fall, winter or summer) to be eligible. Students completing two work terms within one academic year (Sept. - Aug.) 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 courses taken within the two terms. SGPA cutoffs and scholarship amounts vary from year to year. Possession of minimum requirements does not guarantee an award. The Registrar's Office (Awards) decides the awardees and the amounts of money. The amount of money authorized for a scholar may be met wholly or partially by a Dalhousie University Scholarship and/or one of the named scholarships described below in sections A through I. (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.

1. Endowments or Annual Givings used by the University to Fund Students' Scholarships

The following scholarships are administered by the Registrar's Office. Unless otherwise noted, no application required.

The AstraZeneca Scholarship

This annual scholarship is awarded each year to a student enrolled in the fourth and final year of a BSc program with Honours in biology, biochemistry, or chemistry. Awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing. Awarded by the Office of the Registrar. Application not required.

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 Office of the Registrar. 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 sophomore 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-course, 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 Scholarship

A scholarship of \$1000 is offered by T.Y. Lung in memory of Dharma Master Chuk Mor. This scholarship is available to a student who has attained a high standard of academic achievement and who has completed a minimum of one year in undergraduate 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.

The Mr. & Mrs. H.D. Howitt Scholarship Fund

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. Automatic consideration.

Killam American Scholarship Fund

This endowment, established in memory of Isaac Walton Killam, provides in-course 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 scholarship is available to a student entering third year who has demonstrated high academic standing (GPA of at least 3.30) and who has 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 a 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-course 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. Hector McInnes.

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 junior 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-course 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 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.

Environova Scholarship

This \$500 scholarship is for a student entering fourth year of the Bachelor of Community Design honours program who has higher than average academic standing and who has contributed to student life at the university. Apply to the Director of the School of Planning by March 20.

Ekistics Planning & Design Scholarship

This \$1000 scholarship is for a student entering fourth year of the Bachelor of Community Design honours program who has an interest in pursuing landscape architecture. The recipient will have higher than average academic standing and have been actively involved in community service. Apply to the Director of the School of Planning by March 20.

Colin Gash Scholarship

In memory of Colin Gash (BEDS 2004), Kallweit Graham Architecture of Vancouver has donated a \$2,000 scholarship that is awarded annually to a student entering Year 4 of the BEDS program. It is awarded for design excellence and contribution to student life at the school. The recipient is selected at the year-end review in April and receives the scholarship at the start of the next academic year. No application required.

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 Year 4 of the BEDS program to undertake supervised design and construction activities in the Halifax

Regional Municipality. Proposals are evaluated on their imagination, practicality, and potential value to the community. Apply to the Director, School of Architecture. 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 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.

The Medjuck Architectural Design Scholarship

The Centennial Group of Companies Limited established this award of \$1,000 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 Association of Architects William J. Ryan Memorial Scholarship

The Newfoundland Association of Architects established this \$1,000 award to an Architecture student entering Year 4 of the BEDS program who was born and raised 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 as it relates to the Atlantic region, and in particular to Newfoundland; (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 is considered to have 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.

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. Application not required.

Robert Bruce Scholarship

Robert Bruce of Banlieue, Quebec, made a bequest to the University to establish bursaries and scholarships. Application not required.

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. Application not required.

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. Application not required.

The Alan Pollok Scholarship

This scholarship of \$750 was established by the North British Society in Halifax in memory of the Rev. Dr. Alan Pollok. The awardee will be the student, in second year in the College of Arts and Science at Dalhousie University, who stood highest in a class load of at least five full classes (or equivalent). Application not required.

The Stora Enso Port Hawkesbury 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. Application not required.

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. Application not required.

C. Faculty of Arts and Social Sciences

The following scholarships are administered by the Registrar's Office.

Dr. Frederick J. Gaudet Scholarship

Dr. Gaudet bequeathed to the University in 1978 a sum of money to provide for a scholarship in Arts. Application not required.

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. Application not required.

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. Application not 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 Office of the Registrar. Application not required.

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 Majors program (that is a student entering the 3rd or 4th year of the Majors program). In the absence of a suitable candidate from the Majors program, the scholarship will be awarded to a student entering the 3rd or 4th 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 of about \$1,800 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, 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 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.

The James and Abbie Campbell Memorial Scholarships and the James and Abbie Campbell/Department of Music Scholarships

The Undergraduate Scholarship Committee and the Department of Music make selections of winners for undergraduates. See entry under Entrance Scholarships.

Honourable L.D. Currie Memorial Scholarship in Music

The North British Society established this scholarship in memory of the Honourable Lauchlin D. Currie in 1971. An annual scholarship in the amount of \$750 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 Music Club Scholarship

The Halifax Ladies Music Club sponsors an annual scholarship of \$500 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.

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 grade point average of 3.7 or higher.

5. Spanish***Sonia Jones Scholarship***

The first claim upon the expendable income of the Fund is to provide scholarships to advanced students of Spanish (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 entering the final year of the Costume Studies Program.

Christine Zinck Scholarships

Three scholarships awarded annually to fourth-year students in each of the three streams of Theatre: Theatre Studies, Technical Scenography and Acting.

D. 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.

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 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. Selection is carried out by the Scholarship & Awards Committee of the Faculty of Engineering. 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 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.

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 three 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 considerations 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.

E. 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.

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.

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 three 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.

Air Liquide Canada Scholarship

This scholarship of \$5,000, is awarded annually to a student who is entering the penultimate year of the Mechanical Engineering Degree Program, to be paid in the final year of the degree program. Applicants should have exceptional academic standing and proven commitment to his/her community through extra-curricular activities. The successful applicant may have an opportunity to complete a co-op placement with Air Liquide Canada Inc. 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.

Atlantic Farm Mechanization Show (Entrance) Scholarship

The Atlantic Farm Mechanization Show established this award of \$1000. Eligible applicants are Canadian citizen/landed immigrant, 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 of 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 \$1000. 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 was 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 not required.

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.

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.

Exxon Mobil Canada Ltd. Undergraduate Scholarships

Exxon Mobil Canada Ltd. established 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 Scholarships

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 four 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.

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. Scholarship

The Association of Professional Engineers of Nova Scotia (APENS) 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 APENS 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 \$2000, 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 one or year 2, are eligible. Payment is applied to the student's first academic term in the upper division (year three, 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 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. 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 I to Year II 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 II to Year III in the Dalhousie Faculty of Engineering. The recipient must have achieved excellent academic standing and demonstrated significant improvement from the first to second year of the engineering degree program. Application not required.

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.

The Maple Leaf Foods Scholarship

This Scholarship was established by Maple Leaf Foods for students entering the program of studies leading to the degree of Bachelor of Applied Science (Food Science) within the Faculty of Engineering. It is intended for candidates entering in either first or second year of the program. The scholarships will be awarded in the amount of \$2,500 per annum. Applications should be made through the office of the Associate Dean of Engineering, undergraduate studies, Sexton Campus. Application required. Deadline: April 30.

NACE International "The Corrosion Society" Atlantic Canada Section

This award, valued at \$300, has been established by NACE International and is awarded to the student with the highest academic achievement in the course "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 three 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 \$1500 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 award, 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 Four at Dalhousie in a program in Architecture, Planning, Engineering, or Computer Science. 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 Scholarship

The 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 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 extra-curricular 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 \$2500 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.

Positron Engineering Scholarship

Positron Industries, Inc. established this award of \$2,500. Eligible students are registered in the penultimate year of an Electrical and Computer Engineering program in the Faculty of Engineering. The Scholarship is awarded primarily on the basis of the applicant's academic record. Scholarship preference will be given to a Dalhousie student who excels in electronics. 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.

Positron Engineering Scholarship

Positron Industries Inc. has also established another scholarship of \$2,500 tenable for one year. Eligible students are registered in the Senior Year in Electrical and Computer Engineering. The scholarship is awarded on the basis of the applicant's academic standing of at least 'A' in relevant classes among communications, electronics or computer engineering. Application required. Deadline: September 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.

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 on the basis of the applicant's academic record at Dalhousie University. Application required. Deadline: September 30.

Schlumberger Undergraduate Scholarship 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

grade point average 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 Scholarship

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.

Stora Enso 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 considerations in reaching a decision. 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 Three 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

F. 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-course 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-course 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. School of Nursing

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). Contact the School of Nursing for details.

3. 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 \$1000 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 \$1000 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 \$1000 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.

4. 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 NSAACP and to the qualities of courage, generosity, persistence, and leadership that characterizes Dr. Ruck's life and work. Application required.

G. 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 year two, has attained the highest average mark in COMM 2101, 2102, 3105. The endowment for this scholarship was provided by friends and co-religionists of the late Professor Berman. Application is not required.

Centre for International Business Studies Fourth Year Undergraduate Scholarship

One Scholarship of \$2,000 is offered to a fourth year Commerce student majoring in International Business. Application required.

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, Buyer 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.

Ernst and Young Scholarship

A scholarship of \$500 will be awarded to a third-year student in Commerce who has obtained a high standing on the basis of his/her average marks for a full year's class, of which one class must be in accounting. Application not required.

Export Development Canada Scholarship in International Studies

A \$3,000 scholarship awarded by the Centre for International Business Studies to a student entering the third year of the Commerce program majoring in International Business. A work term at EDC in Ottawa is also part of the scholarship. Application is required by department.

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 Office of the Registrar. Application not required.

Knight, Bain, Seath, Holbrook Atlantic Limited Scholarship

A scholarship of \$2,000 is to be awarded annually to a student entering the Third or Fourth Year in the Commerce degree program. The recipient will have demonstrated high academic standing and an interest in the investment field. 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 School of Business Administration. 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 Scholarship Fund

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.

NORTHSTAR Trade Finance - Mary Grover LeBlanc Memorial Fellowship - International Business

Scott Shepherd, MBA '83, created the Northstar Trade Finance - Mary Grover LeBlanc Memorial Fellowship in International Business. The \$2000 fellowship is available to a student completing their final year of international business. Candidates must be Canadian citizens or landed immigrants, and have a strong academic record to date.

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 Office of the Registrar. 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 2 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.

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.

H. Faculty of Science

These scholarships are administered by the Office of the Registrar.

AstraZeneca Scholarship

This annual scholarship is awarded each year to a student enrolled in the fourth and final year of a BSc program with Honours in biology, biochemistry, or chemistry. Awards will be made on a rotational basis between the subject areas. The recipient will have achieved a high academic standing. Awarded by the Office of the Registrar. Application 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. Application not required.

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. Application not required.

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. Application not required.

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. Application not required.

The Ross Stewart Smith Scholarships

A significant bequest established these memorial scholarships for students who excel in the sciences or mathematics. Application not required.

The following scholarships are administered by the academic unit. Please consult the departments directly for details.

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.

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.

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.

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.

Norbert Wolter Memorial Scholarship

Established in memory of Norbert Wolter, this Scholarship is awarded to a student enrolled in Chemistry within the Faculty of Science.

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 course 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.

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 Programs

Art and Dorothy Cooke Memorial Research Scholarship

Their daughters Janet Jericho and Susan Mrkich established this Scholarship in memory of Art and Dorothy Cooke. 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

This Scholarship of \$2,500 is awarded to a student entering their final year of Marine Biology. The recipient will have demonstrated significant academic achievement and also extra curricular involvement including athletics, fine arts, student body involvement and/or volunteer work in the community.

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.

JDS Uniphase Undergraduate Scholarship in Optics and Photonics

Established by JDS Uniphase Corporation. Awarded annually to a student entering the second year of the Honours Physics program in the Faculty of Science, on the basis of academic achievement and potential for a successful industrial career in optics and photonics. Open to Canadian citizens or permanent residents.

The award is renewable for up to two additional years for award holders who continue to demonstrate career potential in optics/photonics and who maintain first class standing. Award holders who are interested in summer or internship positions in the optics/photonics industry will normally be offered appropriate positions by JDS Uniphase. A letter of application should be submitted to the Department of Physics and Atmospheric Science by March 31.

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.

9. Psychology**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. 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.

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 course 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.

Applications for the following awards are available at the Department of Athletics.

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 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.

c) MacRae Scholarships

The Dr. Donald M. MacRae Basketball Scholarships were established by the late Dr. Donald M. MacRae to recognize the important roles played by the captains of the Dalhousie men and women's basketball teams. These awards recognize three generations of the MacRae family who played for the Tigers including Dr. MacRae.

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 Office of the Registrar 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.

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 course from the Bachelor of Commerce program or the Spanish 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 University Training Plan Men 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 University Training Plan Men who achieves a passing standing. The Office of the Registrar 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 general 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 15th 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.

North Nova Scotia Highlanders Memorial Award

An award of up to \$300 is available to an entering varsity student athlete who clearly shows leadership qualities and has a strong background in competitive athletics and other extra curricular activities. Applicants must have achieved at least an 80 percent average in Grade 12. Candidates must apply with supporting documentation to the Associate Director of Athletics, Dalplex, Dalhousie University, Halifax, NS, B3H 3J5. Deadline June 30.

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.

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 Her 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 courses 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 Architecture and Planning

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.

Floyd Dykeman Prize in Rural Planning

Awarded to a planning student committed to rural planning. Preference will be given to a candidate in their final year of study who engages in innovative research on rural planning, who conducts a special project, who develops in inspiring thesis or who shows outstanding service to others.

University Medal in Community Design

This medal is awarded annually to the graduate who has attained the highest academic standing in Community Design.

D. Faculty of Arts & Social Sciences**1. 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.

2. 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.

3. 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.

4. 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 90th anniversary and the 40th 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 to 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 of about \$300 is awarded annually to an outstanding first-year student enrolled in English 1000 (Introduction to Literature) 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 a student(s) majoring in English or in Honours English and entering their fourth year of study.

Paul McIsaac Memorial Prize

A memorial gift provides for an annual prize of about \$350 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 the 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, of an annual value of approximately \$5,500 each, 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 Devandra 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.

5. 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.

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 courses required for second year Major and Honours students. Currently these courses 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 courses.

University Medal in French

The Department of French offers a medal to the top First Class Honours graduate in recognition of superior achievement.

6. 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.

7. 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 Clan Ramsay of Nova Scotia Prize

To provide an annual prize to the student in the Department of History 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.

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.

8. History of Science and Technology

University Medal in History of Science and Technology

The Department of History of Science and Technology offers to the top First Class Honours graduate a medal in recognition of superior achievement.

9. 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.

10. Linguistics

University Medal in Linguistics

Halifax Interuniversity Linguistics Program offers to the top First Class Honours graduate a medal in recognition of superior achievement.

11. Music

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 grade point average 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

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-course 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: Contemporary Musics, 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.

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 "Sing Sunrise" Prize in Choral Music

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.

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.

12. 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.

13. 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 course 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.

14. 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.

15. Sociology and Social Anthropology

Professor Yuri Glazov Memorial Award

Awarded annually to a student who shows an outstanding capacity to combine civic duty and charitable service with a love for the humanities.

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.

16. Spanish

The de Carteret Memorial Prize

The de Carteret Memorial Prize is payable from the net annual income of a fund which was provided as a gift in the memory of the late Norman S. and Helier S. de Carteret and their sister, Phyllis de Carteret Nielsen. The prize is to be awarded on the recommendation of the Executive Committee of the Department to an outstanding student in the Department of Spanish.

Dr. James E. Holloway, Jr. Memorial Prize

The Holloway Memorial Prize is awarded to a graduating student with an honours degree who has demonstrated a consistently high level of achievement in the field of Latin American Literature, and who has successfully completed an honours thesis in the department in that field. The prize was established by colleagues, students, friends and family to honour the memory of Dr. James E. Holloway, Jr., a Dalhousie Spanish professor for over 30 years.

Sylvia Coffee Memorial Award

The Sylvia Coffee Memorial Award is given to a female Spanish student studying in one of our programs abroad in Latin America.

Department of Spanish Citizenship Award

The Citizenship Award recognizes the contributions of an individual to build a community atmosphere within the Department of Spanish.

University Medal in Spanish

The Department of Spanish offers a medal to the top First Class Honours graduate in recognition of superior achievement in the Spanish program.

17. 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.

Department of Theatre Awards Fund

This fund supports three awards to recognize the achievements of outstanding students in the Department of Theatre: the **Basil Cook Award** for students in the Costume Studies program; the **Department of Theatre Award** for students enrolled in the BA program; and the **Martin Surette Award** for which all students enrolled in the Theatre Program may be eligible.

The awards will normally be made at the commencement of students' third year of study in the Theatre program with the exception of the Basil Cook Award which will be made to students in their second year.

Jopling Award for Out of Country Theatre Studies

Earning 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

Recognizes an outstanding graduating honours student in Theatre Studies

18. 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.

E. 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 courses 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 and have at least one academic term of 2.0 credits or more to complete their computer science degree at the time of the award assessment. 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.

Entrepreneurship Award

The Entrepreneurship Award is sponsored by the Faculty of Computer Science, and by the Natural Sciences and Engineering Council of Canada to promote and support entrepreneurial activities among computer science students at Dalhousie University.

This Award, of \$5,000, is for one year with the possibility of renewal for one additional year based on the candidate satisfying the renewal criteria. The awards are open to full-time students enrolled in a 20 credit computer science major program and have a cumulative GPA of at least 3.0 at the time the award is presented. Computer Science students enrolled in CSCI 2102 and who meet the eligibility requirements are automatically considered for these awards as part of the course requirements. The number of awards available varies each year.

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 2nd, 3rd, and 4th 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 courses 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 of an individual in building a community atmosphere within the Faculty of Computer Science.

Mobil Oil Award

This award of \$125 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 major 20-credit program offered by the Faculty of Computer Science with at least 2.0 credits of courses 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 and have at least one academic term of 2.0 credits or more to complete their computer science degree at the time of the award assessment. 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 BCSc and BSc in recognition of superior achievement in computer science.

F. 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 APENS (Association of Professional Engineers of Nova Scotia) Award

The Association of Professional Engineers of 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 APENS and based on a written and oral presentation.

Atlantic Farm Mechanization Show Award

The Atlantic Farm Mechanization Show Award is given annually to the student graduating in Biological Engineering who has exhibited the greatest aptitude in the machinery related classes (with particular emphasis on their design project) and who has demonstrated the greatest potential for a career in power and machinery. Value: \$1,000.

The Atlantic Industrial Engineering Society Prize

The Atlantic Industrial Engineering Society provides a prize which is awarded at Convocation each year to the student graduating in Industrial Engineering with the highest overall average in the program of studies at Dalhousie.

Atlantic Land Improvement Contractors Association Award

The Atlantic Land Improvement Contractors Convocation Award is given annually to the student graduating in the Environmental Engineering program who had exhibited the greatest aptitude in the environmental

engineering courses (with particular emphasis on their design project) 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-course scholarships.

The Canadian Society for Chemical Engineering Medal

The Canadian Society for Chemical Engineering Medal is presented annually to the Junior Year student in Chemical Engineering with the highest overall average during the Junior 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 Agricultural Engineering 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 Year II to Year III 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 Mining 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 penultimate year of 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.

Teleglobe Canada Prize

Teleglobe Canada, Canada's international telecommunicator, offers a prize of \$500 to a top graduating student in the Department of Electrical Engineering. Award of the prize is based on academic excellence.

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 and Technology Engineering

This medal is awarded annually to the graduate who has attained the highest academic standing in Food Science & Technology Engineering.

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 Mining Engineering

This medal is awarded annually to the graduate who has attained the highest academic standing Mining 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.

G. 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 courses 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. Courses 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.

Canadian Association for Health, Physical Education and Recreation Student Award

This award is presented to a second- or third-year student who has demonstrated a significant involvement in the SAHHPER organization and by so doing has demonstrated a commitment to the advancement of professional principles supported by CAPHER.

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.

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 Sportsman Award

This award is presented to the student who has contributed significantly to the development of a sport.

University Medal in Health and Human Performance

Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 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 prize valued at \$400.00 is awarded to a graduating student with the highest cumulative GPA following four full time years in the BHSc program.

DRAXIMAGE Award

This award valued at \$500.00 is awarded to a full-time student graduating in Nuclear Medicine who has achieved the highest cumulative GPA for their discipline-specific courses.

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 award valued at \$500.00, is awarded to a member of the graduating class in Nuclear Medicine with the highest combined evaluation in clinical and academic performance over the four years of the degree.

Radiologist's Awards

These awards valued at \$250.00 each, are sponsored by the QEII Health Sciences Radiologist Group and is awarded to a full-time student graduating in each of the Nuclear Medicine, Diagnostic Medical Ultrasound and Radiological Technology programs with highest cumulative GPA.

Respiratory Therapy Faculty Academic Award

This award valued at \$100.00 is sponsored by the BHSc Respiratory Therapy faculty and is awarded to a full-time graduating student of Respiratory Therapy with the highest cumulative GPA.

University Medal in Health Sciences

Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 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 valued at \$200.00, is sponsored by the Respiratory Therapy Society of Nova Scotia and the Scotia Chapter of the Canadian Cystic Fibrosis Foundation. The award is presented to a student completing year three 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 valued at \$250.00, 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, established this award in her memory. This cash award is given to a student entering year four in Nuclear Medicine and is based on financial need, academic standing, community and campus involvement and recommendation of the Nuclear Medicine faculty.

Nova Scotia College of Medical Laboratory Technologists (NSCMLT) Awards

These three awards, sponsored by NSCMLT, are given to three 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 3.3.

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 valued at \$100.00, is awarded 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**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 leadership during his/her years of study.

Certificate for Highest Academic Achievement in the Basic Degree Program

This prize is awarded to a student graduating from the basic Degree program who has demonstrated the highest academic achievement.

Certificate for Highest Academic Achievement in the Post RN Stream

This prize is awarded to a student graduating from the Post-RN Degree program with the highest academic average.

The Melda Dashevsky Memorial Award

The recipient of this monetary award is a student graduating from the basic degree program who has demonstrated interest and proficiency in Oncology Nursing. This award is provided by Mrs. Dashevsky's husband in her memory. It was previously awarded to a student graduating from the Victoria General Hospital School of 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. 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.

This prize recognizes a student who has demonstrated excellence in clinical nursing, with a focus on the care of persons and families facing acute illness in either the hospital or at home. To be eligible, students must have cumulative GPA of 3.7 or higher upon completion of 96 credit hours towards a BScN, and have consistently received an excellent evaluation in the clinical nursing components of the undergraduate program.

Eligible students should submit a scholarly paper (of no longer than 3000 words) which integrates research, theory and practice to describe the care of persons and families facing acute illness. Papers must be submitted to the School of Nursing. Deadline: April 1.

Elsevier Canada Award

The recipient of this award will be a graduating student (Basic or Post RN) who has shown progressive academic achievement.

The H.D. Fraser-Davey Award

This award is given to a graduating student who has demonstrated outstanding ability and talent in international nursing and nurse midwifery.

Prize for Highest Academic Standing in the Undergraduate Degree Program

The recipient of this award is the student graduating from the basic or Post-RN degree program with the highest academic average.

The IWK/Medical, Dental and Scientific Staff Award for Excellence in Children's Nursing

The recipient of this award will be a student graduating from the basic program who has demonstrated excellence in the area of children's nursing.

The IWK/Medical, Dental and Scientific Staff Award for Excellence in Women's and Newborn Nursing

The recipient of this award will be a student graduating from the basic 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 their Families

This award is granted to a student who has demonstrated critical thinking, advocacy and autonomy in nursing children and their families in hospitals, homes and communities.

Elizabeth MacKinnon Lambie Nutrition Award

The recipient of this monetary award has demonstrated the ability to apply community nutrition knowledge to the nursing profession.

QEII Health Sciences Centre Award for Professional Practice in Nursing

Selected by their peers, this award recognizes the graduating BScN Basic and Post-RN student who demonstrate the qualities of Professional Practice. The recipients epitomize 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.

Registered Nurses Professional Development Centre Award

The recipient of this award 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) for Medical/Surgical Nursing

This award is granted to a student who has demonstrated excellence in academic and clinical practice when caring for adults.

Dr. Samar B. Singh Prize in Anatomy

This book prize is awarded to the highest standing student in ANAT 1010.03 among Nursing and Pharmacy enrollers. It is a memorial to Dr. Singh, a long-time member of the department of Anatomy.

Rosie Steele Award

The recipient of this monetary award is a student graduating from the Post-RN program who has demonstrated academic achievement and potential leadership in perinatal nursing.

The Stern Award

This award is given to a graduating student who has (in the opinion of his/her peers) made outstanding contributions to the student body throughout the year.

University Medal in Nursing

Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 for details.

Victoria General Hospital School of Nursing Alumni Award for Oncology Nursing

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 oncology nursing.

Women's Division of the Dalhousie Alumni Association Medal

This medal is presented to the graduating student with the highest cumulative grade point average in the BSc Nursing program.

5. College of Pharmacy

CPhA Apotex Future Leader Award

One award of \$1,000 is available annually to qualifying students who are graduating from the program. The recipients will be selected from those who have made significant contributions to the student body, who have demonstrated the strong potential to make contributions to the profession, and who have maintained throughout their university studies a satisfactory academic standing.

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.

BioMedica Diagnostics Award

An award of \$100 and a certificate will be presented to a student at the College of Pharmacy who excels in research related to Pharmacy

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 class.

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 Pharmacy 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. Apply to the College of Pharmacy.

Jean Coutu Award

This \$3,000 award was introduced in 1996 by Jean Coutu to recognize a graduating New Brunswick Pharmacy student. The candidate must have attained good academic standing and contributed to undergraduate and community life.

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.

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.

Dr. Jessie I. MacKnight Miss Mona W. Fleming Award in Hospital Pharmacy

This award is administered 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.

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).

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 \$1,000 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 Awards

In conjunction with its 100th anniversary of incorporation, the Society has established two awards. 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 awards, each of which is \$1,000.

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.

Novapharm Pharmacy Award

This \$500 award is given to the student who excels in the second year Pharmacokinetics class.

Pfizer Cardiology Award

This \$1,000 award is presented by Pfizer Canada to the student who obtained the highest mark in PHAR 3040.

Pfizer Consumer Group Drugs Self-Medication Award

An award of \$500 is presented by Pfizer Canada to recognize the pharmacy student who excels in class work related to over-the-counter drug products.

Pfizer Pain and Rheumatology Award

This \$1,000 award is presented by Pfizer Canada to the student who obtained the highest mark in PHAR 3050.

Pfizer Respiratory Award

This \$1,000 award is presented by Pfizer Canada to the student who obtained the highest mark in PHAR 2035.

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.

Pharmasave Community Service Awards

An award (\$1250) presented to a student from both first and second year that is actively involved in volunteer work and has made an impact on community life.

Pharmasave Pharmacy Innovation in Patient Care Awards

An award of (\$1250) presented to a student from both third and fourth year that shows leadership in the development and implementation of a "non-dispensing" patient care program/service offered by a community pharmacy. (PEP not included.)

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. Trevoy Pugsley Memorial Pharmacy Award

This award was established by a bequest from the Estate of B. Trevoy 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

These awards were established by a bequest from the Vera B. Pugsley estate. Three awards of \$500 will be presented annually to students that successfully completed one or more years of the class leading to a degree in pharmacy and who are 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.

Ratiopharm Award

Two awards of \$500.00 each are available annually. The candidates must have attained a satisfactory academic standing in the first year classes and be registered in second year Pharmacy classes. The Selection Committee may consider financial need in determining the awardees.

John J. Ryan Pharmacy Administration Award

This award of \$500 is presented annually to the student who excels in PHAR 4060.03 (Advanced Patient Health Management). Financial need will also be considered. This Award was made possible through income of the John J. Ryan Fund.

Sandoz Pharmacy Administration Award

This award is presented to the student who excels in medication use management, PHAR 2060.03.

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.

The Sepracor Graduate Award

This award is presented to a graduate student, research fellow or post doctoral fellow who has done research with a Dalhousie University College of Pharmacy faculty member.

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.

University Medal in Pharmacy

Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 for details.

Wyeth Award of Excellence in Pharmacy Research

An Award of \$200 and a certificate will be presented to a student at the College of Pharmacy who excels in research related to pharmacy.

6. School of Social Work***Dalhousie University Women Alumnae Medal***

This medal is presented annually to the BSW graduating student with the highest cumulative grade point average in the baccalaureate program in the School of Social Work.

Raoul Leger Memorial Humanitarian Award

For a BSW or MSW graduating student. Recipient must be seen to exemplify a commitment to issues of development, peace and social justice. This can be in academic endeavours, volunteer commitments, field placements or previous work history in combination with a continued involvement in critical issues. Students are nominated by the Faculty.

The SSW Alumni Award

For a BSW and MSW student who demonstrates the highest values of humanity, social justice, community and service in the study of social

work. The award is provided from faculty members' nominations to the School of Social Work BSW Program Committee.

University Medal in Social Work

Please refer to G. Faculty of Health Professions, 1. University Medals on page 560 for details.

H. Faculty of Management**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 Business Management.

The Stewart Lockie Gibson Memorial Prize

The School of Business Administration 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 School of Business Administration 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.

Outstanding Undergraduate Achievement in International Business Award (non-monetary)

Awarded to a graduating Commerce International Business major to recognize demonstrated interest, university involvement, and academic achievement.

University Medal in Commerce

The School of Business Administration 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.

Andrew Peacock Memorial Award

An annual award named in honour of Dr. Andrew Peacock, Professor in the School of Business Administration. Students who are in good standing and are enrolled in the Bachelor of Management degree 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 department.

I. 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 4th 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 3200, 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 4401. (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 1010.03 and Biology 1011.03, 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 (Biology 3071 or MARI 3071).

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.

Ogden Memorial Prize

The Dr. J.C. Ogden memorial Prize is given to the top student in Limnology (Biology 4068) and honours the late Dr. J.C. (Pete) Ogden, an accomplished limnologist. A long-serving member of the Biology Department, Dr. Ogden contributed significantly to the field of aquatic science. He particularly enjoyed teaching the Limnology 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.

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.

The John Carstairs-Arnell Prize

An endowment has been 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.

Walter J. Chute Prize in Chemistry

An endowment has been 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.

The Hugh Graeme Fraser Memorial Prize in Advanced Chemistry

This award was founded by members of the Class of 1931. The interest 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.

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.

Alan Chaloner-Hill Memorial Bursary

Alison Biedermann-Hill, daughter of the late Alan Chaloner Hill (BSc '25), established an endowment in her father's memory to provide a bursary to a second- or third-year Chemistry student. Dr. Hill was born in Lancaster, NB, on May 19, 1905 and was Life President of the Class of '25 at Dalhousie. After earning his PhD from McGill in 1929 he went on to enjoy a very distinguished career in the Canadian pulp and paper industry. At the time of his retirement he was CEO of Anglo Paper Products. Please apply to the Department of Chemistry.

Oswald Knop Prize in Chemistry

An endowment provides for an annual prize to the top student (or students, in the event of a tie) for the best achievement in both classes 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.

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.

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.

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 Programs

Environmental Programs Award

This award is given to an Environmental Programs in her/his third year of study who has shown academic promise in her/his environmental course work.

Environmental Programs Honour Society Medal

The Honours Society Medal 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 has achieved a cumulative GPA of 3.5 or more.

Environmental Science Thesis Prize

This prize is awarded annually to the student that is judged to have submitted and defended the best Honours Thesis.

Owen Hertzman Prize

The Owen Hertzman Prize is granted annually to an Environmental Programs student who is deemed to have contributed significantly to Environmental Programs school life.

University Medal in Environmental Science

The Department of 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 1100, 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 Prize

A prize will be awarded to an undergraduate student attending courses typically taught by Masayoshi Senba, who, in the opinion of the faculty, possess outstanding skills, interest, promise, and determination in theoretical physics. The 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***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.

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.

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 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.

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.

University Medal in Neuroscience

The Department of Psychology offers a medal to the top graduating student with First Class Honours in the program.

University Medal in Psychology

The Department of Psychology offers a medal to the top graduating student with First Class Honours in the program.

Dr. Lilyan E. White Prize

A bequest from the Estate of Dr. Lilyan 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.

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 course 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., 9. 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
P.O. Box 28000
Station Main
Edmonton, AB T5J 4R4
Fax: (780) 422-4516
Tel: (780) 427-3722
1-800-222 6485 (toll-free in Canada)
www.alis.gov.ab.ca

British Columbia

Student Services Branch
Ministry of Advanced Education
P.O. Box 9173
Stn Provincial Government
Victoria, BC V8W 9H7
Fax: 1-800-262-2112
1-800-561-1818 (toll-free in Canada/US)
www.aved.gov.bc.ca/studentaidbc

Manitoba

Manitoba Student Aid Advanced Education
409-1181 Portage Ave.
Winnipeg, MB R3G 0T3
Fax: (204) 948-3421
Tel: (204) 945-2313 (outside Manitoba)
1-800-204-1686 (toll free in Manitoba)
www.studentaid.gov.mb.ca

New Brunswick

Student Financial Services
Department of Education
P.O. Box 6000
77 Westmorland St., TD Tower, 5th Floor
Fredericton, NB E3B 5H1
Fax: (506) 444-4333
Tel: (506) 453-2577 or
1-800-667-5626 (Atlantic Provinces, Ontario and Quebec only)
www.studentaid.gnb.ca

Newfoundland & Labrador

Student Financial Services Division
Department of Youth Services and Post-Secondary Education

P.O. Box 8700
St. John's, NL A1C 4J6
Fax: (709) 729-2298
1-888-657-0800
www.edu.gov.nf.ca/studentaid

Northwest Territories

Student Financial Assistance
Department of Education
Cultural and Employment
Government of NWT
P.O. Box 1320
Yellowknife, NT X1A 2L9
Fax: 1-800-661-0893
Tel: (867) 873-7190
1-800-661-0793
www.nwtsfa.gov.nt.ca

Nova Scotia

Student Assistance Office
Department of Education
P.O. 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, N.S.)
<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
www.gov.nu.ca/education

Ontario

Ontario Student Assistance Program
Student Support Branch
Ministry of Training,
Colleges and Universities
P.O. 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
P.O. Box 2000
16 Fitzroy St
Charlottetown, PE C1A 7N8
Fax: (902) 368-6144
Tel: (902) 368-4640
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
Tel: 1-888-345-4505
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
www.student-loans.sk.ca

Yukon Territory

Students Financial Assistance
Advanced Education Branch
Department of Education
Government of Yukon
P.O. Box 2703
Whitehorse, YT Y1A 2C6
Fax: (867) 667-8555
Tel: (867) 667-5929
1-800-661-6408 Local 5929 (within Yukon)
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 Office of the Registrar, Room 133, Henry Hicks Academic Administration Building, the Sexton Campus Student Service Centre, or online www.registrar.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.

A. General—All Faculties

The following bursaries, unless indicated otherwise, are administered by the Office of the Registrar. Awards are made through the online bursary program. Please refer to moneymatters.dal.ca for the deadline dates for the online bursary program.

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.

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.

The Birks Family Foundation Bursaries

The Birks Family Foundation has established a plan of annual contributions to the Student Aid Fund of recognized Canadian universities for the creation of the Birks Family Foundation Bursaries. The Bursaries are awarded by the Foundation on the recommendation of the Registrar's Office - Awards and are not restricted to faculty or year and may be renewed. The number and amount of such awards may vary annually, depending upon the funds available for the purpose from the Foundation. 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 \$2,000 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 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 Raefe Douthwaite Memorial Bursary

To honour the memory of Charles Robert Raefe 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. 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.

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 31.

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.

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 31.

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 31.

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.

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.

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.

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 International Student and Exchange Office. Deadline: January 31.

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 31.

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 31.

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 will also be required to be submitted to the Alumni Office addressed to the Chair of the Scholarship Committee, Women's Division. Deadline: October 31.

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.

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. Application required. 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

Barry and Margo Johns Family Bursary

This \$1000 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.

Margaret Newcomb Layton Harrigan Brink Bursary

This bursary was established in memory of Margaret Newcomb Layton Harrigan Brink, who graduated from Dalhousie in 1937 with a Licentiate in Music and who was a music teacher in the Nova Scotia public schools system. The award was established by her son to honour the influence she had on a great number of music students in Nova Scotia. The bursary is awarded to an undergraduate student in the Department of Music who is pursuing studies related to music education, composition, musicology, or music history. Eligible students, in order of preference, will be from (a) the Great Village area; (b) Colchester County; or (c) other parts of Nova Scotia. The value of the award is \$500. Applicants will apply to the general online bursary program as well as to the Department of Music Scholarships Committee. Deadline: October 31.

Eric Stanley Hillis Memorial Bursary

An annual bursary for a student enrolled in the 2nd, 3rd, or 4th 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 31

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 31.

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 Office of the Registrar. 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.

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, students must apply for all bursaries available through the Faculty of Engineering. Please refer to specific bursary descriptions for further details.

1. Studley Campus

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, Studley Campus. Contact the department for the deadline.

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, Studley Campus Office. Contact the department for the deadline.

2. Sexton Campus

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.

The Sam Ando Memorial Bursary

This \$1,000 bursary is awarded annually to a student studying in his/her fourth year of Mechanical Engineering to honour the memory of the distinguished scientist, and engineering educator, Mr. Sam Ando. To be eligible, a student must be in good academic standing and display creativity through high academic performance in design courses and/or extra curricular activities. Deadline: September 30.

J.D. (Dan) Arbing Memorial Nova Scotia Road Builders Association Bursary

The N.S. Road Builders Association established this award of \$1,500. 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.

Armoyan Family Bursary

This annual bursary of \$2,000 has been established to assist a student in his/her first year of Upper Division of Engineering. The recipient will have demonstrated financial need and satisfactory academic standing. Deadline: September 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.

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.

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 students(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.

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.

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.

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 by June 1.

Astra Zeneca Bursaries

Two bursaries of \$750 each are awarded annually to students who have completed two or three years and who demonstrate financial need. Apply to the College of Pharmacy.

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. Apply to the College of Pharmacy.

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. Apply to the College of Pharmacy.

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. Apply to the College of Pharmacy.

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. Apply to the College of Pharmacy.

Kenneth MacKenzie Memorial Bursary in Pharmacy

To provide a bursary to an undergraduate student in the College of Pharmacy who has demonstrated financial need. Apply through the general online Bursary Program.

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 Dunsworth'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 \$1000. The bursaries are awarded on the basis of need to those students whose academic achievement, promise, and character are acceptable. Apply to the College of Pharmacy.

Apotex Inc./P.A.C.E. Bursaries

Two bursaries of \$750 each are offered annually by Apotex Inc. for students who have completed at least one year at the College of Pharmacy. The students must have a satisfactory academic standing and demonstrate financial need. Apply to the College of Pharmacy.

The Pfizer Bursary

This bursary of \$500 is awarded to a deserving student who demonstrates financial need and who has attained a satisfactory academic standing. Apply to the College of Pharmacy.

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. Apply to the College of Pharmacy.

L.E. (Gene) Robinson Memorial Bursary

This bursary is provided to a student enrolled full-time in the College of Pharmacy who has demonstrated financial need and has shown interest in community involvement.

Shoppers Drug Mart Community Pharmacy Bursaries

Shoppers Drug Mart will sponsor three bursaries of \$600 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. QEII/Dalhousie University School of Health Sciences

Dorothy Archibald Bursaries

These awards valued at \$250.00, 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 course(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 courses 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 Office of the Registrar.

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. Selection is made by the BSW Committee in the Fall Term. 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.

G. Faculty of Management

Knight, Bain, Seath, Holbrook Atlantic Limited Bursary

This Company sponsors an annual bursary of \$1,000 to be awarded to a student in the Bachelor of Commerce program on the basis of financial need. The recipient will have achieved satisfactory standing. Apply through the School of Business Administration. Contact the School of Business for the deadline.

The Louisbourg Investments Bursary

Two bursaries are funded annually by Louisbourg Investments in order to assist students enrolled in the School of Business Administration. Students must demonstrate financial need and be of satisfactory academic standing.

Application required to the School of Business Administration. Contact the 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 31.

H. Faculty of Science

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. Please apply to the Department of Chemistry. Deadline: Check with Chemistry in September.

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 31.

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 Office of the Registrar. 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.

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 31.

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 31.

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 course 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

Program dates: Fall: October 1 - October 31
 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 Office of the Registrar.

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